



QUAID-E-AWAM UNIVERSITY

OF ENGINEERING, SCIENCE AND TECHNOLOGY, NAWABSHAH
Sakrand road, Nawabshah, 67450

PROCUREMENT OFFICE

No: QUEST/NH/PROC/350

Dated: 08.11.2024

NOTICE INVITING TENDER

"Say No To Corruption"

The Quaid-e-Awam University of Engineering, Science & Technology (QUEST) Nawabshah invites competent contractors, joint ventures or consortiums to submit sealed bids / tenders under SPPRA Rules 2010 and Pakistan Engineering Council guidelines for the following works;

Sr. No.	Name of Work	Estimate Cost	Bid Security	Tender Fee	Completion period	Date of issuance	Submission on 28-11-2024 at following times	Opening on 28-11-2024 at following times
1	Construction of Environmental Engineering Department at QUEST, Nawabshah	311.532 millions	5%	5,000	18 Months	12-11-2024	12:00 Noon	1:30 PM
2	Internal and External Electrical work of Environmental Engineering Department	42.795 millions	5%	5,000	12 Months		12:00 Noon	2:30 PM

Eligibility: All the interested Contractors / Firms eligibility criteria, viz. having valid registration with Federal Board of Revenue (FBR) for Income Tax, Registration with SRB for SRB Tax & Pakistan Engineering Council (PEC) in relevant category and discipline, **Electrical Inspector license of concerned region is mandatory in work Sr. No.2.**

- Minimum 05 works completed / in progress of similar nature of any university or large organization along with documentary evidence of works completed / in progress.
- Details of turnover (including in terms of rupees) at least last three years that average turnover should be atleast of estimated cost of above mentioned bids (Sr. No. 01 & 02 each work separately) and it would be verified by bank certificate with statement.
- Undertaking of affidavit that the firm is not involved in any litigation of abandoned or executing agency.
- Latest Income Tax Certificate.
- Detailed portfolio of completed work.

Method of Procurement: SINGLE STAGE - TWO ENVELOPE

Bidding / Tender Document

- i) **Issuance:** Documents will be issued from 12-11-2024 to 28-11-2024 on payment of above mentioned tender fee (Non refundable) in the shape of D.D. / Pay order in the favor of Director Finance QUEST Nawabshah.
- ii) **Submission:** Last date of submission **28-11-2024 at 12:00 Noon** (Work Sr. No 1 & 2)
- iii) **Opening:** Tenders will be opened same date of submission (i-e) on **28-11-2024 at 1:30 pm**
- iv) **Amount of Bid Security/earnest money:** 5% of bid amount at the time of bid submission.
- v) **Bid Validity Period:** (90) days
- vi) **Place:** Procurement Office, Electrical Engineering Department A-Sector Quaid-e-Awam University of Engineering, Science & Technology (QUEST), Nawabshah S.B.A Sindh Office # 0244-930389/0244-930017
- vii) **Tender must be uploaded on SPPRA Website (EPADS) within due date and time of submission.**


Terms & Conditions:

- The contract documents and other terms & Conditions can be seen and blank tenders be obtained from websites given below:
QUEST (www.quest.edu.pk) and SPPRA (E-PADS) websites from 12-11-2024. The bids will be opened on the date and time as mentioned above in the presence/online of bidders or their authorized representative who wish to attend.
- Earnest money in the shape of bank draft/pay order in the favour of Director Finance QUEST Nawabshah must be attached with the bid documents.
- The cost of bid should include all government taxes.
- The procurement agency reserves the right to accept or reject any or all financial bids as per SPPRA rules.
- In case of any disturbance or delay schedule of any committee member, the tenders will be opened on next working day.

Under following condition tender will be rejected:

- Conditional bids / tenders.
- Bids not accompanied by the full security of required amount and form.
- Bid received after specified closing time.
- Black listed firms.
- In case the applicant not follow SPPRA or aforesaid conditions, the applications for issuance of bidding document will not be entertained.


Procurement Manager
QUEST, Nawabshah



QUAID-E-AWAM UNIVERSITY
 OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH
 JAMSHED ROAD, NAWABSHAH, DISTRICT
 RAJOURI, PUNJAB



Procurement Office
Date: 08/11/2024

NOTICE INVITING

"BAY NO TO CORRUPTION"

The Quaid-e-Awam University of Engineering, Science & Technology (QUEST) Nawabshah invites competent contractors, joint ventures or consortiums to submit sealed bids for tendering under SPPRA Rules 2017 and Pakistan Engineering Council guidelines for the following work:

Sr. No.	Name of Work	Estimated Cost	Bid Security	Tender Fee	Completion period	Date of Issuance	Submission on 20-11-2024 at following time	Opening on 20-11-2024 at following time
1	Construction of Environmental Engineering Department at QUEST, Hyderabad	91.500 millions	5%	5,000	18 Months		12:00 Noon	1:30 PM
2	Internal and External Electrical work of Environmental Engineering Department	45.750 millions	5%	5,000	12 Months	12-11-2024	12:00 Noon	2:30 PM

Eligibility: All the interested Contractors / Firms eligibility criteria, viz. having valid registration with Federal Board of Revenue (FBR) for Income Tax, Registration with 2018 for 2019 Tax & Pakistan Engineering Council (PEC) in relevant category and discipline. **Technical Inspector: Scores at concerned region is mandatory (15 Marks, 30, 100%).**
I. Treasury its work completed / in progress of similar nature of any university or large organization along with documentary evidence of work completed / in progress.
II. Details of turnover (including in terms of rupees) of last three years that average turnover should be atleast of estimated cost of above mentioned bids (SC No. 01 & 02 each work separately) and it would be verified by bank certificate with statement.
III. Undertaking of affidavit that the firm is not involved in any litigation of abandoned or existing agency.
IV. Latest Income Tax Certificate (ITTN).
V. Latest portfolio of company profile.

Method of Procurement: SINGLE STAGE - TWO ENVELOPE

Bidding / Tender Documents

I. Issuance: Documents will be issued from 12-11-2024 to 20-11-2024 on payment of above mentioned tender fee (non refundable) in the shape of D.D. / Pay order in the favor of Director Finance-QUEST Nawabshah.

II. Submission: Last date of submission (20-11-2024) at 12:00 Noon (P.M) (On Nov 1 & 2).

Opening: Tenders will be opened same date of submission II-at on 20-11-2024 at 1:30 pm.

Amount of Bid Security: banked money: 5% of bid amount at the time of bid submission.

III. Bid Validity Period: (30) days.

IV. Place: Procurement Office, Electrical Engineering Department-Academic Quaid-e-Awam University of Engineering, Science Technology (QUEST), Nawabshah S.B & S. Office of state representative QUEST.

V. Tender must be uploaded on SPPRA Website (ENRIS) within due date and time of submission.

Terms & Conditions

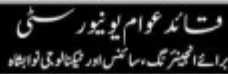
- The contract documents and other terms & Conditions can be seen and mark tenders be obtained from website given below:
QUEST (www.quest.edu.pk) and SPPRA (S-PROC) websites from 12-11-2024. The bids will be opened on the date and time as mentioned above in the presence/online of bidders or their authorized representative who wish to attend.
- Earnest money in the shape of bank cheques/ order in the favor of Director Finance QUEST Nawabshah must be attached with the bid documents.
- The cost of bid should inclusive of all government taxes.
- The procurement agency reserves the right to accept or reject any or all financial bids as per SPPRA rule.
- In case of any disturbance or busy schedule of any committee member, the tenders will be opened on next working day.

Other necessary requirements tenders will be required

- Conditional bids / tenders.
- Bids not accompanied by the bid security of required amount and form.
- Bids received after specified date and time.
- Blank bid forms.
- In case the applicant not fulfills SPPRA or at stated conditions, the applications for issuance of bidding document will not be entertained.

Procurement Manager
QUEST Nawabshah

08/11/2024



QUEST/NH/PROC/350c

ٹھینڈر کی دعوت کا نوٹس

"SAY NO TO CORRUPTION"

© 2010 SPPRA. سائنس اور طبی پیشہ ورانہ (REQUEST) اور طبی پیشہ ورانہ کے حقوق کے موضوع پر اس مضمون کا مقصد یہ ہے کہ وہ مطالعہ کا مضمون کے لیے

تاریخ	موضوع	نمبر	نوع	نوع	نوع	نوع	نوع
28-11-2024	29-11-2024	12-11-2024	ا.ب.	5000	9%	311.532	1
2-12-2024	12-12-2024	12-11-2024	ا.ب.	5000	9%	42.795	2

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کام کے علاوہ، 2012ء کی تقریب۔

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برچسب مربوط به این صفحه: [تاریخچه](#)

المؤلفون: **أحمد محمد عبد الحليم**

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www.elsevier.com/locate/jmb

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محمد بن علیؑ کے قتل بعد مسعودؑ کو پھانسی دیا گیا

- خود کو اپنا لکھتا ہے۔
 وہاں ایسی صورتیں ہیں جو کہ ان کے لیے عجیب و غریب ہیں۔
 ان کے لیے وہاں ایک عجیب و غریب ہے۔
 وہاں ایک عجیب و غریب ہے۔
 وہاں ایک عجیب و غریب ہے۔

پرو کیور مشن - منیجر
QUEST, نومبر 2014

PHD 344 173/24



پروفیسر میٹھرا

Dated: 08.11.2024

"SAY NO TO CORRUPTION"

"SAY NO TO CORRUPTION"

Sl. No.	Name of Work	Estimate Cost	Bid Security	Tender Fee	Completion period	Date of Issuance	Information on 20-11-2024 and 20-11-2024 at	Opening on 20-11-2024 at
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Sr. No.	Name of Work	Estimated Cost	Risk Security	Tender Fee	Completion period	Date of Insurance	Submission on 20-11-2024 at following times	Opening on 20-11-2024 at following times
1	Construction of Environmental Engineering Department at OUST, Narsimharajpet Internal and External Electrical work of Environmental Engineering	311.532 millions	5%	5,000	18 Months	12-11-2024	12:00 Noon	1:30 PM
2		42.795 millions	5%	5,000	12 Months		12:00 Noon	2:30 PM

18. خلاف نامی نی انکنت فریر شتهن قانونی چاروا جوئی پر دلوٹ نہ اھی، بالکل گنہگار اچھنسی مان.

19. تازو انظر تحفہ سر تیضیت (اے نی اے).

7. خطیبی پر فاضل جو تعلیمی پورٹ فولیو کے ایسے

المجلة

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بیت جلالہ شریعت صحت لیندر رو کیا ویند؟

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PMD 100-172034



**QUAID E AWAM UNIVERSITY OF ENGINEERING
SCIENCE & TECHNOLOGY
NAWABSHAH**

**CONSTRUCTION OF ENVIRONMENTAL ENGINEERING
DEPARTMENT AT QUEST NAWABSHAH**

Tender Documents

Part – I

(Tender No. QUEST/NH/PROC/-350-002a-Civil Works)

***Invitation for Bids
Instruction to Bidders
Bidding Data
Form of Bid and Appendices to Bid
Bid Security Form
Form of Performance Security
Form of Contract Agreement
Mobilization Advance Guarantee/Bond
Indenture Bond for Secured***

Consultants:



ZAHEERUDDIN CONSULTANTS (PVT.) LTD.

■ Architects ■ Planners ■ Engineers ■ Construction Managers
5-A, Sindhi Muslim Society, Karachi – 74400 (Pakistan)
Tel:# 3455 0321 (4 Lines) Fax: (92-21) 3455 5251 E-mail: zclkh@gmail.com
Email: info@zaheeruddinconsultants.org, www.zaheeruddinconsultants.org



**CONSTRUCTION OF ENVIRONMENTAL ENGINEERING
DEPARTMENT AT QUEST, NAWABSHAH.**

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INVITATION FOR BIDS



QUAID-E-AWAM UNIVERSITY

OF ENGINEERING, SCIENCE AND TECHNOLOGY, NAWABSHAH
Sakrand road, Nawabshah, 67450

PROCUREMENT OFFICE

No: QUEST/NH/PROC/350

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Sr · N o.	Name of Work	Estimate Cost	Bid Security	Tender Fee	Completion period	Date of issuance	Submission on 28-11-2024 at following times	Opening on 28-11-2024 at following times
1	Construction of Environmental Engineering Department at QUEST, Nawabshah	311.532 millions	5%	5,000	18 Months		12:00 Noon	1:30 PM
2	Internal and External Electrical work of Environmental Engineering Department	42.795 millions	5%	5,000	12 Months	12-11-2024	12:00 Noon	2:30 PM

Eligibility: All the interested Contractors / Firms eligibility criteria, viz. having valid registration with Federal Board of Revenue (FBR) for Income Tax, Registration with SRB for SRB Tax & Pakistan Engineering Council (PEC) in relevant category and discipline, **Electrical Inspector license of concerned region is mandatory in work Sr. No.2.**

- Minimum 05 works completed / in progress of similar nature of any university or large organization along with documentary evidence of works completed / in progress.
- Details of turnover (including in terms of rupees) at least last three years that average turnover should be atleast of estimated cost of above mentioned bids (Sr. No. 01 & 02 each work separately) and it would be verified by bank certificate with statement.
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- Detailed portfolio of company profile.

Method of Procurement: SINGLE STAGE – TWO ENVELOPE

Bidding / Tender Documents:

- Issuance:** Documents will be issued from 12-11-2024 to 28-11-2024 on payment of above mentioned tender fee (Non refundable) in the shape of D.D. / Pay order in the favor of Director Finance QUEST Nawabshah.
- Submission:** Last date of submission **28-11-2024 at 12:00 Noon (Work Sr. No 1 & 2)**

- iii) **Opening:** Tenders will be opened same date of submission (i-e) on **28-11-2024** at **1:30 pm**
- iv) **Amount of Bid Security/earnest money:** 5% of bid amount at the time of bid submission.
- v) **Bid Validity Period:** (90) days
- vi) **Place:** Procurement Office, Electrical Engineering Department A-Sector Quaid-e-Awam University of Engineering, Science Technology (QUEST), Nawabshah S.B.A Sindh Office # 0244-930389/0244-930615.
- vii) **Tender must be uploaded on SPPRA Website (EPADS) within due date and time of submission.**

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QUEST (www.quest.edu.pk) and SPPRA ([E-PADS](#)) websites from 12-11-2024. The bids will be opened on the date and time as mentioned above in the presence/online of bidders or their authorized representative who wish to attend.
- Earnest money in the shape of bank draft/pay order in the favour of Director Finance QUEST Nawabshah must be attached with the bid documents.
- The cost of bid should inclusive of all government taxes.
- The procurement agency reserves the right to accept or reject any or all financial bids as per SPPRA rules.
- In case of any disturbance or busy schedule of any committee member, the tenders will be opened on next working day.

Under following conditions tender will be rejected:

- Conditional bids / tenders.
- Bids not accompanied by the bid security of required amount and form.
- Bid received after specified date and time.
- Black listed firms.
- In case the applicant not fulfills SPPRA or aforesaid conditions, the applications for issuance of bidding document will not be entertained.

Procurement Manager
QUEST, Nawabshah

INVITATION FOR BIDS

Date: _____

Federal/Provincial/ Funds/ No. _____

Bid Reference No: QUEST /NH/PROC/350-002a-Civil Works

1. Quaid-e- Awam University of Engineering Sciences & Technology, Nawabshah (QUEST) (the “Procuring Agency”) has received funds from the Government of Pakistan towards the Establishment of Environmental Engineering Department at their Main Campus in Nawabshah. It is intended that part of the proceeds of the funds will be applied to eligible payments under the contract for the various works under the PC-1.
2. Procuring agency invites sealed bids from interested firms or persons licensed by the Pakistan Engineering Council (PEC) in the appropriate category for the works who meet the eligibility criteria. A foreign bidder is entitled to bid only in a joint venture with a Pakistani Firm in accordance with the relevant provisions of PEC bye-laws.
3. Bidders may obtain information by acquiring the bidding documents (BD) from the Office of the procuring agency, at

Procurement Manager
Electrical Engineering Department at QUEST, Sakrand
Road, Nawabshah:
Tel: 0224-937-0381-5 (5 lines); Fax: 0224-937-0367; 0224-937-0357
Attention: Prof. Dr. Abdul Sattar Saand, Procurement Manager
Mobile: 0331-388-2896

4. A complete set of Bid Documents may be purchased by an interested bidder on submission of a written application to the above office and upon payment of a non-refundable fee of Rs.5,000.00 (Rupees Five Thousand Only).
5. 5% of Bid Value.

Procurement Manager
Electrical Engineering Department at QUEST, Sakrand
Road, Nawabshah:
Tel: 0224-937-0381-5 (5 lines); Fax: 0224-937-0367; 0224-937-0357
Attention: Prof. Dr. Abdul Sattar Saand, Procurement Manager
Mobile: 0331-388-2896

at or before 12:00 hours, on 28-11-2024. Bids will be opened at 01:30 hours on the sameday, in the presence of bidder’s representatives who choose to attend at the same address.

The bid is invited in single stage two envelope procedure as provided under rule 46(2) SPPRA 2010. The technical and financial proposals should be sealed separately and placed in 3rd envelope. The Tender Documents are to be submitted by 28-11-2024 at the office of Procurement Manager QUEST up to 12:00 noon, where technical proposal will be opened on same date at 01:30 p.m. in front of bidders who wish to be present.

Financial Proposals of the technical accepted bids shall be publically opened for which date, time and venue shall be communicated to the bidders in advance.

* * * * *

INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS

A. GENERAL

IB.1 Scope of Bid

- 1.1 Procuring agency as defined in the bidding data hereinafter called “the procuring agency” 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 Appendix-A to Bid.

IB.2 Source of Funds

- 2.1 Procuring agency has received/ applied for loan/grant/ Federal/ Provincial/Local Government funds from the source(s) indicated in the bidding data in various currencies towards the cost of the project /scheme specified in the bidding data, and it is intended that part of the proceeds of this loan/grant/funds 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 interested bidders who are eligible under provisions of Sindh Public Procurement Rules as mentioned below and the criteria given in the Notice Inviting Tender (NIT)/ Bidding Document.

Firms and individuals, national or international, may be allowed to bid for any project where international competitive bidding is feasible. Any conditions for participation shall be limited to those that are essential to ensure the bidder’s capability to fulfill the contract in question.

- (a) Bidders may be excluded if;
 - (i) as a matter of law or official regulations, commercial relations are prohibited with the bidder’s country by the federal government, or
 - (ii) a firm is blacklisted/ debarred by the procuring agency and the matter has been reported to the Authority, subject to Rule 39 of Sindh Public Procurement Rules 2010 as amended up to November 2021.
- (b) Government-owned enterprises or institutions may participate only if they can establish that they are;
 - (i) legally and financially autonomous, and
 - (ii) operate under commercial law.

Provided that where government-owned universities or research centers in the country are of a unique and exceptional nature, and their participation is critical to project implementation, they may be allowed to participate; and Bidders shall include all those contractors who are registered or incorporated in Pakistan, irrespective of the nationality of their owners and professional staff, or

- (c) Bidders are: -
 - (i) to submit their qualification requirements as set out in section Post – qualification (Annexure-M) of these bidding documents. The bidders will

submit this data as technical part in a separate sealed envelope. The bidder meeting the technical requirements will be asked to attend the public opening of their Financial Proposals for which date, time and venue shall be communicated to the bidder in advance at a later date

IB.4 One Bid per Bidder

- 4.1 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.16) will be disqualified.

IB.5 Cost of Bidding

- 5.1 The bidders shall bear all costs associated with the preparation and submission of their respective bids, and the procuring agency will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

IB.6 Site Visit

- 6.1 The bidders are advised to visit and examine the site of works and its surroundings and obtain all information that may be necessary for preparing the bid and entering into 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 procuring agency 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 procuring agency, 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.
- a. Instructions to Bidders.
 - b. Bidding Data.
 - c. General Conditions of Contract, Part-I (GCC).
 - d. Special Conditions of Contract, Part-II (SCC)
 - e. Specifications.
 - f. Form of Bid and Appendices to Bid.
 - g. Bill of Quantities (Appendix-D to Bid).
 - h. Form of Bid Security.
 - i. Form of Contract Agreement.
 - j. Forms of Performance Security, Mobilization Advance Guarantee and Indenture bond for secured advance.
 - k. 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 BD will be rejected.

IB.8 Clarification of Bidding Documents

- 8.1 Any interested bidder requiring any clarification(s) in respect of the bidding documents may notify the procuring agency in writing at the procuring agency's address indicated in the Invitation for Bids/NIT/EOI. Procuring agency will respond to any request for clarification provided they are received at least five calendar days prior to the date of opening of bid. The procuring agency shall respond to such queries in writing within 24 hours.

Copies of the procuring agency's response will be forwarded to all the bidders including a description of the enquiry, but without disclosing the identity of its/their initiator(s).

IB.9 Amendment of Bidding Documents

- 9.1 At any time prior to the deadline for submission of bids, the procuring agency may, for any reason, whether at his own initiative or in response to a clarification requested by a interested bidder, modify the bidding documents by issuing addendum.
- 9.2 Any addendum thus issued shall be part of the bidding documents pursuant to sub-clause IB 7.1 hereof and shall be communicated in writing to all bidders. Interested bidders shall acknowledge receipt of each addendum in writing to the procuring agency.
- 9.3 To afford bidders reasonable time in which to take an addendum into account in preparing their bids, the procuring agency may extend the deadline for submission of bids in accordance with IB.20.

C. PREPARATION OF BIDS

IB.10 Language of Bid

- 10.1 The bid and all correspondence and documents related to the bid exchanged by a bidder and the procuring agency shall be in the language stipulated in the bidding data and I Conditions of the contract. Supporting documents and printed literature furnished by the bidders may be in any other language provided the same are accompanied by an accurate 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.11 Documents Accompanying the Bid

- 11.1 Each bidder shall:

- (a) submit a written authorization on the letterhead of the bidding firm, authorizing the signatory of the bid to act for and on behalf of the bidder;
- (b) update the information indicated and listed in the bidding data and previously submitted with the application for prequalification, and continue to meet the minimum criteria set out in the prequalification documents, which as a minimum, would include the following:
 - (i) Evidence of access to financial resources along with average annual construction turnover;
 - (ii) Financial predictions for the current year and the following two years, including the effect of known commitments;
 - (iii) Work commitments since prequalification;
 - (iv) Current litigation information; and
 - (v) Availability of critical equipment, and

- (c) furnish a technical proposal taking into account the various Appendices to Bid specially the following:

Appendix-E to Bid	Proposed Construction Schedule
Appendix-F to Bid	Method of Performing the Work
Appendix-G to Bid	List of Major Equipment
Appendix-K to Bid	Organization Chart for Supervisory Staff and other pertinent information such as mobilization programme etc;

11.2 Bids submitted by a joint venture of two (2) or more firms shall comply with the following requirements:

- (a) 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;
- (b) the bid, and in case of a successful bid, the Form of Contract Agreement shall be signed by the authorized partner so as to be legally binding on all partners;
- (c) the partner-in-charge shall always be duly authorized to deal with the procuring agency 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(a) above as well as in the Form of Bid and in the Form of Contract Agreement (in case of a successful bid);
- (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 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 procuring agency;
- (f) submission of an alternative Letter of Intent to execute a Joint Venture Agreement shall be mandatory.

11.3 Bidders shall also submit proposals of work methods and schedule, in sufficient detail to demonstrate the adequacy of the bidder's proposals to meet the technical specifications and the completion time referred to sub- clause IB 1.2 hereof.

IB.12 Bid Prices

- 12.1** Unless stated otherwise in the bidding documents, the contract shall be for the whole of the works as described in IB 1.1 hereof, based on the unit rates or prices submitted by the bidder or percentage quoted above or below on the rates of Composite Schedule of Rates (CSR), as the case may be.

- 12.2 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 procuring agency when executed and shall be deemed to be covered by rates and prices for other items in the Bill of Quantities. In case of Composite Schedule of Rates, if the bidder fails to mention the percentage above or below, it shall be deemed to be at par with the rates of Composite Schedule of Rates.
- 12.3 The bid price submitted by the contractor shall include all rates and prices including the taxes. All duties, income taxes, sales tax and other levies payable by the contractor under the contract, or for any other cause during the currency of the execution of the work or otherwise specified in the contract as on the date seven days prior to the deadline for submission of bids.
- Additional / reduced duties, taxes and levies due to subsequent additions or changes in legislation shall be reimbursed / deducted as per Sub-Clause 70.2 of the General Conditions of Contract Part-I.
- 12.4 The rates and prices quoted by the bidders are subject to adjustment during the performance of the contract in accordance with the provisions of Clause 70 of GCC. The bidders shall furnish the prescribed information for the price adjustment formulae in Appendix-C to Bid, and shall submit with their bids such other supporting information as required under the said Clause. Adjustment in prices quoted by bidders in case of NCB will not be allowed except on those items notified by Finance Department after the date of opening and will be paid accordingly. In case of ICB, Clause 4(ii) of Section C of Instructions to bidders and bidding data shall apply.

IB.13 Currencies of Bid and Payment

- 13.1 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 supplied from outside the procuring agency's country (referred to as the "Foreign Currency Requirements") shall indicate the same in Appendix-B to Bid. 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 the bid.
- 13.2 The rates of exchange to be used by the bidder for currency conversion shall be the selling rates published and authorized by the State Bank of Pakistan prevailing on the date, 07 (seven) 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.14 Bid Validity

- 14.1 Bids shall remain valid for the period stipulated in the bidding data from the date of opening of bid specified in clause IB.23.
- 14.2 In exceptional circumstances, prior to expiry of the original, the procuring agency may request the bidders to extend the period of validity for a specified additional period, which shall not be for more than one third of the original period of bid validity. The request and the responses thereto, shall be made in writing. A bidder may refuse the request without the forfeiture of the bid security. In case, a bidder agreed to the request, shall not be required or permitted to modify the bid, but will be required to extend the validity of the bid security for the period of the extension, and in compliance with Clause IB.15 in all respects.

IB.15 Bid Security

- 15.1 Each bidder shall furnish, as part of the bid, a bid security in the amount stipulated in the bidding data in Pak Rupees or an equivalent amount in a freely convertible currency.
- 15.2 The bid security shall be at the option of the bidder, in the form of deposit at call, pay order or a bank guarantee issued by a Scheduled Bank in Pakistan or from a foreign bank duly counter guaranteed by a Scheduled Bank in Pakistan in favor of the procuring agency, which should commensurate with the bid validity period. The bank guarantee for bid security shall be acceptable in the manner as provided at Annexure BS-1
- 15.3 Any bid not accompanied by an acceptable bid security shall be rejected by the procuring agency as non-responsive.
- 15.4 Bid security shall be released to the unsuccessful bidders once the contract has been signed with the successful bidder or the validity period has expired.
- 15.5 The bid security of the successful bidder shall be returned when the bidder has furnished the required Performance Security and signed the Contract Agreement. On return of bid security, security deposit at the rate of 5% shall be deducted from the interim or running bills.
- 15.6 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 27.2 hereof; or
 - (c) In the case of successful bidder, if he fails within the specified time limit to:
 - (i) furnish the required Performance Security; or
 - (ii) sign the Contract Agreement.

IB.16 Alternate Proposals/Bids

- 16.1 Each bidder shall submit only one bid either by himself, or as a member of a joint venture, until and unless they have been requested or permitted for alternative bid, then he has to purchase separate bidding documents and alternate bid shall be treated as separate bid.
- 16.2 Alternate proposals are allowed only for procurement of works where technical complexity is involved and more than one designs or technical solutions are being offered. Two stage two envelope bidding procedure will be appropriate when alternate proposal is required.
- 16.3 Alternate bid(s) shall contain (a) relevant design calculations; (b) technical specifications; (c) proposed construction methodology; and (d) any other relevant details / conditions, provided that the total sum entered on the Form of Bid shall be that which represents complete compliance with the bidding documents.

IB.17 Pre-Bid Meeting

- 17.1 Procuring agency may, on his own motion or at the request of any bidder, 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, shall be communicated to all bidders. All bidders or their authorized representatives shall be invited to attend such a pre-bid meeting at their own expense.

- 17.2 The bidders are requested to submit questions, if any, in writing so as to reach the Procuring agency not later than seven (7) days before the proposed pre-bid meeting.
- 17.3 Minutes of the pre-bid meeting, including the text of the questions raised and the replies given, will be transmitted without delay to all bidders. 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 procuring agency exclusively through the issue of an Addendum pursuant to Clause IB.9 and not through the minutes of the pre-bid meeting.
- 17.4 Absence at the pre-bid meeting will not be a cause for disqualification of a bidder.

IB.18 Format and Signing of Bid

- 18.1 Bidders are particularly directed that the amount entered on the Form of Bid shall be for performing the contract strictly in accordance with the bidding documents.
- 18.2 All appendices to bid are to be properly completed and signed.
- 18.3 No alteration is to be made in the form of bid nor in the Appendices 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 out the forms without alterations and shall provide an original copy along with photocopies as per the requirement of the procuring agency specified in the bidding data. The original as well as copy (ies) of the document shall be clearly marked as "ORIGINAL" and „COPY", as the case may be. If there is any discrepancy between original and copy (ies) then the original shall prevail.
- 18.5 The original and all copies of the bid shall be typed or written in indelible ink (in the case of copies, Photostats are also acceptable) and shall be signed by a person(s) duly authorized to sign on behalf of the bidder pursuant to sub- clause IB 11.1(a) hereof. All pages of the bid shall be initialed and stamped by the person(s) signing the bid.
- 18.6 The bid shall contain no alterations, omissions or additions, except to comply with instructions issued by the procuring agency, or as are necessary to correct errors made by the bidder. Such corrections shall be initialed by the person(s) signing the bid.
- 18.7 Bidders shall indicate in the space provided in the Form of Bid their full and proper postal 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 as their file copy.

D. SUBMISSION OF BIDS

IB.19 Sealing and Marking of Bids

- 19.1 Each bidder shall submit his bid as under:
- (a) ORIGINAL and copies of the bid shall be separately sealed and put in separate envelopes and marked as such.
 - (b) The envelopes containing the ORIGINAL and copies shall be put in one sealed envelope and addressed as given in sub – clause IB 19.2 hereof.

19.2 The inner and outer envelopes shall:

- (a) be addressed to the procuring agency at the address provided in the bidding data;
- (b) bear the name and identification number of the contract as defined in the bidding 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 postal 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 procuring agency 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 procuring agency 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 shall 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 package.
 - (d) Upon request, acknowledgment of receipt of bids will be provided to those making delivery in person or by messenger.
- 20.2 The Procuring Agency may, at its discretion, extend the deadline for submission of bids by issuing an amendment in accordance with IB 09. In such case, all rights and obligations of the procuring agency and the bidders shall remain the same as mentioned in the original deadline.

IB.21 Late Bids

- 21.1
- (a) Any bid received by the procuring agency after the deadline for submission of bids prescribed in to clause IB 20 shall be returned unopened to such bidder.
 - (b) Delays in the mail, 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 submit the bid in time.

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 procuring agency prior to the deadline for submission of bids.
- 22.2 The modification, substitution, or notice for withdrawal of any bid 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 to sub - clauses IB 22.1 and IB 27.2.
- 22.4 Withdrawal of a bid during the interval between the deadlines for submission of bids and the expiration of the period of bid validity specified in the Form of Bid may result in forfeiture of the bid security in pursuance to clause IB 15.

E. BID OPENING AND EVALUATION.

IB.23 Bid Opening

- 23.1 Procuring agency 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 or their representatives who are in attendance shall sign an attendance sheet.
- 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.
- 23.3 Procuring agency shall read aloud the name of the bidder, total bid price and price of any Alternate Proposal(s), if any, discounts, bid modifications, substitution and withdrawals, the presence or absence of bid security, and such other details as the procuring agency may consider appropriate, and total amount of each bid, and of any alternative bids if they have been requested or permitted, shall be read aloud and recorded when opened.
- 23.4 Procuring Agency shall prepare minutes of the bid opening, including the information disclosed to those present in accordance with the sub-clause 23.3.

IB.24 Process to be Confidential

- 24.1 Information relating to the examination, clarification, evaluation and comparison of bid and recommendations for the award of a contract shall not be disclosed to bidders or any other person not officially concerned with such process before the announcement of bid evaluation report which shall be done at least ten (10) days prior to issue of Letter of Acceptance. 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 procuring agency's processing of bids or 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 ten (10) days after the announcement of the bid evaluation report; however mere fact of lodging a complaint shall not warrant suspension of the procurement process.

IB.25 Clarification of Bid

- 25.1 To assist in the examination, evaluation and comparison of bids, the procuring agency may, at its discretion, ask any bidder for clarification of the bid, including breakdowns of unit rates. The request for clarification and the response shall be in writing but 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 procuring agency in the evaluation of the bids in accordance with clause IB 28.

IB.26 Examination of Bids and Determination of Responsiveness

- 26.1 Prior to the detailed evaluation of bids, the procuring agency will determine whether the bidder fulfills all codal requirements of eligibility criteria given in the tender notice such as registration

with tax authorities, registration with PEC (where applicable), turnover statement, experience statement, and any other condition mentioned in the NIT and bidding document. If the bidder does not fulfill any of these conditions, it shall not be evaluated further.

- 26.2 Once found to be fulfilling the eligibility criteria, as mentioned in sub- clause 26.1, the bids of eligible bidders will be evaluated for technical responsiveness as per specification and criteria given in the bidding documents. Technical and financial evaluations may be carried out in accordance with single stage-single one envelope, single stage-two envelopes, two stage or two stage-two envelopes bidding procedures, depending on the selection procedure adopted by the procuring agency.
- 26.3 A bid will be considered technically responsive if it (i) has been properly signed; (ii) is accompanied by the required bid security; and (iii) 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 procuring agency's rights or the bidder's obligations under the contract; or (iii) adoption/rectification whereof would affect unfairly the competitive position of other bidders presenting substantially responsive bids.
- 26.4 If a bid is not substantially responsive, it will be rejected by the procuring agency, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

IB.27 Correction of Errors before Financial Evaluation

- 27.1 Bids determined to be substantially responsive will be checked by the procuring agency for any arithmetic errors. Errors will be corrected by the procuring agency as follows:
- (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 procuring agency 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.
- 27.2 The amount stated in the Form of Bid will be adjusted by the procuring agency in accordance with the above procedure for the correction of errors and with the concurrence of the bidders. The amount thus corrected 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 15.6(b) hereof.

IB.28 Financial Evaluation and Comparison of Bids

- 28.1 The procuring agency will evaluate and compare only the Bids determined to be substantially responsive in accordance with clause IB 26.
- 28.2 In evaluating the Bids, the procuring agency will determine for each bid the evaluated bid price by adjusting the bid price as follows:
- (a) making any correction for errors pursuant to clause IB 27;
 - (b) excluding provisional sums (if any), for contingencies in the Summary Bill of Quantities, but including competitively priced Day work; and
 - (c) making an appropriate adjustment for any other acceptable variation or deviation.

- 28.3 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 bid evaluation.
- 28.4 If the bid of the successful bidder is seriously unbalanced in relation to the procuring agency's estimate of the cost of work to be performed under the contract, the procuring agency 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 procuring agency may require that the amount of the Performance Security set forth in clause IB.32 be increased at the expense of the successful bidder to a level sufficient to protect the procuring agency against financial loss in the event of default of the successful bidder under the contract.

28.5 Evaluation Report

After the completion of evaluation process, as described in clauses IB 27 and IB 28, the procuring agency shall prepare an evaluation report. The evaluation report shall contain names of all the bidders, technical and financial score or comparison, name of lowest evaluated bidder and any other information that procuring agency may like to include in the report.

F. AWARD OF CONTRACT

IB.29 Award

- 29.1 Subject to clauses IB 30 and IB 34, the procuring agency shall award the contract to the bidder whose bid has been determined to be substantially responsive to the bidding documents, and who has offered the lowest evaluated bid, provided that such bidder has been determined to be eligible in accordance with the provisions of clause IB 03 and qualify pursuant to sub-clause IB 29.2.
- 29.2 Procuring agency, at any stage of the bid evaluation, having credible reasons for or having *prima facie* evidence of any deficiency(ies) in contractor's capacities, may require the contractor to provide information concerning their professional, technical, financial, legal or managerial competence whether already pre-qualified or not for the said project.

Provided that such qualification shall only be laid down after recording reasons, thereof, in writing. They shall form part of the records of that bid evaluation report.

IB.30 Procuring Agency's Right to Reject all Bids or Annul the Bidding Process

- 30.1 Notwithstanding clause IB 29, the procuring agency reserves the right to annul the bidding process and reject all bids or proposals, at any time prior to award of contract, without thereby incurring any liability to the affected bidders or any obligation except that the grounds for rejection of all bids shall be communicated promptly to all bidder who submitted a bid, without giving justification of grounds.

IB.31 Notification of Award

- 31.1 Prior to expiry of the period of bid validity, including extension, prescribed by the procuring agency, the procuring agency shall notify the successful bidder in writing ("Letter of Acceptance") that his bid has been accepted. This letter shall mention the sum which the procuring agency will pay to 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 "Contract Price").
- 31.2 No negotiation with the bidder having evaluated as lowest responsive or any other bidder shall be permitted, however, procuring agency may hold meetings to clarify any item in the bid evaluation report.

- 31.3 The notification of award and its acceptance by the bidder will constitute the formation of the contract, binding the procuring agency and the bidder till signing of the formal Contract Agreement.
- 31.4 Upon furnishing by the successful bidder of a Performance Security and signing of the contract, the procuring agency will promptly notify the name of the successful bidder to all bidders and return their bid securities accordingly.
- 31.5 The notification of the award shall be hoisted on the Authority's website (www.pprasinhd.gov.pk) as well as the procuring agency's website, if available.
- 31.6 **Debriefing.**
- (a) A bidder may ask the procuring agency for reasons for non acceptance of his bid and may request for a debriefing meeting and procuring agency shall give him the reasons for such non acceptance, either in writing or by holding a debriefing meeting with such a bidder.
- (b) The requesting bidder shall bear all the costs of attending such a debriefing.

IB.32 Performance Security

- 32.1 The successful bidder shall furnish to the procuring agency a Performance Security in the form and the amount stipulated in the bidding data and the Conditions of Contract within a period of 28 days after the receipt of Letter of Acceptance.
- 32.2 Failure of the successful bidder to comply with the requirements of Sub-clause IB.32.1 or clauses IB 33 or IB 35 shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security.

IB.33 Signing of Contract Agreement

- 33.1 Within 14 days from the date of furnishing of acceptable Performance Security under the Conditions of Contract, the procuring agency will send the successful bidder the Contract Agreement in the form provided in the bidding documents, incorporating all agreements between the parties.
- 33.2 The formal Agreement between the procuring agency and the successful bidder shall be executed within 14 days of the receipt of the Contract Agreement by the successful bidder from the procuring agency.

Provided that the procuring agency may reduce the maximum time limit for signing of contract, as and when required, and shall be mentioned in the bidding documents.

IB.34 General Performance of the Bidders

Procuring agency may in case of consistent poor performance of the contractor and his failure to remedy the underperforming contract may take such action as may be deemed appropriate under the circumstances of the case including the rescinding the contract and/or black listing of such contractor and debarring him from participation in future bidding process.

IB.35 Integrity Pact

The bidder shall sign and stamp the Integrity Pact provided at Appendix-L to bidding the bidding documents for all Provincial/Local Government procurement contracts exceeding Rupees ten million. Failure to provide such Integrity Pact shall make the bidder non-responsive

IB.36 Instructions not Part of Contract

Bids shall be prepared and submitted in accordance with these Instructions which are provided to assist bidders in preparing their bids, and do not constitute part of the bid or the Contract Documents.

IB.37 Arbitration

Any dispute that is not amicably resolved shall be finally settled, unless otherwise specified in the Contract, under the Arbitration Act 1940 updated from time to time and would be held anywhere in the Province of Sindh at the discretion of procuring agency.

* * * * *

**BIDDING
DATA**

Bidding Data

The following specific data for the works to be tendered 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

1.1 Name and address of the procuring agency:

**Procurement Manager
Electrical Engineering Department atQUEST, Sakrand
Road, Nawabshah:
Tel: 0224-937-0381-5 (5 lines); Fax: 0224-937-0367; 0224-937-0357**

Attention: Prof. Dr. Abdul Sattar Saand, Procurement Manager; Mobile: 0331-388-2896

1.1 Name of the Project and Summary of the works:

The works of Construction of Environmental Engineering Department is part of the overall development of Quaid e Awan University of Engineering Science & Technology at Nawabshah

- The scope of works includes Reinforced concrete framed structure with either deep cut brick masonry or cement plastered brick masonry.
- The works are to be completed in **548 days** and contractor has to mobilize his plant and equipment accordingly.

2.1 Name of the Borrower/Source of Financing/Funding Agency/Funding Source;

Quaid e Awan University of Engineering Science & Technology, Sakrand Road, Nawabshah

2.1 Amount and Type of Financing/Scheme Cost and Allocated Funds.

3.1 Bids are being invited in two stage single two envelope procedure under clause 46(2) of SPPRA-2010.

3.1.1 Bidders have to submit their qualification requirements as set out in section post-qualification documents (Annexure-M) of these bidding documents. The bidders will submit this as a technical part in a separate sealed envelope. The bidders meeting the technical requirements will be asked to attend the public opening of their Financial Proposals for which date, time and venue shall be communicated to the bidders in advance to a later date.

8.1 Time limit for clarification:

The tenderers may seek clarification within 7 working Days prior to last date of submission

10.1 Bid language:

English language will be used for bidding and correspondence.

11.1 (a) Prequalification Information to be submitted (where applicable):

- List requirement as per post-qualification documents of SPPRA, which includes;
- (i) Evaluation criteria for the benefit of procuring agency.

- (ii) Application Forms
- (iii) Annexure I
- (iv) The forms of the Post-qualification is given in Annexure-M

b) Contractor should have valid PEC registration for year **2024**.

11.1 (b) Company profile in single stage single envelope:

The bidder to submit a technical proposal in sufficient detail to demonstrate the adequacy of the bid in meeting requirements for timely completion of the works.

13.1 Bid to be quoted in Pakistan Rupees Only.

14.1 Period of Bid Validity:

Period of Bid Validity is 120 days after the deadline for submission.

15.1 Amount of Bid Security:

5% of Bid Value.

16.2 Alternate bids are not allowed

17.1 Venue, time, and date of the pre-Bid meeting:

Pre Bid meeting to be convened if required.

18.4 Number of copies of the bid to be completed and returned:

The tenderers shall submit complete one set in original and one copy of the tender documents duly filled and signed, stamped and sealed.

19.2 (a) Procuring Agency's address for the purpose of bid submission

Procurement Manager
Electrical Engineering Department at QUEST, Sakrand
Road, Nawabshah:
Tel: 0224-937-0381-5 (5 lines); Fax: 0224-937-0367; 0224-937-0357

Attention: Prof. Dr. Abdul Sattar Saand, Procurement Manager; Mobile: 0331-388-2896

(b) Name and Identification Number of the Contract:

Construction of Environmental Engineering Department at Quest, Nawabshah.
Contract No: QUEST-NH/PROC-350-002a-Civil Works

20.1 (a) Deadline for submission of bids:

The tenders are to be submitted till 31.10. 2024 at 12:00 noon.

(b) Venue, time, and date of bid opening:

Procurement Manager

Electrical Engineering Department at QUEST, Sakrand

Road, Nawabshah:

Tel: 0224-937-0381-5 (5 lines); Fax: 0224-937-0367; 0224-937-0357

Attention: Prof. Dr. Abdul Sattar Saand, Procurement Manager;

Mobile: 0331-388-2896

Time: 01:30 hours

Date: 28-11-2024

32.1 Standard form and amount of Performance Security acceptable to the procuring agency:

Performance Security in shape of Insurance Guarantee equivalent to 10% of the Contract Price to be issued from company acceptable to the Employer.

Mobilisation Advance up to a maximum of 10% of the Contract value would be payable against a valid bank Guarantee from a scheduled Bank as per the Sindh Government's Prevailing Policy and acceptable to Quaid e Awam University of Engineering Science and Technology.

**FORM OF BID
AND
APPENDICES TO BID**

FB-1
FORM OF BID

Bid Reference No. QUEST-NS-Envir-Engr-002a-Civil Works
Construction of Environmental Engineering Department

To:
Procurement Manager,
Construction of Environmental Engineering Department
Quaid e Awam University of Engineering Science & Technology
Sakrand Road, Nawabshah 67480, Sindh.

Gentleman,

1. Having examined the bidding documents including Instructions to Bidders, Bidding Data, and Conditions of Contract, Specifications, Drawings and Bill of Quantities and Addenda Nos. for the execution of the above-named works, we, the undersigned, offer to execute and complete such works and remedy any defects therein in conformity with the Conditions of Contract. Specifications, Drawings, Bill of Quantities and Addenda for the sum of Rs. _____ (Rupees _____) or such other sum as may be ascertained in accordance with the said conditions.
2. We understand that all the Appendices attached hereto form part of this Bid.
3. As security for due performance of the undertakings and obligations of this Bid, we submit herewith a bid security in the amount of Rs. _____ (Rupees _____ only) drawn in your favour or made payable to you and valid for a period of _____ days beginning from the date Bids are opened.
4. We undertake, if our bid is accepted, to commence the works and to complete the whole of the works comprised in the contract within the time stated in Appendix-A to Bid.
5. We agree to abide by this bid for the period of 120 days from the date fixed for opening the same and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
6. Unless and until a formal Agreement is prepared and executed, this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.
7. We do hereby declare that the bid is made without any collusion, comparison of figures or arrangement with any other bidder for the works.
8. We understand that you are not bound to accept the lowest or any bid you may receive.

Dated this _____ day of _____ 2024

Signature: _____

in the capacity of _____ duly authorized to sign Bids for and on behalf of

(Name of Bidder in Block Capitals)

(Seal)

Address: _____

Witness:

Signature: _____

Name: _____

Address. _____

Occupation _____

Appendix-A to Bid

SPECIAL STIPULATIONS

**Clause
Conditions of Contract**

1.	Engineer representing Consulting Firm hired by the procuring agency to issue variation in case of emergency ¹ in foreign funded projects.	2.1	<i>Not Applicable</i>
2.	Amount of Performance Security	10.1	10% of Contract Price.
3.	Time for Furnishing Programme	14.1	Within 28 days from the date of receipt of Letter of Acceptance.
4.	Minimum amount of Third Party Insurance	23.2	Rs. 500,000/- per occurrence with number of occurrences unlimited.
5.	Time for Commencement	41.1	Within 14 days from the date of receipt of Engineer's Notice to Commence, this shall be issued within fourteen (14) days after signing of Contract Agreement.
6.	Time for Completion	43.1 48.2	548 days from the date of receipt of Engineer's Notice to Commence
7.	a) Amount of Liquidated Damages	47.1	Rs.100,000.00 for each day of delay in completion of the works subject to a maximum of 10% of contract price stated in the Letter of Acceptance.
	<i>b) Amount of Bonus (it is discretion of procuring agency to pay bonus, only in cases where time is of critical value).</i>	47.3	<i>Not Applicable</i>
8.	Defects Liability Period	49.1	365 days from the effective date of Taking Over Certificate.
9.	Percentage of Retention Money	60.2	10% of the amount of Interim/Running Payment Certificate.
10.	Limit of Retention Money	60.2	5% of Contract Price stated in the Letter of Acceptance.
11.	Minimum amount of Interim/Running Payment Certificates	60.2	Rs. 5.0 million
12.	Time of Payment from delivery of Engineer's Interim/Running Payment Certificate to the procuring agency.	60.10	30 days
13.	Mobilization Advance (Interest Free in case of foreign funded projects only)	60.12	10% of Contract Price stated in the Letter of Acceptance, against Bank Guarantee.

As explained in the Special Conditions Part-II of Contract.

Appendix-D to Bid

BILL OF QUANTITIES

A. Preamble

1. The Bill of Quantities shall be read in conjunction with the Conditions of Contract, Specifications and Drawings.
2. The quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work 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 the Contract.
3. The rates and prices entered in the priced Bill of Quantities shall, 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 including income tax and sales tax etc 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 Bids, shall be included in the rates and prices and the total bid price submitted by the bidder.
4. A rate or price shall be entered against each item in the priced Bill of Quantities, whether quantities are stated or not. The cost of items against which the contractor 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.
5. The whole cost of complying with the provisions of the Contract shall be included in the items provided in the priced Bill of Quantities, and where no items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related items of the works.
6. General directions and description of work and materials are not necessarily repeated nor summarised in the Bill of Quantities. References to the relevant sections of the bidding documents shall be made before entering prices against each item in the priced Bill of Quantities.
7. Provisional sums included and so designated in the Bill of Quantities shall be expended in whole or in part at the direction and discretion of the Engineer in accordance with sub-clause 58.2 of Part I, General Conditions of Contract.

BILL OF QUANTITIES
DAY WORK SCHEDULE

C. Day work Schedule

General

1. Reference is made to Sub-Clause 52.4 of the General Conditions of Contract Part-I. Work shall not be executed on a day work basis except by written order of the Engineer. Bidders shall enter basic rates for day work items in the Schedules, which rates shall apply to any quantity of day work ordered by the Engineer. Nominal quantities have been indicated against each item of day work, and the extended total for day work shall be carried forward to the bid price.

Day work Labour

2. In calculating payments due to the contractor for the execution of day work, the actual time of classes of labour directly doing the day work ordered by the Engineer and for which they are competent to perform will be measured excluding meal breaks and rest periods. The time of gangers (charge hands) actually doing work with the gang will also be measured but not the time of foreman or other supervisory personnel.
3. The contractor shall be entitled to payment in respect of the total time that labour is employed on day work, calculated at the basic rates entered by him in the Schedule of day work Rates for labour together with an additional percentage, payment on basic rates representing the contractor's profit, overheads, etc., as described below:
 - a) the basic rates for labour shall cover all direct costs to the contractor, including (but not limited to) the amount of wages paid to such labour, transportation time, overtime, subsistence allowances and any sums paid to or on behalf of such labour for social benefits in accordance with Pakistan law. The basic rates will be payable in local currency only; and
 - b) the additional percentage payment to be quoted by the bidder and applied to costs incurred under (a) above shall be deemed to cover the contractor's profit, overheads, superintendence, liabilities and insurances and allowances to labour timekeeping and clerical and office work; the use of consumable stores, water, lighting and power; the use and repair of staging, scaffolding, workshops and stores, portable power tools, manual plant and tools; supervision by the contractor's staff, foremen and other supervisory personnel; and charges incidental to the foregoing.

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Appendix-D to Bid

SCHEDULE OF DAYWORK RATES

Description	Unit	Nominal Quantity	Rate (Rs) In Figure	Rate (Rs) in Words	Extended Amount (Rs.)
1	2	3	4	5	6
Ganger	Hr	100			
Labourer	Hr	100			
Brick layer	Hr	100			
Mason	Hr	100			
Carpenter	Hr	100			
Steel work Erector	Hr	100			
-----etc-----	Hr	100			
Driver for vehicle up to 10 tons	Hr	100			
Operator for excavator, dragline, shovel or crane	Hr	100			
Operator for tractor, (tracked) with dozer blade or ripper	Hr	100			
Sub Total					
Allow 20% percent of subtotal for Contractor's overhead, profit, etc, In accordance with Paragraph 3(b) of Day work Schedule _____ Total for Day work: Labour : _____ (Carried forward to Day work Summary)					

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Appendix-D to Bid

Day work Material

4. The contractor shall be entitled to payment in respect of materials used for day work (except for materials for which the cost is included in the percentage addition to labour costs as detailed heretofore), at the basic rates entered by him in the Schedule of Day work Rates for materials together with an additional percentage payment on the basic rates to cover overhead charges and profit, as follows:
- a) the basic rates for materials shall be calculated on the basis of the invoiced price, freight, insurance, handling expenses, damage, losses, etc., and shall provide for delivery to store for stockpiling at the site. The basic rates shall be stated in local currency but payment will be made in the currency or currencies expended upon presentation of supporting documentation;
 - b) the additional percentage payment shall be quoted by the bidder and applied to the equivalent local currency payments made under Sub-Para(a) above; and
 - c) the cost of hauling materials used on work ordered to be carried out as Day work from the store or stockpile on the site to the place where it is to be used will be paid in accordance with the terms for Labour and Constructional Plant in this Schedule.

SCHEDULE OF DAYWORK RATES

II. Materials

Description	Unit	Nominal Quantity	Rate (Rs) in Figure	Rate (Rs) in Words	Extended Amount (Rs.)
1	2	3	4	5	6
Cement, ordinary Portland or equivalent in bags	M.Ton	100			
Mild Steel reinforcing bar from 16mm to mm diameter to BS 4449 or equivalent	M.Ton	100			
Fine aggregate for concrete	Cft	100			
Coarse aggregate for concrete	Cft	100			
First class burn bricks locally available as per speciation.	Cft	100			
Sub Total					
Allow 20 percent of subtotal for Contractor's overhead, profit, etc., in accordance with Paragraph 4(b) of Day work Schedule _____					
Total for Day work: Materials _____ (Carried forward to Day work Summary)					

BD-14
Appendix-D to Bid

Day Work Constructional Plant

5. The contractor shall be entitled to payments in respect of constructional plant already on site and employed on Day work at the basic rental rates entered by him in the Schedule of Day work Rates for constructional plant. The said rates shall be deemed to include complete allowance for depreciation, interest, indemnity and insurance, repairs, maintenance, supplies, fuel, lubricants, and other consumables, and all overhead, profit and administrative costs related to the use of such equipment. The cost of drivers, operators and assistants will be paid for separately as described under the section on Day work Labour.
6. In calculating the payment due to the Contractor for constructional plant employed on Day work, only the actual number of working hours will be eligible for payment, except that where applicable and agreed with the Engineer, the travelling time from the part of the site where the constructional plant was located when ordered by the Engineer to be employed on Day work and the time for return journey thereto shall be included for payment.
7. The basic rental rates for constructional plant employed on Day work shall be stated in Pakistani Rupees.

SCHEDULE OF DAYWORK RATES

III. Constructional Plant

Description	Unit	Nominal Quantity	Rate (Rs) in Figure	Rate (Rs) in Words)	Extended Amount (Rs.)
1	2	3	4	5	6
Excavator ,face shovel or dragline:					
1. Up-to and including 1Cu.M	Hr	100			
2. Over 1 Cu.M to 2 Cu. M.	Hr	100			
3. Over 2 Cu. M	Hr	100			
Tractor (tracked) including bull or angle dozer:					
1.Up-to and including 150 HP	Hr	100			
2.Over 150 to 200 HP	Hr	100			
3. Over 200 to 250 HP	Hr	100			
Tractor with ripper:					
1. Up-to and including 200 HP	Hr	100			
2. Over 200 to 250 HP	Hr	100			
.....etc.....					
Total for day work: Constructional Plant _____ (Carried forward to day work summary)					

DAYWORK

Summary (Day work)

	Amount (Rs.)
(I) Total for day work: Labour	_____
(II) Total for day work: Materials	_____
(III) Total for day work: Constructional Plant	_____
Total for day work (Carried forward to summary page of Bill of Quantities)	_____

Bill of Quantities

ENVIRONMENTAL ENGINEERING DEPARTMENT

**SUMMARY OF COST
(Civil and Plumbing Works)**

	Schedule Items	Non Schedule Items
1 Civil Works	Rs. _____	Rs. _____
Premium/Rebate (_____%)	Rs. _____	Nil
Total Civil Works	_____	_____
Total Schedule and Non Schedule Items (Civil Works) = Rs. _____		
2 Plumbing Works	Rs. _____	Rs. _____
Premium/Rebate (_____%)	Rs. _____	Nil
Total Plumbing Works	_____	_____
Total Schedule and Non Schedule Items (Plumbing Works) = Rs. _____		
3 Electrical Works	Rs. _____	Rs. _____
Premium/Rebate (_____%)	Rs. _____	Nil
Total Electrical Works	_____	_____
Total Schedule and Non Schedule Items (Electrical Works) = Rs. _____		
TOTAL COST (Civil, Plumbing and Electrical Works) Schedule + Non Schedule Items		Rs. _____

(Rupees.....)

Bill of Quantities

Client: QUAID-E-AWAM UNIVERSITY OF ENGINEERING
SCIENCE AND TECHNOLOGY NAWABSHAH, SINDH

Project: Environmental Engineering
Department

Consult: Zaheeruddin Consultants (Pvt.) Ltd.

SUB-STRUCTURE WORK

S.No	DESCRIPTION	UNIT	QTY.	RATE(RS)	AMOUNT(RS)
Item-01	<u>JUNGLE CLEARANCE</u> Jungle clearance and removing within 100 feet Chapter 18, Item 4(a) Page-78 of Schedule of Rates 2024	Sft	75,000.00	0.40	30,000.00
Item-02	<u>EXCAVATION FOR FOUNDATION</u> Excavation in foundation of Building Bridges and other structure including dagbelling dressing, refilling around structure. a) In Ordinary soil Chapter No. 01, Item 18(b) Page-3 of Schedule of Rates 2024 b) In hard soil or soft murum Chapter No. 01, Item 18(c) Page-3 of Schedule of Rates 2024	Cft Cft	26,205.00 26,205.00	11.88 11.88	311,315.40 311,315.40
Item-03	<u>EARTH FILLING</u> Filling, watering and ramming earth in under floor with surplus earth from foundation etc. lead upto one chain and lift upto 5 ft. a) Foundation Chapter No. 01, Item 21 Page-3 of Schedule of Rates 2024 Filling, watering and ramming earth under floor with new earth (excavated from outside source) lift upto 5 ft and lead upto 10 miles including cost of earth. b) Under floor Chapter No. 01, Item 22 Page-3 of Schedule of Rates 2024	Cft Cft	27,968.65 140,799.00	6.50 47.02	181,796.23 6,620,368.98
Item-04	<u>CRUSHED STONE</u> Dry rammed brick or stone bllast 1½" to 2" gauge. i) Under Footing ii) Under floor Chapter No. 04, Item (2) Page-10 of Schedule of Rates 2024	Cft Cft	5,485.00 7,271.00	104.97 104.97	575,760.45 763,236.87
Item-05	<u>P.C.C (1:4:8)</u> Cement concrete plain (1:4:8) using sulphate resistant cement type (v) including placing, compacting, finishing, curing, complete, (Including screening and washing of stone aggregate without shuttering). i) Footing ii) Floor Chapter No. 04, Item 5(i) Page-11 of Schedule of Rates 2024	Cft Cft	5,485.00 7,271.00	348.83 348.83	1,913,332.55 2,536,342.93

S.No	DESCRIPTION	UNIT	QTY.	RATE(RS)	AMOUNT(RS)
Item-06	<u>P.C.C (1:2:4)</u> Cement concrete plain (1:2:4) using sulphate resistant cement type (v) including placing, compacting, finishing, curing, complete, (Including screening and washing of stone aggregate without shuttering). i) Floor Chapter No. 04, Item 5(f) Page-11 of Schedule of Rates 2024	Cft	6,661.41	443.54	2,954,601.68
Item-07	<u>REINFORCED CEMENT CONCRETE (S.R Cement)</u> Reinforced cement concrete (1:2:4) using sulphate resistant cement type (v) or more rich to provide 6"x12" cylinder strength of 3000 psi at 28 days age (equivalent cube strength = 3750 psi) including all labour and material except the cost of steel reinforcement and its labour for bending and binding which will be paid separately. This rate also includes all kinds of forms, moulds, lifting, shuttering, curing, rendering and finishing exposed surface including screening and washing of stone aggregate. i) Footing ii) Tie Beams Chapter No. 04, Item 6(a)(I) Page-11 of Schedule of Rates 2024	Cft Cft	6,678.00 5,763.00	717.59 717.59	4,792,066.02 4,135,471.17
Item-08	<u>CEMENT PLASTER UPTO PLINTH</u> Cement plaster 1:4 using sulphate resistant cement i) ½" thick Chapter No. 09, Item 11(b) Page-38 of Schedule of Rates 2024	Sft	2,237.00	39.83	89,099.71
Item-09	<u>BRICK MASONRY IN FOUNDATION & PLINTH (1:6)</u> Pacca brick work in foundation & plinth in cement sand mortar 1:6 using sulphate resistant cement type (v) . Chapter No. 05, Item 4(e) Page-15 of Schedule of Rates 2024	Cft	6,043.80	359.20	2,170,932.96
Item-10	Cement Concrete plain including placing, compacting, finishing and curing complete (including screening and washing of stone aggregate without shuttering): (i) Ratio 1:3:6 Chapter 4 (S.I. No.5(h) & 12 (a&b) Page-11,12 of Schedule of Rates 2024)	Cft	5,713.37	478.97	2,736,532.83
Item-11	<u>DAMP PROOF COURSE (2" thick) (S.R Cement)</u> Damp proof course with cement sand & shingle/crush concrete (1:2:4) using sulphate resistant cement type (v) including 2 coats of asphaltic mixture. (Over Walls) Chapter No. 04, Item 27 (b) Page-15 of Schedule of Rates 2024	Sft	1,560.00	126.97	198,073.20

S.No	DESCRIPTION	UNIT	QTY.	RATE(RS)	AMOUNT(RS)
Item-12	<u>POLYTHENE SHEET</u> Providing and laying single per layer of polythene sheet 0.13 mm thick for water proofing as per specification and instructions of Engineer Incharge. (Over Walls) a) Over walls b) Under floor Chapter No. 07, Item 28(b) Page-14 of Schedule of Rates 2024	Sft Sft	3,797.00 22,032.00	24.01 24.01	91,165.97 528,988.32
Item-13	<u>BITUMEN PAINTING</u> Two coats of bitumen laid hot using 34 lbs for % sft. Over exposed surface of concrete and Brick work in foundation and plinth and blinded with sand at one Cft.per % sft Chapter No. 07, Item 13 Page-27 of Schedule of Rates 2024	Sft	10,731.00	47.84	513,371.04
Item-14	<u>REINFORCED CEMENT CONCRETE (S.R Cement)</u> Placing, compacting finishing and curing of concreting using ordinary Portland cement / sulphate resisting cement / slag cement as may be required; including screening, washing of aggregate and mixing of constituents using batching plant, transportation by transit mixer, pouring with pump in the required position to achieve a cylindrical strength in field as per ACI 214, with the specified consistency i/c the cost of shuttering, compaction with compactor excluding cost admixer, as approved and directed by the Engineer Incharge (Ratio (1:1½:3). i) Columns upto plinth ii) Shear wall upto plinth iii) Lift wall upto plinth Chapter No. 18, Item 98(iv) Page-72 of Schedule of Rates 2024	Cft Cft Cft	2,208.00 1,387.00 255.00	900.31 900.31 900.31	1,987,884.48 1,248,729.97 229,579.05
Item-15	Difference of cost of S.R. cement and Portland cement. (S.I.No.45(a) and 45(b) Page33 of Schedule of Rate of Material 2024	Bag	4,448.88	50.00	222,444.05
	COST WITHOUT STEEL				35,142,409.26
	(A)-TOTAL COST WITHOUT STEEL				35,142,409.26
Item-16	<u>STEEL REINFORCEMENT</u> a)Fabrication of mild steel reinforcement for cement concrete including cutting, bending, laying in position, making joints fastenings, including cost of binding wire also includes removal of rust from bars. a) Grade- 60 Chapter No. 04, Item 8(a)(i) Page-12 of Schedule of Rates 2024	Cwt	1,539.00	18,934.02	29,139,456.78
	COST FOR STEEL				29,139,456.78
	(B)-TOTAL COST FOR STEEL				29,139,456.78

Bill of Quantities

Client: QUAID-E-AWAM UNIVERSITY OF ENGINEERING
SCIENCE AND TECHNOLOGY NAWABSHAH, SINDH

Project: Environmental Engineering
Department

Consult: Zaheeruddin Consultants (Pvt.) Ltd.

SUPER-STRUCTURE WORK

S.No	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT(RS)
Item-01	<u>REINFORCED CEMENT CONCRETE (S.R Cement)</u>				
	Placing, compacting finishing and curing of concreting using ordinary Portland cement / sulphate resisting cement / slag cement as may be required; including screening, washing of aggregate and mixing of constituents using batching plant, transportation by transit mixer, pouring with pump in the required position to achieve a cylindrical strength in field as per ACI 214, with the specified consistency i/c the cost of shuttering, compaction with compactor excluding cost admixer, as approved and directed by the Engineer Incharge.				
	COLUMNS				
	i) Ground Floor	per cft	2,349.00	900.31	2,114,828.19
	ii) First Floor	per cft	2,311.00	955.76	2,208,761.36
	iii) Mumty	per cft	46.00	990.61	45,568.06
	Chapter No. 18, Item 98(iv), Page-73 and Item 12(a) & 12(b) of Chapter No.4 Page-12 of Schedule of				
	SHEAR WALL				
	i) Ground Floor	per cft	1,709.00	900.31	1,538,629.79
	ii) First Floor	per cft	1,709.00	900.31	1,538,629.79
	Chapter No. 18, Item 98(iv), Page-73 and Item 12(a) & 12(b) of Chapter No.4 Page-12 of Schedule of Rates 2024				
	LIFT WALL				
Item-02	i) Ground Floor	per cft	255.00	900.31	229,579.05
	ii) First Floor	per cft	340.00	900.31	306,105.40
	Chapter No. 18, Item 98(iv), Page-73 and Item 12(a) & 12(b) of Chapter No.4 Page-12 of Schedule of Rates 2024				
	<u>REINFORCED CEMENT CONCRETE</u>				
	Placing, compacting finishing and curing of concreting using ordinary Portland cement / sulphate resisting cement / slag cement as may be required; including screening, washing of aggregate and mixing of constituents using batching plant, transportation by transit mixer, pouring with pump in the required position to achieve a cylindrical strength in field as per ACI 214, with the specified consistency i/c the cost of shuttering, compaction with compactor excluding cost admixer, as approved and directed by the Engineer Incharge.				
	BEAMS				
	i) Ground Floor	per cft	4,647.00	805.57	3,743,483.79
	ii) First Floor	per cft	4,468.00	861.02	3,847,037.36
	iii) Second Floor (Mumty)	per cft	87.00	895.87	77,940.69

S.No	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT(RS)
	Chapter No. 18, Item 98(iii), Page-73 and Item 12(a) & 12(b) of Chapter No.4 Page-12 of Schedule of Rates 2024				
	SLABS i) Ground Floor ii) First Floor iii) Above First Floor (Mumty) Chapter No. 18, Item 98(iii), Page-73 and Item 12(a) & 12(b) of Chapter No.4 Page-12 of Schedule of Rates 2024 STAIRS i) Ground Floor ii) First Floor Chapter No. 18, Item 98(a)(III)+6(d), Page-73 of Schedule of Rates 2024) LINTELS i) Ground Floor ii) First Floor iii) Above First Floor (Mumty) Chapter No. 18, Item 98(iii), Page-73 and Item 12(a) & 12(b) of Chapter No.4 Page-12 of Schedule of Rates 2024 Railing i) Ground Floor ii) First Floor Chapter No. 18, Item 98(iii), Page-73 and Item 12(a) & 12(b) of Chapter No.4 Page-12 of Schedule of Rates 2024 PARAPET iii) Above First Floor Chapter No. 18, Item 98(iii), Page-73 and Item 12(a) & 12(b) of Chapter No.4 Page-12 of Schedule of Rates 2024 R.C.C Coping i) Ground Floor ii) First Floor iii) Above First Floor Chapter No. 18, Item 98(iii), Page-73 and Item 12(a) & 12(b) of Chapter No.4 Page-12 of Schedule of Rates 2024	per cft per cft per cft per cft per cft per cft per cft per cft per cft per cft per cft per cft per cft per cft per cft per cft	10,425.00 10,975.00 103.00 339.00 92.00 383.00 499.00 6.30 179.00 40.00 841.10 9.00 2.00 90.00	805.57 861.02 895.87 805.57 861.02 805.57 861.02 895.87 805.57 861.02 895.87 805.57 861.02 895.87	8,398,067.25 9,449,694.50 92,274.61 273,088.23 79,213.84 350,533.31 429,648.98 5,643.98 144,197.03 34,440.80 677,564.93 7,250.13 1,722.04 80,628.30
	COST WITHOUT STEEL				35,632,531.41
	(A)-TOTAL COST WITHOUT STEEL				35,632,531.41
Item-03	<u>STEEL REINFORCEMENT</u> a)Fabrication of mild steel reinforcement for cement concrete including cutting, bending, laying in position, making joints fastenings, including cost of binding wire also includes removal of rust from bars. a) Grade- 60 i) Ground Floor ii) First Floor iii) Above First Floor Chapter No. 04, Item 8(a)(i) Page-12 of Schedule of Rates 2024	per Cwt per Cwt per Cwt	1,918.00 1,931.00 31.00	18,934.02 18,934.02 18,934.02	36,315,450.36 36,561,592.62 586,954.62
	COST FOR STEEL				73,463,997.60
	(B)-TOTAL COST FOR STEEL				73,463,997.60

Bill of Quantities

Client: QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCE
AND TECHNOLOGY NAWABSHAH, SINDH

Project: Environmental Engineering
Department

Consult: Zaheeruddin Consultants (Pvt.) Ltd.

STRUCTURE WORK FOR O.H WATER TANK (02 Nos)

S.No	DESCRIPTION	UNIT	QTY.	RATE(RS)	AMOUNT(RS)
Item-01	<u>REINFORCED CEMENT CONCRETE</u> Placing, compacting finishing and curing of concreting using ordinary Portland cement / sulphate resisting cement / slag cement as may be required; including screening, washing of aggregate and mixing of constituents using batching plant, transportation by transit mixer, pouring with pump in the required position to achieve a cylindrical strength in field as per ACI 214, with the specified consistency i/c the cost of shuttering, compaction with compactor excluding cost admixer, as approved and directed by the Engineer Incharge.				
	a) Columns	cft	33.60	900.31	30,250.42
	b) Beams	cft	89.25	900.31	80,352.67
	c) Bottom Slab	cft	364.35	900.31	328,027.95
	d) Walls	cft	638.00	900.31	574,397.78
	e) Top Slab	cft	319.15	900.31	287,333.94
	Chapter No. 18, Item 98(iv), Page-73 and Item 12(a) & 12(b) of Chapter No.4 Page-12, Schedule of Rates 2024				
Item-02	<u>PVC water stopper</u> Providing "Expansion Joint "in concrete work of 9" wide corrugated PVC water stopper (with bulb) i.c soldering cost of material and labour etc. complete.				
		Rft	135.00	568.90	76,801.50
	Chapter-(II), ItemB(2) Page-57 of Schedule of Rates for Public Health Engineering Works 2024				
Item-03	<u>HI BOND PRE-PACKAGED POLYMER MODIFIED MORTAR (DHPMM)</u> Extra cost due to use of Hi Bond Pre-packaged Polymer Modified mortar (DHPMM) as an admixture in concrete mix for increasing durability, to be used in concreting, flooring, block/brick stone masonry or plastering as % by weight of cement. (For O-H Tank)				
	i) Over head tank	Kg	861.00	500.00	430,500.00
	Chapter-04, Item 7(ii) Page 12 of Schedule of Rates 2024				
Item-04	<u>MS RUNGS 3/4" DIA</u> Fabrication of mild steel reinforcement for cement concrete including cutting, bending, laying in position, making joints and fastenings including cost of bending wire (also includes removal of rust)				
		Cwt	0.85	17,936.09	15,245.68
	Chapter No. 04, Item 8(b) Page-12 of Schedule of Rates 2024				

S.No	DESCRIPTION	UNIT	QTY.	RATE(RS)	AMOUNT(RS)
Item-05	<u>TERRAZZO FINISH 3/8" THICK DADO</u> Mosaic or dado or skirting one part of grey cement and two parts of marble chips laid over 1/2" thick cement plaster 1:3 complete with finishing. (1/2" thick) Chapter-08, Item 22 Page 31 of Schedule of Rates 2024	sft	1,055.33	268.32	283,166.15
Item-06	<u>VENT PIPE (PVC) 3" DIA CLASS 'B'</u> Chapter-IV & V, Item 2 Page 103 Schedule of Rates for Public Health Engineering Works 2024	Rft	14.00	320.06	4,480.84
Item-07	<u>C.I MAN HOLE COVER AND FRAME</u> Providing and fixing C.I Manhole Cover with frame i/c cost of material. Chapter -VI-VII, Item 4 Page 109 Schedule of Rates for Public Health Engineering Works 2024	Kg	1.57	248.40	389.99
Item-08	<u>ORNAMENTAL JALI</u> Providing & Fixing ornamental cement jali 2" thick 1:2:4 without steel Chapter No.04, item 11(i), Page 12 of Schedule of Rates 2024	sft	844.00	141.04	119,037.76
TOTAL COST WITHOUT STEEL					2,229,984.66
(A)-TOTAL COST WITHOUT STEEL					2,229,984.66
Item-09	<u>STEEL REINFORCEMENT</u> a)Fabrication of mild steel reinforcement for cement concrete including cutting, bending, laying in position, making joints fastenings, including cost of binding wire also includes removal of rust from bars. a) Grade- 60 Chapter No. 04, Item 8(a)(i) Page-12 of Schedule of Rates 2024	Cwt	136.00	18,934.02	2,575,026.72
TOTAL COST FOR STEEL					2,575,026.72
(B)-TOTAL COST FOR STEEL					2,575,026.72
Item-10	Non-Schedule item <u>THERMOPORE SHEET</u> Providing and fixing thermopore sheet on outside of overhead water tank 2" thick	per Sft	1,055.33	75.00	79,149.75
(C)-TOTAL COST FOR Non Schedule items					79,149.75

Bill of Quantities

Client: QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCE AND
TECHNOLOGY NAWABSHAH, SINDH
Project: Environmental Engineering
Department
Consult: Zaheeruddin Consultants (Pvt.) Ltd.

Schedule Archi-works

S.No.	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT (Rs.)
Item-1	Brick Masonry works in super structure (above plinth level/Plinth protection) Chapter No.5, Page No. 21 Providing and laying approved first class burnt brick masonry in super structure walls at any height and any floor, laid and jointed with cement and approved source sand machine mixed mortar, masonry to be laid in course true to line, level and plumbing, protected and properly cured including scaffolding and providing deep joints to receive rendering. All work to be completed as per drawings and specifications, including P/F specified anchorage with concrete members and directed by the Engineer. i) (Item No. 5, (i)(c) & 6 Page No 16 of Schedule of Rates 2024 4 1/2" thick and above internal/external walls in (1:4) CSM i) Ground Floor ii) First Floor 9" thick and above internal/external walls in (1:6) CSM i) Ground Floor ii) First Floor iii) Mumty Floor (Chapter No. 5, Item No.5(i)(e)+6 Page No.16 of Schedule of Rates 2024				
		cft.	1,011.41	397.85	402,389.47
		cft.	1,403.84	415.08	582,705.91
		cft.	12,826.52	381.18	4,889,212.89
		cft.	13,880.22	398.41	5,530,018.45
		cft.	307.32	437.52	134,458.65
Item-2	(First class brick) walling laid in 1:3 cement sand mortar reinforced with 1" 25 mm wide 18 gauge hoop iron: (II) 4 1/2" (114 mm) thick walling with hoop iron bonding 12" (300 mm) apart. (Chapter No. 20, (II) Page No.25)	sft.	5,121.00	192.35	985,024.35
Item-3	Cement pointing struck joints on walls. (Chapter No. 9, Items No. 19(a), Page No. 39 of Schedule (a) Ratio 1:2	sft.	5,121.00	41.23	211,138.83
Item-4	Providing and applying 3/4" thick plaster at any floor or at any height using approved quality sand preferably machine mixed mortar, including all bends, corners, recesses including scaffolding and hacking the concrete surfaces, arching the masonry joints and providing 8" wide GI wire mesh of 17 SWG 1"x1" size fixed with GI staples on masonry joints, concrete joints. All plaster to be finishes smooth with steel float in true to level, line and plumb and properly cured, complete as per drawings, specifications and as directed by the Engineer. Chapter No. 9, Item No.11(c) Page 39 & Item No.29 Page No.39 of Schedule of Rates 2024 Internal walls/columns plaster 3/4" thick in 1:4 CSM i) Ground Floor ii) First Floor iii) Mumty Floor				
		sft.	36,503.19	53.82	1,964,601.69
		sft.	37,137.18	58.97	2,189,979.50
		sft.	870.39	64.12	55,809.41

S.No.	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT (Rs.)
Item-5	External Surfaces 3/4" thick 1:4 CSM on walls / up stand / down stand beam projection/jali/RCC Railing.				
	i) Ground Floor	sft.	33,295.43	53.82	1,791,960.04
	ii) First Floor	sft.	36,703.88	58.97	2,164,427.80
	iii) Mumty Floor	sft.	484.31	64.12	31,053.96
	Preparing the surface and painting with matt finish I/c rubbing the surface with Bathy (silicon carbide rubbing brick) filling the voids with zink/chalk / plaster of paris mixture, applying first coat premix, making the surface smooth and then etc: complete.(new surface) and second and subsequent coat: for 3 coats.				
	a) Walls	sft.	70,483.62	100.83	7,106,863.40
	b) Ceiling	sft.	38,040.33	100.83	3,835,606.47
	Chapter 9, Item 36(A) & 36(B), Page No.40 of Schedule of Rates 2024				
	Item-6				
	Preparing the surface and painting with weather coat I/c rubbing the surface with rubbing bricks / sand Paper, filling the voids with chalk / plaster of Paris and then painting with weather coat of approved make + 2nd & subsequent coat. Extra Labour for above 20'. For 3 coats.				
Item-6	a) Plaster surface external				
	Ground Floor	sft.	13,426.80	86.58	1,162,492.34
	First Floor	sft.	11,325.64	123.21	1,395,432.10
	Mumty Floor	sft.	5,093.80	159.84	814,192.99
	Chapter 9, Item 38(A) & 38(B) and Item 42, Page 40 of Schedule of Rates 2024)				
	Item-8				
	<u>Enamel Paint</u>				
	<u>Painting New Surfaces</u>				
	Preparing surface and painting of doors and windows any type, (including Edges). Priming Coat + Each subsequent coat of paint. For 3 coats.				
		sft.	6,523.95	25.52	166,491.20
Item-8	Chapter No.11, Item No.5(c)(i) & (ii) Page 49, of Schedule of Rates 2024				
	Item-9				
	Providing and laying 1" thick topping cement concrete (1:2:4) including surface finish and diving into panels with Anti slip finishing.				
		sft.	302.27	65.57	19,819.84
	Chapter No. 8, Item No. 16 (a) Page 31 of Schedule of Rates 2024				
	Item-10				
	<u>MARBLE TILES - SKIRTING</u>				
	Providing and fixing 3/8" thick marble tiles of approved quality and colour and shade size 8" x 4" /6" x 4" in dado skirting and facing removal /tucking of existing plaster surface etc.. Over 1/2" thick base of cement mortar 1:3 setting of tiles in slurry of white cement over mortar base including filling the joints and washing the tiles with white cement slurry , curing finishing, cleaning and polishing etc. complete.				
	All Floors	Sft.	167.35	247.28	41,382.31
	Chapter No. 8, Item No. 62 (i) Page 35 of Schedule of Rates 2024)				
Item-11	Khuras on roof 2'x2'x4"	Each	10.00	1,001.84	10,018.40
	Chapter No. 7, Item No. 18, Page No.27 of Schedule of Rates 2024				

S.No.	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT (Rs.)
Item-12	Leveling dressing and making lawns. Chapter No. 18, Item No. 42, Page 69 of Schedule of Rates 2024	sft	1,820.00	9.51	17,350.20
Item-13	Supplying Manure (Capacity of Cart 20 Cft or 0.57 cum). Chapter No.18, Item No. 44, Page 69 of Schedule of Rates 2024	P.Cart load	10.00	573.30	5,733.00
	(A)-TOTAL COST WITHOUT STEEL				35,508,121.22
	A- Total				35,508,121.22
Item-14	Supplying & fixing in position 2mm Aluminum channels framing for sliding windows & ventilators of Alcop made with 5 mm thick tinted glass glazing (Belgium) & Aluminum fly screen I/c handles stoppers & locking arrangement etc. Complete. Chapter 18, S.I. No.84(b) Page-71 of Schedule of Rates 2024 i) Deluxe model (Bronze)	sft.	4,199.00	2,386.73	10,021,879.27
Item-15	Aluminum Doors/Windows/Ventilators. Supplying & fixing in position Aluminum channels framing for hinged doors or Alcop made with 5 mm thick tinted glass glazing (Belgium) and Alpha (Japan) locks I/c handles, stoppers etc. Chapter No. 18, Item No. 84 (b) Page 71 of Schedule of Rates 2024.	sft.	150.00	1,656.14	248,421.00
Item-16	White glazed tiles 1/4" thick dado jointed in white cement and laid over 1:2 cement sand mortar 3/4" thick including finishing. (18' X 36') Chapter 8, S.I. No.24 Page-31 of Schedule of Rates 2024 i) Kitchen	sft. sft.	7,656.77 192.00	389.36 389.36	2,981,239.97 74,757.12
Item-17	<u>Wooden Architrave</u> Providing and fixing with sunk iron screws wooden Architrave approved design / shape having width not less than 2½ inches as directed by Engineer Incharge. Chapter No.10, Item No.60, Page 47 of Schedule of Rates 2024	rft.	1,368.15	136.40	186,615.66
Item-18	laying floors of approved coloured glazed tiles 1/4" thick laid in white cement and pigment on a bed of 3/4" thick cement mortar 1:2. (F-5 12" x 18") Chapter No.8, Item 25, Page 31 of Schedule of Rates 2024. i) All Levels	sft.	2,913.13	325.40	947,932.50
Item-19	Wooden Doors Including Frames Providing and Fixing in position doors, windows and ventilators of first class deodar wood frames and 1-3/4" thick commercial, ply veneer shutters of first class deodar skeleton (Hollow) and commercial ply wood (3 ply) on both sides including hold fasts, hinges, iron tower bolts, handles and cleats with cord and one mortise lock and hooks. (All Room Doors) Chapter-10, S.I. No.9, Page 43 of Schedule of Rates 2024	sft.	2,290.05	2,998.14	6,865,890.51

S.No.	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT (Rs.)
Item-20	Deodar wood frame with braces and 22 gauge G.I sheet facing on one side including hold fast wooden beadings, hinges, and locking arrangement as directed by Engineer-Incharge.(Toilet Doors) Chapter No.10, Item No.13(a) Page 43 Schedule of Rates 2024	sft.	971.93	1,682.20	1,634,980.65
	B- TOTAL FOR SCHEDULE ITEMS				22,961,716.67
	GRAND TOTAL FOR SCHEDULE ITEMS				58,469,837.89

Bill of Quantities

Client: QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCE AND
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Project: Environmental Engineering
Department
Consult: Zaheeruddin Consultants (Pvt.) Ltd.

Non - Schedule Archi-works

S.No.	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT (Rs.)
Item-1	<u>PORCELAIN FLOOR TILE:</u> Providing and laying polished/matt finish Porcelain tile in size Upto 6 to 8 Sqft of the area approved make, colour, and shade with patches/borders pattern in dark color, laid on cement paste having addition of tile bond at 15% by weight of cement laid over 1" thick 1:4 cement sand base mortar, over existing PCC 1:2:4 complete as per detail shown on the drawing, specifications, and as directed by the Engineer. (Floor Type as per dwg)				
	i) Ground Floor Room's, Hall's, Lab's & Passage	Sft	17,687.00		
	ii) First Floor Room's, Hall's, Lab's & Passage	Sft	17,155.00		
	iii) Mumty	Sft	53.00		
Item-2	<u>INSULATION BOARD:</u> Providing and laying moulded 2" thick Styropax (Fire rated) Insulation Boards of approved colour, type having 35Kg/Cu.M density individually moulded, complete as per drawings, specifications and as directed by the Engineer:				
	a) for Roof (2" Thick)	Sft.	20,372.00		
	b) for O.H.Water tank (1-1/2" thick)	Sft.	1,170.00		
Item-3	<u>ROOF SCREEDING:</u> Providing and laying average 3" thick roof screeding in single layer having slope towards roof drain and making panels of 30 Sft size with 3/4"x3/4" thick grove filled with sand and bitumen, laying R.C.C. (1:2:4), using lawrancepur sand and margalla crushed stone aggregates, including the cost of 4"x4" size 10 SWG steel wire welded mesh reinforcement placed in middle of the thickness including curing, overlap of mesh etc., complete as per drawings, specifications and as directed by the Engineer: On Top Roof				
	i) Main Roof and Mumty Roof	Sft	20,372.00		
Item-4	<u>WATER PROOF PLASTERING:</u> Providing and laying 3/4" thick (1:3) cement sand plaster mixed with sika, imporient or equivalent waterproofing compound material @ 3% of binder content by weight and 2 coats of primer of Sika bond LA/Latex and 2 coats of seal top by Sika 105 over plaster. Keeping the walls and bottom slab properly wet, including all bends, corners, recesses and also including hacking the concrete surfaces, all plaster to be finished smooth with steel float in true level, line and properly cured, complete as per drawings, manufacturer's specifications and as directed by the Engineer.				
	a) Overhead Water Tank//lift where required	Sft	1,170.00		
Item-5	<u>WATER PROOFING:</u> Providing, laying and applying 4mm thick Plasto Grip (Roof Grip water proofing bituminous membrane torch applied polymerized containing non woven polyester coated on both side with APP modified bitumen compound having upper and lower surface with polyethylene film and applying Roof Grip Primer @ 3 to 4 Sq.M per liter on RCC surface roof and unrolling, including overtop age 10cm at side and 15cm at ends. Complete as per manufacturer's specification and instructions of the Engineer.				
	a) Roof & Mumty	Sft	20,372.00		

S.No.	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT (Rs.)
Item-6	<p><u>MARBLE TILES</u> Providing and laying 3/4" thick Sado Grey Granite pre-polished marble as per detail shown on the drawings on Stair steps including landing and risers set over and including average 1-3/4" thick (1:3)CSM with cement slurry and grouting the joint with neat white cement mixed with colour pigment to match the marble colour including curing, grinding and chemical polishing, two strips Non skid tape 1" wide of 3M on treads etc., complete as per specifications, drawings and as directed by the Engineer. The basic rate of marble slabs 3/4" thick supplied at site should be taken Rs.150/- per sft.</p> <p>a) Stairs/Steps: Stair upto Mumty i) On Treads with bull nosing 3/4" thick full length ii) Risers iii) Stair Landing iv) Skirting b) Marble on Ablution c) MARBLE IN ENTRANCE</p>	<p>Sft. Sft. Sft. Sft. Sft. Sft.</p>	<p>471.00 242.00 101.00 332.00 279.00 335.00</p>		
Item-7	<p><u>Marble on Counters</u> Providing and Laying Sunny White Marble 3/4" thick on counters of approved shape and colour of best Quality. Complete as directed by the Engineer.</p>	Sft	18.00		
Item-8	<p><u>Kitchen Cabinets</u> Providing & fixing factory made Kitchen Cabinet on frame and pedestals of kitchen care or Interwood supplier with solid mahogany wood panel shutters, self closing s.s carriage drawers and laminated wooden shelves and partitions including hardware and lacquare polishing etc.</p>	Sft	11.00		
Item-9	<p><u>Polystyrene sheet</u> Providing 1-1/2" thick polystyrene sheet having 35 kg density per cubic meter sheets placed abutting with each other in the external wall cavity by pressing in the triangular tiles etc complete as directed by Engineer.</p>	Sft	5,032.00		
Item-10	<p><u>VANITY MARBLE TOP:</u> Providing and fixing 1" thick factory grinded and polished approved colour Best Quality Marble White for top and face of vanity having 2'-0" width and length as shown on the drawings with 1/2" thick 1:2 cements and base mortar including 3" thick R.C.C 1:2:4 shelve with 12" deep drop pardi and cement sand plaster at bottom of the shelve, including making opening in slab and vanity top, rounding/bull nosing and polish of edges including epoxy jointing and silicon filling at wall and marble slab or fixture joints and enamel painting at plastered surfaces etc, complete as per drawings and as directed by the Engineer.</p>	Sft	270.00		
	Total Rs:				

Bill of Quantities

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STRUCTURE WORK FOR EXTERNAL

S.No	DESCRIPTION	UNIT	QTY.	RATE(RS)	AMOUNT(RS)
Item-01	<u>EXCAVATION FOR FOUNDATION</u> Excavation in foundation of Building Bridges and other structure including dagbelling dressing, refilling around structure with excavated earth watering and ramming lead upto 5 ft. In Ordinary soil Chapter No. 01, Item 18(b) Page-3 of Schedule of Rates 2024	cft	1,792.88	11.88	21,299.41
Item-02	<u>EARTH FILLING</u> Filling, watering and ramming earth under floor with new earth (Excavated from outside) lead upto one chain and lift upto 5 feet. a) Around building Chapter No. 01, Item 21 Page-3 of Schedule of Rates 2024	cft	71,502.90	6.50	464,768.85
Item-03	<u>P.C.C (1:4:8)</u> Cement concrete plain (1:4:8) using sulphate resistant cement type (v) including placing, compacting, finishing, curing, complete, (Including screening and washing of stone aggregate without shuttering). i) Footing Chapter No. 04, Item 5(i) Page-11 of Schedule of Rates 2024	cft	1,250.81	348.83	436,320.05
Item-04	<u>REINFORCED CEMENT CONCRETE (S.R Cement)</u> Reinforced cement concrete (1:2:4) using sulphate resistant cement type (v) or more rich to provide 6"x12" cylinder strength of 3000 psi at 28 days age (equivalent cube strength = 3750 psi) including all labour and material except the cost of steel reinforcement and its labour for bending and binding which will be paid separately. This rate also includes all kinds of forms, moulds, lifting, shuttering, curing, rendering and finishing exposed surface including screening and washing of stone aggregate. i) Footing ii) Walls iii) External Stair Chapter No. 04, Item 6(a)(i) Page-12 of Schedule of Rates 2024	per cft per cft per cft	210.00 409.50 52.50	717.59 717.59 717.59	150,693.90 293,853.11 37,673.48
Item-05	<u>KERB STONE</u> Providing and fixing precast edge block 3750 psi industrial made 6"x12"x12" in size i/c cost of cartage, excavation, form work for haunching, 1450 PSI lean concrete, 2250 PSI concrete for haunching, 1:4 cement sand mortar HIGHWAY Schedule of work 2024, Page#15 Item#39(14)	Rft	1,107.75	678.38	751,475.45

S.No	DESCRIPTION	UNIT	QTY.	RATE(RS)	AMOUNT(RS)
Item-06	<u>PAVING BLOCK</u> Providing & fixing cement paving blocks flooring having size of 197x97x60 (mm) of city / Quddra / cobble shape with natural colours, having strength b/w 5000 psi to 8500 psi I/c filling the joints with hill sand and laying in specific manner / pattern and design etc: complete CHAPTER 8, Item-67, Page#36 of Schedule of Rates 2024	Sft	11,041.80	197.48	2,180,534.66
Item-07	<u>SAND FILLING</u> Sand filling under floor foot path/plinth protection and where required including laying, leveling, dressing compacting and complete Chapter No. 01, Item 22 Page-3 of Schedule of Rates 2024	cft	1,877.11	47.02	88,261.71
Item-08	<u>BRICK MASONRY IN FOUNDATION & PLINTH (1:6)</u> Pacca brick work in foundation & plinth in cement sand mortar 1:6 using sulphate resistant cement type (v) . Chapter No. 05, Item 4(e) Page-21 of Schedule of Rates 2024	cft	157.50	359.20	56,574.00
Item-09	<u>SWEET EARTH</u> Supply of clean screened (River or Pit) sand within 5 chains including removal of Top crust of earth or over burden and royalty to the Government or cost to the Private Owner. Chapter#1, Item#36, Page#4 of Schedule of Rates 2024	Cft	3,397.80	12.80	43,491.84
Item-10	<u>P.C.C (1:2:4)</u> Cement concrete plain (1:2:4) using sulphate resistant cement type (v) including placing, compacting, finishing, curing, complete, (Including screening and washing of stone aggregate without shuttering). i) Floor Chapter No. 04, Item 5(f) Page-11 of Schedule of Rates 2024	cft	518.18	443.54	229,833.56
Item-11	<u>Preperation of Sub-Grade</u> Preparing sub grade including earth excavation or filling to an average depth of 9" dressing to camber and consolidation with power roller. Highways Works Schedule of Rates 24 Item 9 Page-5	% Sft	10,437.00	1,639.71	171,136.53
Item-12	<u>Sub-Base</u> Preparing sub-base course by supplying and spreading stone metal 1-1/2"-2" gauge of approved quality from approved quarry in required thickness to proper camber and grade including hand packing filling voids with 10 cft: of screening and non plastic quarry fines of approved quality and gauge from approved source watering and compacting to achieve 98-100% density as per modified AASHTO specifications (Rate includes all cost of materials T&P and carriage upto 3 chains). Highways Works Schedule of Rates 2024, Item 11(b) Pag	% Cft	3,444.21	11,180.22	385,070.26

S.No	DESCRIPTION	UNIT	QTY.	RATE(RS)	AMOUNT(RS)
Item-13	<u>Base Course</u> Preparing base course i/c supplying and spreading stone metal of approved quality properly graded to maximum size of 1-1/2" in required thickness to proper camber and grade including supplying and spreading 15 Cft: screenings and non plastic quarry fines, filling depressions with stone metal after initial rolling including watering and compacting the same so as to achieve 100% density as per modified AASHTO specifications. (Rate includes providing and using templates, camber plates, screens, forms as directed. (Rate includes all cost of materials T&P and carriage upto 3 chains				
	Highways Works Schedule of Rates 2024, Item 13(a) Pag	% Cft	3,444.21	15,676.75	539,940.19
	COST WITHOUT STEEL				5,850,926.99
	(A)-TOTAL COST WITHOUT STEEL				5,850,926.99
Item-11	<u>STEEL REINFORCEMENT</u> a) Fabrication of mild steel reinforcement for cement concrete including cutting, bending, laying in position, making joints fastenings, including cost of binding wire also includes removal of rust from bars. (Grade-60)				
		per Cwt	59.00	18,934.02	1,117,107.18
	Chapter No. 04, Item 8(a)(i) page-12 of Schedule of Rates 2024				
	COST FOR STEEL				1,117,107.18
	(B)-TOTAL COST FOR STEEL				1,117,107.18

Bill of Quantities

Client: QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCE
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Non-Schedule Item (External)

S.No	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1	<u>FIRE HYDRANT</u> Providing and fixing, fire hydrants B.S.S quality and weight of 2½" dia (including cost of jointing material) N.S	Each	3		
	TOTAL FOR NON-SCHEDULE ITEMS			TOTAL	

Bill of Quantities

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PLUMBING

S.No	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1	<u>ORISA TYPE W.C.PLASTIC FLUSHING CISTERN 3 GALLONS WITH 4" EARTHEN WARE TRAP & PLASTIC THUMBLE</u>		Nil	Nil	Nil
2	<u>EUROPEAN TYPE W.C</u> Providing and fixing European white glazed earthen ware wash down w.c pan complete with and I/c the cost of white/black plastic seat (Best Quality) and lid with C.P brass hinges and buffer, 3 gallons white glazed earthen ware low level flushing cistern with siphon fitting 1-½" dia white porcelain enamelled flush bend ¾" dia and making requisite number of holes in walls, plinth and floor for Pipe connections and making good in cement concrete 1:2:4 (Foreign Quality) (ICL or equivalent)	Each	37.00	42,354.59	1,567,119.83
	Chapter-1, item-5, Page-6 of Schedule for Water Supply and Sanitary Items, 2024				
3	<u>LAVATORY BASIN</u> <u>a) Basin</u> Providing and fixing 24" x 18" lavatory basin in white glazed earthen ware complete with & I/c the cost of W.I or C.I cantilever brackets 6 inches built into wall, painted white in two coats after a primary coats of red lead paint a pair of ½" dia rubber plug & chrome plated brass chain 1-¼" dia, 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. (Foreign or Equivalent...)	Each	2.00	24,094.98	48,189.96
	<u>b) Pedestal</u> Add extra for providing & fixing of earth ware pedestal white or coloured Glazed (Foreign or equivalent)	Each	2.00	3,675.07	7,350.14
	Chapter-1,item-(10,11),Page-7 of Schedule for Water Supply and Sanitary Items, 2024				
4	<u>FLOOR TRAP</u> Providing and fixing 6"x2" or 6"x3" C.I. floor trap of the approved self cleaning design with a C.I. screwed down grating with or without a vent arm including cost of making requisite number of holes in walls, plinth & floor for pipe connection & making good in cement concrete 1:2:4.	Each	85.00	1,647.07	140,000.95
	Chapter-1,item-20,Page-9 of Schedule for Water Supply and Sanitary Items, 2024				
5	<u>NYLON CONNECTIONS WITH BRASS STOP COCK</u> Providing and fixing in position nylon connection complete with " dia brass stop cock with pair of brass nuts and lining jointed to nylon connection.	Each	120.00	637.65	76,518.00
	Chapter-1,item-23,Page-9 of Schedule for Water Supply and Sanitary Items, 2024				

S.No	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
6	<u>TOWEL RAIL 30" LONG</u> ¾" dia round or square (Superior quality) Chapter-2,item-1(II)b,Page-10 of Schedule for Water Supply and Sanitary Items, 2024	Each	17.00	3,285.07	55,846.19
7	<u>BRASS TOILET C.P PAPER HOLDER</u> Providing and fixing C.P. brass toilet paper brackets complete (similar) to twyford design number 1108 Superior Quality Chapter-2, item-2b, Page-10 of Schedule for Water Supply and Sanitary Items, 2024	Each	37.00	1,170.00	43,290.00
8	<u>BELGIUM MIRROR 24" X 18"</u> Providing and fixing 24" x18" beveled edge mirror of Belgium glass complete with ⅛" thick hard board and c.p screw fixed to wooden cleats Standard Quality Chapter-2,item-3a,Page-10 of Schedule for Water Supply and Sanitary Items, 2024	Each	41.00	2,106.00	86,346.00
9	<u>SOAP TRAY EARTHEN</u> Supplying & fixing soap tray earthen ware with c.p screw etc. complete. Chapter-2,item-5,Page-10 of Schedule for Water Supply and Sanitary Items, 2024	Each	30.00	585.00	17,550.00
10	<u>CP BIB COCK ½" Dia</u> S/Fixing long bib-cock of crystal head with ½" dia Chapter-6,item-13(b),Page-18 of Schedule for Water Supply and Sanitary Items, 2024	Each	40.00	2,784.60	111,384.00
11					
12	<u>HANDLE VALVES</u> Providing and fixing handle valves (china). a) ½" dia b) ¾" dia c) 1" dia d) 1½" dia e) 2" dia Chapter-6,item-5(a) to 5(d) & 5(e), Page-17 of Schedule for Water Supply and Sanitary Items, 2024	Each Each Each Each Each	6.00 12.00 12.00 29.00 29.00	1,614.60 1,848.60 1,907.10 2,199.60 2,492.10	9,687.60 22,183.20 22,885.20 63,788.40 72,270.90
13	<u>WASH BASIN MIXTURE CP ½" Dia</u> Supplying/Fixing wash basin mixture of superior quality with c.p head ½" dia. Chapter-6,item-14(b),Page-19 of Schedule for Water Supply and Sanitary Items, 2024	Each	41.00	4,890.60	200,514.60
14	<u>C.P MUSLIM SHOWER</u> Supplying & fixing C.P Muslim Shower with crystal head etc. complete. Chapter-6,item-19(b),Page-19 of Schedule for Water Supply and Sanitary Items, 2024	Each	37.00	5,475.60	202,597.20
15	<u>C.C GULLY TRAP 6"x6"x4"</u> Providing & fixing 6"x4" C.C gully trap with 4" outlet complete with 4" thick 1:2:4 C.C for bed & ½" thick cement plaster (1:3) to the kerb, C.I grating 6"x 6" & C.I cover and frame 12"x12" (inside) etc. Complete. Chapter-10, Item-1 C-(ii), Page-23 of Schedule for Water Supply and Sanitary Items, 2024	Each	14.00	3,276.00	45,864.00

S.No	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
16	<u>STAINLESS STEEL SINK</u> Providing and fixing steel sinks stainless local make complete with cast iron or wrought iron brackets 6 inches built in wall, 1-½" C.P rubber plug chrome plated brass chain, 1-½" C.P brass waste, with 1-½" P.V.C waste pipe & making requisite number of holes in wall & plinth & floor for pipe connection & making good in cement concrete 1:2:4. Steel sink stainless sized 36" x 18" local make (Standard Pattern). Chapter-1, item-19(b), Page-8 of Schedule for Water Supply and Sanitary Items, 2024	Each	1.00	10,215.27	10,215.27
17	<u>SINK MIXTURE CP ½" Dia</u> Supplying/Fixing sink mixture cock of superior quality with c.p head etc. complete. Chapter-6, item-17, Page-19 of Schedule for Water Supply and Sanitary Items, 2024	Each	1.00	2,550.60	2,550.60
	COST WITHOUT PIPES				2,806,152.04
	(A) TOTAL COST WITHOUT PIPES				2,806,152.04
18	<u>G.I PIPES WATER SUPPLY (Internal)</u> Providing G.I Pipes, specials, and clamps etc, including fixing cutting & fitting complete with and I/c the cost of breaking through walls and roof, making good etc. painting two coats after cleaning the pipe etc. with white zink paint with pigment to match the colours of the building and testing with water to a pressure head of 200 feet and handling . a) 1" dia b) 1½" dia c) 2" dia Chapter-4, item-1(iii), 1(v) & 1(vi), Page-13 for PHE 2024	Rft Rft Rft	158.00 318.00 735.00	503.70 731.85 977.55	79,584.60 232,728.30 718,499.25
19	<u>G.I PIPES GAS SUPPLY (Internal)</u> Providing G.I Pipes, specials, and clamps etc, including fixing cutting & fitting complete with and I/c the cost of breaking through walls and roof, making good etc. painting two coats after cleaning the pipe etc. with white zink paint with pigment to match the colours of the building and testing with water to a pressure head of 200 feet and handling . a) ½" dia b) ¾" dia c) 1" dia Chapter-IV, item-1(i), 1(ii) & 1(iii) Page-13 PHE 2024	Rft Rft Rft	105.00 112.00 368.00	190.00 240.00 385.00	19,950.00 26,880.00 141,680.00
20	<u>U PVC PIPES (Sewerage Internal)</u> Providing, Laying uPVC pressure Pipes of Class 'B' (equivalent make) fixing in trenches i/c cutting, fitting and jointing with 'Z' joint with one rubber ring i/c testing with water to a head 61 meter or 200 ft. a) 3" Dia b) 4" Dia c) 5" Dia Chapter-(II)D, item-1(a), 1(b)&1(c) Page-13 PH 2024	Rft Rft Rft	515.00 680.00 430.00	255.18 384.82 522.91	131,417.70 261,677.60 224,851.30

S.No	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
21	<u>U PVC PIPES (Rain Water Pipe Internal)</u> Providing, Laying uPVC pressure Pipes of Class 'B' (equivalent make) fixing in trenches i/c cutting, fitting and jointing with 'Z' joint with one rubber ring i/c testing with water to a head 61 meter or 200 ft. a) 3" Dia Chapter-(II)D,item-1(a)Page-13 PHE 2024	Rft	504.00	255.18	128,610.72
	COST FOR PIPES				1,965,879.47
	(B) TOTAL COST FOR PIPES				1,965,879.47

Bill of Quantities

Client: QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCE AND TECHNOLOGY NAWABSHAH, SINDH

Project: Environmental Engineering Department

Consult: Zaheeruddin Consultants (Pvt.) Ltd.

Non-Schedule Item (Internal)

S.No	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1	<u>VANITY TYPE BASIN</u> Glazed earthen ware Vanity type wash hand basin including all fittings which shall be of best quality manufactured by Master, Sonex or approved equivalent, with bracket set, waste pipe, waste coupling, flexible CP connection pipes, CP T-stop cocks, pillar cock including mixer, heads, washers, CP bottle traps, rubber plug with chain and other relevant fittings, (All accessories/ fittings shall be Master, Sonex or approved equivalent) complete in all respect as per drawings, conforming to specification and as directed by the Engineer.	Each	39.00		
2	<u>CLEANOUT</u> Providing and fixing Stainless Steel cleanout special quality as approved.				
	a) 3"	Each	2.00		
	b) 4"	Each	16.00		
	c) 5"	Each	9.00		
3	<u>GAS GEYSER</u> Providing and fixing gas water geyser 14SWG GI water tank, 22SWG MS sheet external cover 4" thick high density glass wool (as per approved manufacturer) including gas and water connections, commissioning and testing etc complete.				
	a) 10 Gallons	Each	2.00		
	b) 50 Gallons	Each	8.00		
4	<u>PPR PIPES</u> Supply & Fixing of PPR (Poly Propylene Random) Pipes i/c cutting jointing with all fittings i/c Socket, Bend ,Tea , Elbow etc inside Bathrooms, Kitchen etc i/c cutting of wall and floor as required (Class PN-20). External dia as below				
	a) dia 25 mm	Each	1,334.00		
	b) dia 32 mm	Each	918.00		
	c) dia 40 mm	Each	212.00		
	d) dia 50 mm	Each	158.00		
	TOTAL FOR NON-SCHEDULE ITEMS			TOTAL	

Bill of Quantities

Client: QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCE AND TECHNOLOGY NAWABSHAH, SINDH

Project: Environmental Engineering Department

Consult: Zaheeruddin Consultants (Pvt.) Ltd.

WATER SUPPLY (External)

S.No	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1	<u>EXCAVATION</u> Excavation for pipe line in trenches, and pits in hard soils i/c trimming and dressing sides to true alignment and shape leveling of bed of trenches to correct level and grade, cutting joint holes and disposal of surplus earth with in one chain as directed by Engineer Incharge. Providing fence guards, lights, flags and temporary crossings for non vehicular traffic where ever required lift upto 5 ft.(1.52m) and lead upto one chain (30.5 m). a) Hard PHE Chapter# II, Item-3, Page-62 PHE 2024	%0Cft	4,594.00	19,812.00	91,016.33
2	<u>SAND BED</u> Supply of clean screened (River or Pit) sand within 5 chains including removal of Top crust of earth or over burden and royalty to the Government or cost to the Private Owner. Chapter#1, Page#4 Item#36 of Schedule of Rates 2024	Cft	1,969.00	12.80	25,203.20
3	<u>VALVE 3" Dia</u> Providing and fixing full way gun matel valves with wheels, threaded or flanged ends with rubber washers Standard Pattern (Note: Standard manufacturer by M/S Anwar Mechanical Works. a) 3" Dia Chapter#6, Item-4B(h), Page-17 of Water Supply & Sanitary Item 2024	Each	6.00	2,375.10	14,250.60
4	<u>MAKING CONNECTION TO PUBLIC HEALTH MAINS</u> a) 3" dia Chapter#6, Item-10(a), Page-18 of Water Supply & Sanitary Item 2024	Each	1.00	2,568.74	2,568.74
5	<u>VALVE CHAMBERS</u> Providing Chamber 3'x2' (915x615 mm) inside dimension 4 1/2' (1372 mm) deep as per approved design for sluice value 3" to 12" dia with 18" (457 mm) dia inside cast iron cover and frame (wt=1 cwt 3 qr) fixed in RCC 1:2:4 (102 mm) thick (with 5 Lbs steel per cft) 9" (299 mm) thick brick masonry wall set in 1:6 cement mortar 6" (1152 mm) thick cement concrete 1:3:6 in foundation 1" (25 mm) thick cement concrete 1:3:6 in foundation 1" (25 mm) thick cement concrete 1:2:4 flooring 1/2" (12.5 mm) thick cement plaster 1:3 to all inside wall surface and to top i/c providing and fixing M.S foot rest at every one foot beyond 2 1/2 ft depth curing, excavation, back filling and disposal of surplus earth etc. complete. Chapter-2 ,item-(P)1,Page-50 PHE 2024	Each	14.00	63,209.83	884,937.62
TOTAL COST WITHOUT PIPES					1,017,976.49
(A) TOTAL COST WITHOUT PIPES					1,017,976.49

S.No	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
6	GI PIPE Providing G.I pipe & special etc including fixing cutting & fitting complete with & i/c the cost of cutting trench upto 2-½" feet deep refilling watering ramming and disposal of surplus earth within one chain and painting two coats of bitumen paint to pipes & specials after cleaning & hessian cloth soaked in maxphalt composition wrapped tightly round pipes and testing to a pressure head of 200 feet and handling. a) 3" Dia Chapter-5,Item-1(viii), Page-16 of Water Supply & Sanitary Item 2024	Rft	550.00	1,507.32	829,026.00
	TOTAL COST FOR PIPES				829,026.00
	(B) TOTAL COST FOR PIPES				829,026.00

Bill of Quantities

Client: QAUID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCE AND
TECHNOLOGY NAWABSHAH, SINDH

Project: Environmental Engineering
Department

Consult: Zaheeruddin Consultants (Pvt.) Ltd.

External Sewerage

S.No	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1	<u>EXCAVATION</u> i) Excavation for pipe line in trenches, and pits in hard soils i/c trimming and dressing sides to true alignment and shape leveling of bed of trenches to correct level and grade, cutting joint holes and disposal of surplus earth with in a one chain as directed by Engineer Incharge. Providing fence guards,lights,flags and temporary crossings for non-vehicular traffic where ever required and lead upto one chain (30.5 m). a) Pipes b) Manholes Chapter# II, Item-A-3 , Page-62 of PHE 2024	%OCft %OCft	25,000.00 13,596.00	19,812.00 19,812.00	495,300.00 269,363.95
2a	<u>MANHOLES</u> <u>4" to 9" dia 4'x3'x7'9"</u> Constructing manhole for the required dia of circular sewer and 7'-9" depth with walls of B.B in cement mortar 1:3 cement plastered 1:3, ½" thick, inside of walls and 1" (25mm) thick over benching and channel i/c fixing C.I manhole cover with frame of clear opening 2'x2' (610 x 610 mm) of 4.5 cwt. embeded in plain C.C 1:2:4 and two way reinforced 6" thickness i/c fixing 1"(25 mm) dia M.S steps 6" (150 mm) wide projecting 4" (102 mm) from the face of wall at 12" (305 mm) c/c duly painted etc, complete specification and drawing. Chapter-2 (O),item-2(a), Page-48 PHE 2024	Each	14.00	146,248.37	2,047,477.18
2b	<u>MANHOLES</u> <u>4" to 12" dia 2'x2'x3'6"</u> Constructing manhole or inspection chamber for the required dia of circular sewer and 3'-6" depth with walls of B.B in cement mortar 1:3 cement plastered, ½" thick, inside of walls and 1" (25mm) thick over benching and channel i/c fixing C.I manhole cover with frame of clear opening 1-1/2'x1-1/2' (457x457 mm) of 1.75 cwt. (88.9 kg) embeded in plain C.C 1:2:4 and fixing 1"(25 mm) dia M.S steps 6" (150 mm) wide projecting 4" (102 mm) from the face of wall at 12" (305 mm) c/c duly painted etc. Complete as per standard specification and drawing. Chapter-2 (O),item-(a),Page-47 PHE 2024	Each	12.00	55,584.18	667,010.16
3	<u>P.C.C (1:2:4)</u> Cement concrete plain (1:2:4) using sulphate resistant cement type (v) including placing, compacting, finishing, curing, complete, (Including screening and washing of stone aggregate without shuttering). a) Base Slab b) P.C.C Benching c) P.C.C Cradle Chapter-4 Item 5(f), Page-11 of Schedule of Rates 2024	cft cft cft	372.00 204.00 207.00	443.54 443.54 443.54	164,996.88 90,482.16 91,812.78
	COST WITHOUT PIPES				3,826,443.11
	(A) TOTAL COST WITHOUT PIPES				3,826,443.11
4	<u>R.C.C PIPES CLASS 'B'</u> Providing R.C.C pipe with collars class 'B' and fixing in trench including cutting, fitting and jointing with maxphalt composition & cement mortar 1:1 and testing with water pressure to a head of 22.5 meter or 75 ft. a) 9" Dia Chapter-II, Item-2(d) , Page-18 of PHE 2024	Rft	1,120.00	385.87	432,174.40

S.No	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
5	PVC Pipe Providing, Laying uPVC pipes of Class 'B' fixing in trench i/c cutting, fitting and jointing with solvent cement i/c testing with water to a head of 61 meter or 200ft. a) 6" Dia Chapter-II,Item-D-4(d), Page-24 of PHE 2024	Rft	150.00	764.46	114,669.00
	COST FOR PIPES				546,843.40
	(B) TOTAL COST FOR PIPES				546,843.40

Bill of Quantities

Client: QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCE
AND TECHNOLOGY NAWABSHAH, SINDH

Project: Environmental Engineering
Department

Consult: Zaheeruddin Consultants (Pvt.) Ltd.

GAS SUPPLY (External)

S.No	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1	<u>EXCAVATION</u> Excavation for pipe line in trenches, and pits in hard soils i/c trimming and dressing sides to ture alignment and shape leveling of bed of trenches to correct level and grade, cutting joint holes and disposal of surplus earth with in a one chain as directed by Engineer Incharge. Providing fence guards,lights,flags and temporary crossings for non-vehicular traffic where ever required lift upto 5 ft.(1.52m) and lead upto one chain (30.5 m). a) Hard Chapter# II, Item-3 , Page-62 of PHE 2024	1000Cft	3,981.00	19,812.00	78,871.57
2	<u>SAND BED</u> Supply of clean screened (River or Pit) sand within 5 chains including removal of Top crust of earth or over burden and royalty to the Government or cost to the Private Owner. Chapter#1, Page#4 Item#36 of Schedule of Rates 2024	Cft	1,513.00	12.80	19,366.40
3	<u>VALVE CHAMBERS</u> Providing chamber 3'x2' (915x615 mm) inside dimension, 4½ft (1.372 m) deep as per approved design for sluice valve 3" to 12" dia, with 18" (457 mm) dia inside cast iron cover and frame (wt=1 cwt 3 qr), fixed in R.C.C 1:2:4 4" (102 mm) thick (with 5 lbs steel per cft), 9" (299 mm) thick brick masonry wall set in 1:6 cement mortar, 6" thick cement concrete 1:3:6 in foundation, 1" (25mm) thick cement concrete 1:2:4 flooring, ½" (12.5mm) thick cement plaster 1:3 to all inside wall surface and to top i/c providing and fixing M.S foot rest at every one foot beyond 2½ ft depth, curing, excavation, back filling and deposal of surplus earth etc. Complete. Chapter-2 ,item-(P)1, Page-50 of PHE 2024	Each	10.00	63,209.83	632,098.30
4	<u>GAS VALVES</u> Providing and fixing full way gun matel valves with wheels, threaded or flanged ends with rubber washers Standard Pattern a) 2" Dia Chapter-6 Item-4B(f), Page-17 of Water Supply & Sanitary 2024	Each	10.00	1,965.60	19,656.00
	COST WITHOUT PIPES				749,992.27
	(A) TOTAL COST WITHOUT PIPES				749,992.27

S.No	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
5	<u>G.I PIPES</u> Providing G.I Pipes, specials, and clamps etc, including fixing cutting & fitting complete with and I/c the cost of breaking through walls and roof, making good etc. painting two coats after cleaning the pipe etc. with white zink paint with pigment to match the colours of the building and testing with water to a pressure head of 200 feet and handling. a) 2" dia Chapter-4,item-1(vi),Page-13 of Water Supply & Sanitary 2024	Rft	650.00	977.55	635,407.50
6	<u>MAKING CONNECTION TO MAIN LINE</u> Making the Connection with Public health mains for the house hold fitting with M.S. Clamps ,Socket screw etc complete a) 2" dia Chapter-6, Item-8, Page-18 of Water Supply & Sanitary 2024	Each	1.00	2,592.14	2,592.14
	COST FOR PIPES				637,999.64
	(B) TOTAL COST FOR PIPES				637,999.64

BE-1
Appendix-E to Bid

PROPOSED CONSTRUCTION SCHEDULE

Schedule of works to be provided in Bar chart form with a more detailed/elaborate schedule by 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 and parts of the works may meet procuring agency's completion targets in days noted below and counted from the date of receipt of Engineer's Notice to Commence (Attach sheets as required for the specified form of Construction Schedule):

BF-1
Appendix-F to Bid

METHOD OF PERFORMING THE WORK

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.

BG-1
Appendix-G to Bid

LIST OF MAJOR EQUIPMENT – RELATED ITEMS

[The bidder will provide on Sheet 2 of this Appendix 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 which shall be in sufficient detail to demonstrate fully that the equipment will meet all requirements of the Specifications.]

BG-2
Appendix-G to Bid

LIST OF MAJOR EQUIPMENT (SAMPLE)

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						

BH-1
Appendix-H to Bid

CONSTRUCTION CAMP AND HOUSING FACILITIES

The Contractor in accordance with Clause 34 of the Conditions of Contract shall provide description of his construction camp's facilities and staff housing requirements.

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.

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) 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.).

BI-1
Appendix-I to Bid

LIST OF SUBCONTRACTORS

I/We intend to subcontract the following parts of the work to subcontractors. In my/our opinion, the subcontractors named hereunder are reliable and competent to perform that part of the work for which each is listed.

Enclosed are documentation outlining experience of subcontractors, the curriculum vitae and experience of their key personnel who will be assigned to the contract, equipment to be supplied by them, size, location and type of contracts carried out in the past.

Part of Works (Give Details)	Subcontractor (With Complete Address)
1	2

BJ-1
Appendix-J to Bid

ESTIMATED PROGRESS PAYMENTS (SAMPLE)

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 Pakistani Rupees:

Quarter/ Year/ Period	Amounts (in thousands)
1	2
1 st Quarter	
2 nd Quarter	
3 rd Quarter	
4 th Quarter	
5 th Quarter	
6 th Quarter	
Bid Price	

BK-1
Appendix-K to Bid

**ORGANIZATION CHART
FOR THE
SUPERVISORY STAFF AND LABOUR**

(To be filled in by the bidder)

Detailed CV's of the staff to be included.

(INTEGRITY PACT)

**DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC.
PAYABLE BY CONTRACTORS.
(FOR CONTRACTS WORTH RS.10.00 MILLION OR MORE)**

Contract No. _____ Dated _____

Contract Value: _____

Contract Title: Quaid e Awam University of Engineering Science & Technology at Nawab Shah

..... [name of Contractor] hereby declares that it has not obtained or induced the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of Sindh (GoS) or any administrative subdivision or agency thereof or any other entity owned or controlled by it (GoS) through any corrupt business practice.

Without limiting the generality of the foregoing, [name of Contractor] represents and warrants that it has fully declared the brokerage, commission, fees etc. paid or payable to anyone and not given or agreed to give and shall not give or agree to give to anyone within or outside Pakistan either directly or indirectly through any natural or juridical person, including its affiliate, agent, associate, broker, consultant, director, promoter, shareholder, sponsor or subsidiary, any commission, gratification, bribe, finder's fee or kickback, whether described as consultation fee or otherwise, with the object of obtaining or inducing the procurement of a contract, right, interest, privilege or other obligation or benefit in whatsoever form from, from Procuring Agency (PA) except that which has been expressly declared pursuant hereto.

[name of Contractor] accepts full responsibility and strict liability that it has made and will make full disclosure of all agreements and arrangements with all persons in respect of or related to the transaction with PA and has not taken any action or will not take any action to circumvent the above declaration, representation or warranty.

[name of Contractor] accepts full responsibility and strict liability for making any false declaration, not making full disclosure, misrepresenting facts or taking any action likely to defeat the purpose of this declaration, representation and warranty. It agrees that any contract, right, interest, privilege or other obligation or benefit obtained or procured as aforesaid shall, without prejudice to any other rights and remedies available to PA under any law, contract or other instrument, be voidable at the option of PA.

Notwithstanding any rights and remedies exercised by PA in this regard, [name of Supplier/Contractor/Consultant] agrees to indemnify PA for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to PA in an amount equivalent to ten times the sum of any commission, gratification, bribe, finder's fee or kickback given by [name of Contractor] as aforesaid for the purpose of obtaining or inducing the procurement of any contract, right, interest, privilege or other obligation or benefit in whatsoever form from PA.

.....
[Procuring Agency]

[Contractor]

MB-1
Appendix-M to Bid

1.0 Section II: Evaluation/Qualification Criteria.

Mandatory Provisions/Eligibility: Firms/Contractors must possess (i) valid registration certificate of PEC in the category or above and in discipline for year; (ii) valid registration certificate from income tax authority (NTN); and (iii) is not black listed. *(Attach all certificates and affidavit of not black listing).*

Aggregate Qualifying Score is 60%, but it is mandatory to obtain at least 30% in each of the following sections.

(A) Company Profile.

- i. Period since Firm/Contractor is in construction business **10 Marks**
- | | |
|----------------|----------|
| Up to 5 years | 02 Marks |
| Up to 10 years | 05 Marks |
| Above 10 years | 10 Marks |

(Attach PEC license for each year)

(B) General Experience Record 20 Marks

- i. Projects of similar nature and complexity completed over last 05 years. **10 Marks**
(3 Marks for each project)
(Attach satisfactory completion certificates)
- ii. Projects of similar nature and complexity presently in hand. **10 Marks**
(3 Marks for each project having cost Million or above).
(Attach copies of work orders)

MB-2
Appendix-M to Bid

(C) Personnel Capabilities required for this project 20 Marks

*Requirement of persons will vary from Project to Project.
Following factors may be used as a guideline*

Sr. No.	Description/Position with qualification & experience	Number Required	Marks assigned	Remarks
1.	BSc (Civil Engg.) /BE(Civil) Engineers registered with Pakistan Engineering Council (PEC) with experience of 5 years or above.	1 Nos.	10	03 Marks for experience of 5 to 10 years. 05 Marks for above 10 years. (Attach Tax payment challans showing at least 1 year continuous employment with firm. 1 additional Mark for MSc (Civil Engg:)/M.E.(Civil)
2.	Diploma in Civil Engineering, with experience of 2years or above.	01	5	02 Marks for 02 years experience, 03 Marks for above 02 years.
3	Diploma in Surveying, with experience of 2years or above.	01	5	02 Marks for 02 years experience, 03 Marks for above 02 years.

(D) Equipment Capability 10 Marks

- (a) Critical equipment and number required for the Project shall be specified by the Procuring Agency.
- (b) High value equipment should be an option to own, lease or hire.
- (c) Total equipment available with the applicant is to be listed along with its current mobilization on on-going projects.
(Details are to be provided in the attached form)

(E) Financial Soundness /Status 35 Marks

For Financial Status assessment, the Applicants may be required to submit Audited Financial Statements for the last three years. Where necessary, the Procuring Agency will make enquiries with the firm's/contractor's bankers.

Evidence of last three years bank statement

Evidence of last three years audited statements

Average turnover for 3 years to be twice the cost of works	
Greater than twice the cost of works	15 points
Greater than 1.5 times the cost of works	10 points
Greater than 1.0 times the cost of works	5 points
Less than 1.0 times the cost of works	0 points

MB-3
Appendix-M to Bid

Working Capital in hand for this project/work or cash in hand (Attach proof of Bank Statement/Credit Facilities)

i.	Less than 15% of Estimated Cost of this Work	00 Marks
ii.	16 - 25% of Estimated Cost of this Work	04 Marks
iii.	26 - 40% of Estimated Cost of this Work	08 Marks
iv.	More than 40% of Estimated Cost of this Work	10 Marks

2.0 Section III. Application Forms;

A-I

1. Company Profile

Date: -----

Contract: -----

All individual firms and each partner of a joint venture applying for prequalification are requested to complete the information in this form.

1.	Name of firm (legal) <i>(In case of Joint Venture (JV), legal name of each partner:</i>	
2.	Nature of Business: <i>Whether the firm is a Corporation, Partnership, Trust etc.) (In case of Consortium; whether the Lead Consortium Member is a Corporation, Partnership, Trust etc.)</i>	
3.	Head Office Address	
4.	Telephone Fax numbers: E-mail address:	
5.	Place of Incorporation/Registration: Year of incorporation/registration:	
6.	Applicant's authorized representative: Telephone Fax numbers: E-mail address:	
7.	<u>NATIONALITY OF OWNERS.</u>	
	Name:	Country:

MB-4
Appendix-M to Bid

A-II

2. General Experience Record

- (i) **Details of Contracts of Similar Nature and Complexity completed over the last 05 years**

Sr. No.	1	2	3	4	5
Name of Contract:					
Country:					
Name of Procuring Agency With Address, Tele, Fax.					
Nature of works and special features relevant to the contract for which applied:					
Contract Role (Mention: Sole, Sub Contactor or Partner in a Joint Venture).					
Value of the total contract in Pak/Rs:					
Date of Award:					
Date of Completion					

MB-5
Appendix-M to Bid

(ii) Projects of similar nature and complexity in hand.

Firms/ Contractors and each partner of the joint venture 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, for which Completion Certificate has yet to be issued.

Name of Contract	Value of Contract	Name of Procuring Agency	Value of Outstanding work (Equivalent Pak Rs. Millions)	Estimated Completion Date
1.				
2.				
3.				

MB-6
Appendix-M to Bid

(iii) Projects executed in similar geographical conditions in last five (5) years.

Sr. No.	1	2	3	4	5
Name of Contract:					
Country & location					
Name of Procuring Agency With Address, Tele, Fax.					
Nature of works and special features relevant to the contract for which applied:					
Contract Role (Mention: Sole, Sub Contactor or Partner in a Joint Venture).					
Value of the total contract in Pak/Rs					
Date of Award:					
Date of Completion					

MB-7
Appendix-M to Bid

A-III

4 (A) Personnel Capabilities

Firm/Contractor should provide the names of suitably qualified personnel to meet the specified requirements stated in Section 3 (Evaluation and Qualification Criteria).

Sr. No.	Title of Position	Name
1.		
2.		
3.		
4.		
5.		

A-IV

The data regarding experience of the personnel mentioned at A-IV should be supplied separately using the Form below.

4(B) Curriculum Vitae (CV) for Proposed Experts

- 1. Proposed Position:**
- 2. Name of Expert:**
- 3. Name of Firm:**
- 4. Current Residential Address:** _____
Telephone No: _____ **Fax No:** _____
E-Mail Address: _____
- 5. Date of Birth:** _____ **Citizenship:**
- 6. Qualification:** _____
- 7. Work Experience:** Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

From	To	Company / Project / Position / Relevant technical and management experience

MB-9
Appendix-M to Bid

A-V

5. Firm/Contractor shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment whether owned/ leased/ rented listed in Section 3 (Evaluation and Qualification Criteria).

A. Equipment Capabilities (owned by the contractor/firm)

Sr. No.	Name of Equipment	Name of manufacturer	Model and power rating	Capacity	Year of manufacture	Current location
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

MB-10
Appendix-M to Bid

B. Equipment Capabilities (leased/ rented by the contractor/firm)

Sr. No.	Name of Equipment	Mention whether leased or rented	Name of owner	Address of owner	Contact name and title with Telephone Fax & E Mail of the owner	Agreements Details of rental / lease / manufacture agreements specific to the project
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

A-VI

6. Financial Resources.

A. Banker's Information:

Sr. No.	Name & Address of Bank	Contact name and title	Telephone, Fax & E- Mail Address

B. Financial Status: Summarize actual assets and liabilities in Pak Rupees for the previous three years.

Information from Balance Sheet/ Income Statement	Year 1:	Year 2:	Year 3:
1.Total Assets (TA)			
2.Total Liabilities (TL)			
3. Current Assets (CA)			
4. Current Liabilities (CL)			
5.Total Revenues (TR)			
6.Profits Before Taxes (PBT)			
7. Profits After Taxes (PAT)			

C. Source of Financing: Contractor/ Firm shall provide documentary evidence for funding the project for which prequalification is being undertaken.

MB-12
Appendix-M to Bid

Annexure - I

(Procuring agency may opt types of equipments and their number as per requirement of project. It may also add any equipment as per requirement.)

- (i) Earth Moving Machinery (Grader, Bulldozer, Excavator, Roller etc.)
- (ii) Concrete Mixing Machines 2 to 3 no's, 2 Cu yd minimum
- (iii) Shuttering / Form work
 - i. Wood - 10,000 Sft
 - ii. Steel - 15,000 Sft
- (iv) Concrete Pumps
- (v) Vibrator
- (vi) Dumper Trucks
- (vii) Shovel/ Loader/ Backhoe
- (viii) Steel cutting & Bending Machine
- (ix) Air Compressor (15 HP Cap.)
- (x) Scaffolding Pipe for Props.
- (xi) Various tool and Plant (specify)
- (xii) Etc.

FORMS
BID SECURITY
PERFORMANCE SECURITY
CONTRACT AGREEMENT
MOBILIZATION ADVANCE GUARANTEE
INDENTURE BOND FOR SECURED ADVANCE

BID SECURITY

(Bank Guarantee)

Security Executed on _____
(Date)

Name of Surety (Bank) with Address: _____
(Scheduled Bank in Pakistan)

Name of Principal (Bidder) with Address _____

Penal Sum of Security Rupees. _____ (Rs. _____)

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 bound unto

(hereinafter called the 'Procuring Agency') in the sum stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Bidder has submitted the accompanying bid dated _____ for Bid No. _____
for _____ (Particulars of Bid) to the said Procuring Agency; and

WHEREAS, the Procuring Agency has required as a condition for considering said bid that the **bidder** furnishes a bid security in the above said sum from a Scheduled Bank in Pakistan or from a foreign bank duly counter-guaranteed by a Scheduled Bank in Pakistan, to the procuring agency, conditioned as under:

- (1) that the bid security shall remain in force up to and including the date 28 days after the deadline for validity of bids as stated in the Instructions to bidders or as it may be extended by the procuring agency, notice of which extension(s) to the Surety is hereby waived;
- (2) that the bid security of unsuccessful bidders will be returned by the procuring agency after expiry of its validity or upon signing of the Contract Agreement; and
- (3) that in the event of failure of the successful bidder to execute the proposed Contract Agreement for such work and furnish the required Performance Security, the entire said sum be paid immediately to the said procuring agency pursuant to Clause 15.6 of the Instruction to bidders for the successful bidder's failure to perform.

NOW THEREFORE, if the successful bidder shall, within the period specified therefore, on the prescribed form presented to him for signature enter into a formal Contract with the said procuring agency in accordance with his bid as accepted and furnish within twenty eight (28) 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 procuring agency for the faithful performance and proper fulfillment 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 to remain in full force and effect.

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

PROVIDED ALSO THAT the procuring agency shall be the sole and final judge for deciding 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 procuring agency 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 (Bank)

WITNESS:

Signature _____

1. _____

Name _____

Title _____

Corporate Secretary (Seal)

Corporate Guarantor (Seal)

2. _____

Name, Title & Address

PS-1

**FORM OF PERFORMANCE SECURITY
(Bank/Insurance Guarantee)**

Guarantee No. _____

Executed on _____

Expiry date _____

[Letter by the Guarantor to the Procuring Agency]

Name of Guarantor (Bank/Insurance) with address: _____

Name of Principal (Contractor) with address: _____

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

Letter of Acceptance No. _____ Dated _____

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

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

NOW THEREFORE, if the Principal (Contractor) shall well and truly perform and fulfill all the undertakings, covenants, terms and conditions of the said Documents during the original terms of the said Documents and any extensions thereof that may be granted by the procuring agency, with or without notice to the Guarantor, which notice is, hereby, waived and shall also well and truly perform and fulfill all the undertakings, covenants terms and conditions of the Contract and of any and all modifications of said Documents that may hereafter be made, notice of which modifications to the Guarantor being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue till all requirements of Clause 49, Defects Liability, of Conditions of Contract are fulfilled.

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

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

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

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

Guarantor (Bank)

Witness:

1. _____

Signature _____

Corporate Secretary (Seal)

Name _____

Title _____

2. _____

Name, Title & Address

Corporate Guarantor (Seal)

CA-1

FORM OF CONTRACT AGREEMENT

THIS CONTRACT AGREEMENT (hereinafter called the “Agreement”) made on the _____ day of _____ (month) 20____ between _____ (hereafter called the “Procuring Agency”) of the one part and _____ (hereafter called the “Contractor”) of the other part.

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

NOW this Agreement witnessed as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents after incorporating addenda, if any, except those parts relating to Instructions to bidders shall be deemed to form and be read and construed as part of this Agreement, viz:
 - (a) The Contract Agreement;
 - (b) The Letter of Acceptance;
 - (c) The completed Form of Bid;
 - (d) Special Stipulations (Appendix-A to Bid);
 - (e) The Special Conditions of Contract – Part II;
 - (f) The General Conditions – Part I;
 - (g) The priced Bill of Quantities (Appendix-D to Bid);
 - (h) The completed Appendices to Bid (B, C, E to L);
 - (i) The Drawings;
 - (j) The Specifications.
 - (k) _____ (any other)
3. In consideration of the payments to be made by the procuring agency to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the procuring agency to execute and complete the works and remedy defects therein in conformity and in all respects with the provisions of the contract.
4. Procuring agency hereby covenants to pay the contractor, in consideration of the execution and completion of the works as per provisions of the contract, the contract Price or such other sum as may become payable under the provisions of the contract at the times and in the manner prescribed by the contract.

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

Signature of the Contactor

Signature of Procuring Agency

(Seal)

(Seal)

Signed, Sealed and Delivered in the presence of:

Witness:

Witness:

(Name, Title and Address)

(Name, Title and Address)

MG-1

MOBILIZATION ADVANCE GUARANTEE

Bank Guarantee No. _____ Date _____ WHEREAS Quaid e Awan University of Engineering Science & Technology at Nawab Shah, through its Procurement Manager (hereinafter called the 'Procuring Agency') has entered into a Contract for the Construction of _____ with M/S _____ (hereinafter called the "Contractor").

AND WHEREAS, the Procuring Agency has agreed to advance to the Contractor, at the Contractor's request, an amount of Rupees _____ (Rs _____) which amount shall be advanced to the Contractor as per provisions of the Contract.

AND WHEREAS, the Procuring Agency has asked the Contractor to furnish Guarantee to secure the 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 **procuring agency** agreeing to make the above advance to the Contractor, has agreed to furnish the said Guarantee.

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

Notice in writing of any default, of which the procuring agency shall be the sole and final judge, on the part of the Contractor, shall be given by the procuring agency 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 Rupees _____ (Rs _____).

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 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

1. Signature _____
2. Name _____
3. Title _____

WITNESS

1. _____

2. _____
(Name Title & Address)

Schedule Bank (Seal)

INDENTURE FOR SECURED ADVANCES.

(For use in cases in which is contract is for finished work and the contractor has entered into an agreement for the execution of a certain specified quantity of work in a given time).

This INDENTURE made the day of
..... 2024 BETWEEN (hereinafter called "the Contractor" which expression shall where the context so admits or implied be deemed to include his heirs, executors, administrators and assigns) of the one part and THE GOVERNOR OF SINDH (hereinafter called "the Government" of the other part).

WHEREAS by an agreement, dated (hereinafter called the said agreement, the contractor has agreed to perform the under-mentioned works (hereinafter referred to as the said work):-

(Here enter (the description of the works).1

AND WHEREAS the contractor has applied to the
.....for an advance to him of Rupees.....(Rs.
.....) on the security of materials absolutely belonging to him and brought by him to the site of the said works the subject of the said agreement for use in the construction of such of the said works as he has undertaken to execute at rates fixed for the finished work (inclusive of the cost of materials and labour and other charge) AND

WHEREAS the Government has agreed to advance to the Contractor the sum of Rupees, (Rs.) on the security of materials the quantities and other particulars of which are detailed in Part II of Running Account Bill (B). the said works signed by the contractor Fin R.Form.17.A

Onand on such covenants and conditions as are hereinafter contained and the Government has reserved to itself the option of marking any further advance or advances on the security of other materials brought by the Contractor to the site of the said works.

NOW THIS INDENTURE WTTNESSETH that in pursuance of the said agreement and in consideration of the sum of Rupees..... (Rs.) on or before the execution of these presents paid to the Contractor by the Government (the receipt whereof the Contractor doth hereby acknowledge) and of such further advances (if any) as may be made to him as aforesaid (all of which advances are hereinafter collectively referred to as the said amount) the Contractor doth hereby assign unto the Government the said materials by way of security for the said amount

And doth hereby covenant and agree with the Government and declare ay follow :-

- (1) That the said sum of Rupees..... Rs.
.....) so advanced by the Government to the Contractor as aforesaid and all or any further sum or sums which may be advanced as aforesaid shall be employed by the contractor in or towards expending the execution of the said works and for no other purpose whatsoever.
- (2) That the materials detailed in the said Running Account Bill (B) which have been
Fin R Form No. 17-A

Offered to and accepted by (he Government as security for the said amount are absolutely by the Contractors own property free from encumbrances of any kind and the Contractor will not make any application for or receive a further advance on the security of materials which are not absolutely his own property and free from encumbrances of any kind and the contractor hereby agrees, at all times, to indemnify

and save harmless the Government against all claims whatsoever to any materials in respect of which an advance has been made to him as aforesaid.

- (3) That the said materials detailed in the said Running Account Bill (B) and all other
Fin. R. Form No. 17-A

Materials on the security of which any further advance or advances may hereafter be made as aforesaid (hereinafter called the said materials) shall be used by the Contractor solely in the execution of the said works in accordance with the directions of the Divisional Officer ----- (hereinafter called the Divisional Officer) and in the terms of the said agreement.

- (4) That the Contractor shall make at his own cost all necessary and adequate arrangement for the proper watch, safe custody and protection against all risks of the said material and that until used in construction as aforesaid the said materials shall remain at the site of the said works in the Contractor's custody and at his own risk and on his own responsibility and shall at all times be open to inspection by (he Divisional Officer or any officer authorized by him. In the event of the said materials of any part (hereof being stolen, destroyed or damaged or becoming deteriorated in a greater degree than is due to reasonable use and wear thereof Contractor will forthwith replace the same with other materials of like quality or repair and make good the same as required by the Divisional Officer and the materials so brought to replace the said materials so repaired and made good shall also be considered as security for the said amount.
- (5) That the said materials shall not on any account be removed from the site of the said works except with the written permission of the Divisional Officer or an officer authorized by him in that behalf
- (6) That the said amount shall be payable in full when or before the Contractor receives payment, from the Government of the price payable to him for the said works under the terms and provisions of the said agreement PROVIDED THAT if any intermediate payments are made to the contractor on account of work done then on the occasion of each such payment the Government will be at liberty to make a recovery from the Contractor's Bill for such payment by deducting there from in the value of the said materials (then actually used in the construction and in respect of which recovery has not been made previously the value for this purpose being determined in respect of each description of material at the rates at which the amount of the advances made under these presents were calculated.
- (7) That if the Contractor shall at any time make any default in the performance or observation in any respect of any of the terms and provisions of the said agreement or of these presents the total amount of the advance or advances that may still be owing to the Government shall immediately on the happening of such default be repayable by the Contractor to the Government together with interest thereon at twelve percent per annum from the date or respective dates of such advance or advances to the date of repayment and with all costs, charges, damages and expenses incurred by the Government in or for the recovery thereof or the enforcement of this security or otherwise by reason of (he default of the Contractor and any moneys so becoming due and payable shall constitute a debt due from the Contractor to the Government and the Contractor hereby covenants and agrees with the Government to repay and the same respectively to it accordingly.
- (8) That the Contractor hereby charges all the said materials with the repayment to the Government of the said sum of Rupees..... (Rs.) and any further sum or sums which may be advanced as aforesaid and all costs charges damages and expenses payable under these present PROVIDED

ALWAYS and it is hereby agreed and declared that notwithstanding anything in the said agreement and without prejudice to the powers contained therein if and whether the covenant for payment and repayment hereinbefore contained shall become enforceable and the money owing shall not be paid to accordingly.

Once there with the Government may at any time thereafter adopt all or any of following courses as it may deem best :-

- (a) Seize and utilize the said materials or any part thereof in the completion of the said works on behalf of the Contractor in accordance with the provisions in that behalf contained in the said agreement debiting the Contractor with the actual cost of effecting such completion the amount due in respect of advances under these presents and crediting the Contractor with the value of work done as he had carried it out in accordance with the said agreement and at the rates thereby provided. If the balance is against the Contractor he is to pay the same to the Government on demand.
- (b) Remove and sell by public auction the seized materials or any part thereof and out of the moneys arising from the sale retain all the sums aforesaid repayable to the Government under these presents and pay over the surplus (if any) to the Contractor.
- (c) Deduct all or any part of the moneys owing out of the security deposit or any sum due to the Contractor under the said agreement.
- (9) That except as is expressly provided by the presents interest on the said advance shall not be payable.
- (10) That in the event of any conflict between the provisions of these presents and the said agreement the provisions of these presents shall prevail and in the event of any dispute or difference arising over the construction or effect of these presents the settlement of which has not been hereinbefore expressly provided for the same shall be referred to the Superintending Engineer Circle whose..... decision shall be final and the provisions of the Indian Arbitration Act for the time being in force so far as they are applicable shall apply to any such reference.

In witnesses whereof the *on behalf of the Governor of Sindh and the said-----have hereunto set their respective hands and seals the day and first above written.

Singed, sealed and delivered by*

In the presence of

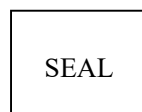


1st witness

2nd witness

Signed, sealed and delivered by*

In the presence of



1st witness

2nd witness



**QUAID E AWAM UNIVERSITY OF ENGINEERING
SCIENCE & TECHNOLOGY
NAWABSHAH**

**CONSTRUCTION OF ENVIRONMENTAL ENGINEERING
DEPARTMENT AT QUEST NAWABSHAH**

Tender Documents

Part – II

(Tender No. QUEST/NH/PROC/-350-002a-Civil Works)

***General Condition of Contract
Special Condition of Contract
Specification***

Consultants:



ZAHEERUDDIN CONSULTANTS (PVT.) LTD.

■ Architects ■ Planners ■ Engineers ■ Construction Managers
5-A, Sindhi Muslim Society, Karachi – 74400 (Pakistan)
Tel:# 3455 0321 (4 Lines) Fax: (92-21) 3455 5251 E-mail: zclkh@gmail.com
Email: info@zaheeruddinconsultants.org, www.zaheeruddinconsultants.org



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REFERENCE TO PART II INDEX

Notes on the Conditions of Contract

The Conditions of Contract comprise two parts:

(a) Part I - General Conditions of Contract

(b) Part II - Special Conditions of Contract

Over the years, a number of “model” General Conditions of Contract have evolved. The one used in these Standard Bidding Documents was prepared by the International Federation of Consulting Engineers (Federation Internationale des Ingenieurs-Conseils, or FIDIC), and is commonly known as the FIDIC Conditions of Contract. (The used version is the fourth edition, 1987, reprinted in 1992 with further amendments).

The FIDIC Conditions of Contract have been prepared for an ad measurement (unit price or unit rate) type of contract, and cannot be used without major modifications for other types of contracts, such as lump sum, turnkey, or target cost contracts.

The standard text of the General Conditions of Contract chosen must be retained intact to facilitate its reading and interpretation by bidders and its review by the procuring agency. Any amendments and additions to the General Conditions, specific to the contract in hand, should be introduced in the Particular Conditions of Contract.

The use of standard conditions of contract for all civil works will ensure comprehensiveness of coverage, better balance of rights or obligations between procuring agency and Contractor, general acceptability of its provisions, and savings in time and cost for bid preparation and review, leading to more economic prices.

The FIDIC Conditions of Contract are copyrighted and may not be copied, faxed, or reproduced. Without taking any responsibility of its being accurate, Pakistan Engineering Council with prior consent of FIDIC Secretariat, has reproduced herein the FIDIC General Conditions of Contract for reference purpose only which cannot be used by the users for preparing their bidding documents. The bidding document may include a purchased copy, the cost of which can be retrieved as part of the selling price of the bidding document. Alternatively, the FIDIC Conditions of Contract can be referred to in the bidding documents, and the bidders are advised to obtain copies directly from FIDIC.*

* Add the following text if the bidding documents, as issued, do not include a copy:

“Copies of the FIDIC Conditions of Contract can be obtained from:

FIDIC Secretariat

P.O. Box 86

1000 Lausanne 12

Switzerland

e-mail: fidic.pub@fidic.org – FIDIC.org/bookshop]

PART I - GENERAL CONDITIONS

Definitions and Interpretation

1.1 Definitions

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

- (a) (i) "Procuring Agency" means the person/agency named as such in Part II of these Conditions and the legal successors in title to such person, but not (except with the consent of the Contractor) any assignee of such person.
- (ii) "Contractor" means the person whose tender has been accepted by the procuring agency and the legal successors in title to such person, but not (except with the consent of the procuring agency) any assignee of such person.
- (iii) "Subcontractor" means any person named in the Contract as a Subcontractor for a part of the works or any person to whom a part of the works has been subcontracted with the consent of the Engineer and the legal successors in title to such person, but not any assignee of any such person.
- (iv) "Engineer" means the person appointed by the procuring agency to act as Engineer for the purposes of the Contract and named as such in Part II of these Conditions.
- (v) "Engineer's Representative" means a person appointed from time to time by the Engineer under Sub-Clause 2.2.
- (b) (i) "Contract" means these Conditions (Parts I and II), the Specification, the Drawings, the Bill of Quantities, the Tender, the Letter of Acceptance, the Contract Agreement (if completed) and such further documents as may be expressly incorporated in the Letter of Acceptance or Contract Agreement (if completed).
- (ii) "Specification" means the specification of the works included in the Contract and any modification thereof or addition thereto made under Clause 51 or submitted by the Contractor and approved by the Engineer.
- (iii) "Drawings" means all drawings, calculations and technical information of a like nature provided by the Engineer to the Contractor under the Contract and all drawings, calculations, samples, patterns, models, operation and maintenance manuals and other technical information of a like nature submitted by the Contractor and approved by the Engineer.
- (iv) "Bill of Quantities" means the priced and completed bill of quantities forming part of the Tender.
- (v) "Tender" means the Contractor's priced offer to the procuring agency for the execution and completion of the works and the remedying of any defects

therein in accordance with the provisions of the Contract, as accepted by the Letter of Acceptance.

- (vi) "Letter of Acceptance" means the formal acceptance by the procuring agency of the Tender.
- (vii) "Contract Agreement" means the contract agreement (if any) referred to in Sub-Clause 9.1.
- (viii) "Appendix to Tender" means the appendix comprised in the form of Tender annexed to these Conditions.
- (c) (i) "Commencement Date" means the date upon which the Contractor receives the notice to commence issued by the Engineer pursuant to Clause 41.
- (ii) "Time for Completion" means the time for completing the execution of and passing the Tests on Completion of the works or any Section or part thereof as stated in the Contract (or as extended under Clause 44) calculated from the Commencement Date.
- (d) (i) "Tests on Completion" means the tests specified in the Contract or otherwise agreed by the Engineer and the Contractor which are to be made by the Contractor before the works of any Section or part thereof are taken over by the procuring agency.
- (ii) "Taking-Over Certificate" means a certificate issued pursuant to Clause 48.
- (e) (i) "Contract Price" means the sum stated in the Letter of Acceptance as payable to the Contractor for the execution and completion of the works and the remedying of any defects therein in accordance with the provisions of the Contract.
- (ii) "Retention Money" means the aggregate of all monies retained by the procuring agency pursuant to Sub-Clause 60.2(a).
- (iii) "Interim Payment Certificate" means any certificate of payment issued by the Engineer other than the Final Payment Certificate.
- (iv) "Final Payment Certificate" means the certificate of payment issued by the Engineer pursuant to Sub-Clause 60.8.
- (f) (i) "Works" means the Permanent Works and the Temporary Works or either of them as appropriate.
- (ii) "Permanent Works" means the permanent works to be executed (including Plant) in accordance with the Contract
- (iii) "Temporary Works" means all temporary works of every kind (other than Contractor's Equipment) required in or about the execution and completion of the works and the remedying of any defects therein.

- (iv) "Plant" means machinery, apparatus and the like intended to form or forming part of the Permanent Works.
- (v) "Contractor's Equipment" means all appliances and things of whatsoever nature (other than Temporary Works) required for the execution and completion of the works and the remedying of any defects therein, but does not include Plant, materials or other things intended to form or forming part of the Permanent Works.
- (vi) "Section" means a part of the works specifically identified in the Contract as a Section.
- (vii) "Site" means the places provided by the procuring agency where the works are to be executed and any other places as may be specifically designated in the Contract as forming part of the site.
- (g) (i) "cost" means all expenditure properly incurred or to be incurred, whether, on or off the site, including overhead and other charges properly allocable thereto but does not include any allowance for profit.
- (ii) "day" means calendar day.
- (iii) "foreign currency" means a currency of a country other than that in which the works are to be located.
- (iv) "writing" means any hand-written, type-written, or printed communication, including telex, cable and facsimile transmission.

1.2 Headings and Marginal Notes

The headings and marginal notes in these Conditions shall not be deemed part thereof or be taken into consideration in the interpretation or construction thereof or of the Contract.

1.3 Interpretation

Words importing persons or parties shall include firms and corporations and any organization having legal capacity.

1.4 Singular and Plural

Words importing the singular only also include the plural and vice versa where the context requires.

1.5 Notices, Consents, Approvals, Certificates and Determinations

Wherever in the Contract provision is made for the giving or issue of any notice, consent, approval, certificate or determination by any person, unless otherwise specified such notice, consent, approval, certificate or determination shall be in writing and the words "notify", "certify" or "determine" shall be construed accordingly.

Any such consent, approval, certificate or determination shall not unreasonably be withheld or delayed.

Engineer and Engineer's Representative

2.1 Engineer's Duties and Authority

- (a) The Engineer shall carry out the duties specified in the Contract.
- (b) The Engineer may exercise the authority specified in or necessarily to be implied from the Contract, provided, however, that if the Engineer is required, under the terms of his appointment by the procuring agency, to obtain the specific approval of the procuring agency before exercising any such authority, particulars of such requirements shall be set out in Part II of these Conditions. Provided further that any requisite approval shall be deemed to have been given by the procuring agency for any such authority exercised by the Engineer.
- (c) Except as expressly stated in the Contract, the Engineer shall have no authority to relieve the Contractor of any of his obligations under the Contract.

2.2 Engineer's Representative

The Engineer's Representative shall be appointed by and be responsible to the Engineer and shall carry out such duties and exercise such authority as may be delegated to him by the Engineer under Sub-Clause 2.3.

2.3 Engineer's Authority to Delegate

The Engineer may from time-to-time delegate to the Engineer's Representative any of the duties and authorities vested in the Engineer and he may at any time revoke such delegation. Any such delegation or revocation shall be in writing and shall not take effect until a copy thereof has been delivered to the procuring agency and the Contractor.

Any communication given by the Engineer's Representative to the Contractor in accordance with such delegation shall have the same effect as though it had been given by the Engineer. Provided that:

- (a) any failure of the Engineer's Representative to disapprove any work, materials or Plant shall not prejudice the authority of the Engineer to disapprove such work, materials or Plant and to give instructions for the rectification thereof;
- and
- (b) if the Contractor questions any communication of the Engineer's Representative he may refer the matter to the Engineer who shall confirm, reverse or vary the contents of such communication.

2.4 Appointment of Assistants

The Engineer or the Engineer's Representative may appoint any number of persons to assist the Engineer's Representative in the carrying out of his duties under Sub-Clause 2.2. He shall notify to the Contractor the names, duties and scope of authority of such persons. Such assistants shall have no authority to issue any instructions to the

Contractor save in so far as such instructions may be necessary to enable them to carry out their duties and to secure their acceptance of materials, Plant or workmanship as being in accordance with the Contract, and any instructions given by any of them for those purposes shall be deemed to have been given by the Engineer's Representative.

2.5 Instructions in Writing

Instructions given by the Engineer shall be in writing, provided that if for any reason the Engineer considers it necessary to give any such instruction orally, the Contractor shall comply with such instruction. Confirmation in writing of such oral instruction given by the Engineer, whether before or after the carrying out of the instruction, shall be deemed to be an instruction within the meaning of this Sub-Clause. Provided further that if the Contractor, within 7 days, confirms in writing to the Engineer any oral instruction of the Engineer and such confirmation is not contradicted in writing within 7 days by the Engineer, it shall be deemed to be an instructions of the Engineer.

The provisions of this Sub-Clause shall equally apply to instructions given by the Engineer's Representative and any assistants of the Engineer or the Engineer's Representative appointed pursuant to Sub-Clause 2.4.

2.6 Engineer to Act Impartially

Wherever, under the Contract, the Engineer is required to exercise his discretion by:

- (a) giving his decision, opinion or consent,
- (b) expressing his satisfaction or approval,
- (c) determining value, or
- (d) otherwise taking action which may affect the rights and obligations of the procuring agency or the Contractor

He shall exercise such discretion impartially within the terms of the Contract and having regard to all the circumstances. Any such decision, opinion, consent expression of satisfaction, or approval, determination of value or action may be opened up, reviewed or revised as provided in Clause 67.

Assignment and Subcontracting

3.1 Assignment of Contract

The Contractor shall not, without the prior consent of the procuring agency (which consent, notwithstanding the provisions of Sub-Clause 1.5, shall be at the sole discretion of the procuring agency), assign the Contract or any part thereof, or any benefit or interest therein or there under, otherwise than by:

- (a) a charge in favour of the Contractor's bankers of any monies due or to become due under the Contract, or
- (b) assignment to the Contractor's insurers (in cases where the insurers have discharged the Contractor's loss or liability) of the Contractor's right to obtain relief against any other party liable.

4.1 Subcontracting

The Contractor shall not subcontract the whole of the works. Except where otherwise provided by the Contract, the Contractor shall not subcontract any part of the works without the prior consent of the Engineer. Any such consent shall not relieve the Contractor from any liability or obligation under the Contract and he shall be responsible for the acts, defaults and neglects of any Subcontractor, his agents, servants or workmen as fully as if they were the acts, defaults or neglects of the Contractor, his agents servants or workmen.

Provided that the Contractor shall not be required to obtain such consent for:

- (a) the provision of labour,
- (b) the purchase of materials which are in accordance with the standards specified in the Contract,
- (c) the subcontracting of any part of the works for which the Subcontractor is named in the Contract.

4.2 Assignment of Subcontractors' Obligations

In the event of a Subcontractor having undertaken towards the Contractor in respect of the work executed, or the goods, materials, Plant or services supplied by such Subcontractor, any continuing obligation extending for a period exceeding that of the Defects Liability Period under the Contract, the Contractor shall at any time, after the expiration of such Period, assign to the procuring agency, at the procuring agency's request and cost, the benefit of such obligation for the unexpired duration thereof.

Contract Documents

5.1 Language/s and Law

There is stated in Part II of these Conditions:

- (a) the language or languages in which the Contract documents shall be drawn up, and
- (b) the country or state the law of which shall apply to the Contract and according to which the Contract shall be construed.

If the said documents are written in more than one language, the language according to which the Contract shall be construed and interpreted is also stated in Part II of these Conditions, being therein designated the "Ruling Language".

5.2 Priority of Contract Documents

The several documents forming the Contract are to be taken as mutually explanatory of one another, but in case of ambiguities or discrepancies the same shall be explained and adjusted by the Engineer who shall thereupon issue to the Contractor instructions

thereon and in such event, unless otherwise provided in the Contract, the priority of the documents forming the Contract shall be as follows:

- (a) The Contract Agreement;
- (b) The Letter of Acceptance;
- (c) The Tender;
- (d) Part II of these Conditions;
- (e) Part I of these Conditions; and
- (f) Any other document forming part of the Contract.

6.1 Custody and Supply of Drawings and Documents

The Drawings shall remain in the sole custody of the Engineer, but two copies thereof shall be provided to the Contractor free of charge. The Contractor shall make at his own cost any further copies required by him. Unless it is strictly necessary for the purposes of the Contract, the Drawings, Specification and other documents provided by the procuring agency or the Engineer shall not, without the consent of the Engineer, be used or communicated to a third party by the Contractor. Upon issue of the Defects Liability Certificate, the Contractor shall return to the Engineer all Drawings, Specification and other documents provided under the Contract.

The Contractor shall supply to the Engineer four copies of all Drawings, specification and other documents submitted by the Contractor and approved by the Engineer in accordance with Clause 7, together with a reproducible copy of any material which cannot be reproduced to an equal standard by photocopying. In addition the Contractor shall supply such further copies of such Drawings, Specification and other documents as the Engineer may request in writing for the use of the procuring agency, who shall pay the cost thereof.

6.2 One Copy of Drawings to be kept on Site

One copy of the Drawings, provided to or supplied by the Contractor as aforesaid, shall be kept by the Contractor on the site and the same shall at all reasonable times be available for inspection and use by the Engineer and by any other person authorized by the Engineer in writing.

6.3 Disruption of Progress

The Contractor shall give notice to the Engineer, with a copy to the procuring agency, whenever planning or execution of the works is likely to be delayed or disrupted unless any further drawing or instruction is issued by the Engineer within a reasonable time. The notice shall include details of the drawing or instruction required and of why and by when it is required and of any delay or disruption likely to be suffered if it is late.

6.4 Delay and Cost of Delay of Drawings

If, by reason of any failure or inability of the Engineer to issue, within a time reasonable in all the circumstances, any drawing or instruction for which notice has been given by the Contractor in accordance with Sub-Clause 6.3, the Contractor suffers delay and/or incurs costs then the Engineer shall, after due consultation with the procuring agency and the Contractor, determine:

- (a) any extension of time to which the Contractor is entitled under Clause 44, and
- (b) the amount of such costs, which shall be added to the Contract Price, and shall notify the Contractor accordingly, with a copy to the procuring agency.

6.5 Failure by Contractor to Submit Drawings

If the failure or inability of the Engineer to issue any drawings or instructions is caused in whole or in part by the failure of the Contractor to submit Drawings, Specification or other documents which he is required to submit under the Contract, the Engineer shall take such failure by the Contractor into account when making his determination pursuant to Sub-Clause 6.4.

7.1 Supplementary Drawings and Instructions

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 carry out and be bound by the same.

7.2 Permanent Works Designed by Contractor

Where the Contract expressly provides that part of the Permanent Works shall be designed by the Contractor, he shall submit to the Engineer, for approval:

- (a) such drawings, specifications, calculations and other information as shall be necessary to satisfy the Engineer as to the suitability and adequacy of that design, and
- (b) operation and maintenance manuals together with drawings of the Permanent Works as completed, in sufficient detail to enable the procuring agency to operate, maintain, dismantle, reassemble and adjust the Permanent Works incorporating that design. The works shall not be considered to be completed for the purposes of taking over in accordance with Clause 48 until such operation and maintenance manuals together with drawings on completion have been submitted to and approved by the Engineer.

7.3 Responsibility Unaffected by Approval

Approval by the Engineer, in accordance with Sub-Clause 7.2, shall not relieve the Contractor of any of his responsibilities under the Contract.

General Obligations

8.1 Contractor's General Responsibilities

The Contractor shall, with due care and diligence, design (to the extent provided for by the Contract), execute and complete the works and remedy any defects therein in accordance with the provisions of the Contract. The Contractor shall provide all superintendence, labour, material, Plant, Contractor's Equipment and all other things, whether of a temporary or permanent nature, required in and for such design,

execution, completion and remedying of any defects, so far as the necessity for providing the same is specified in or is reasonably to be inferred from the Contract.

8.2 Site Operations and Methods of Construction

The Contractor shall take full responsibility for the adequacy, stability and safety of all site operations and methods of construction. Provided that the Contractor shall not be responsible (except as stated hereunder or as may be otherwise agreed) for the design or specification of Permanent Works, or for the design or specification of any Temporary Works not prepared by the Contractor. Where the Contract expressly provides that part of the Permanent Works shall be designed by the Contractor, he shall be fully responsible for that part of such works, notwithstanding any approval by the Engineer.

9.1 Contract Agreement

The Contractor shall, if called upon so to do, enter into and execute the Contract Agreement, to be prepared and completed at the cost of the procuring agency, in the form annexed to these Conditions with such modification as may be necessary.

10.1 Performance Security

If the Contract requires the Contractor to obtain security for his proper performance of the Contract, he shall obtain and provide to the procuring agency, such security within 28 days after the receipt of the Letter of Acceptance, in the sum stated in the Appendix to Tender. When providing such security to the procuring agency, the Contractor shall notify the Engineer of so doing. Such security shall be in the form annexed to these Conditions or in such other form as may be agreed between the procuring agency and the Contractor. The institution providing such security shall be subject to the approval of the procuring agency. The cost of complying with the requirements of this Clause shall be borne by the Contractor, unless the Contract otherwise provides.

10.2 Period of Validity of Performance Security

The performance security shall be valid until the Contractor has executed and completed the works and remedied any defects therein in accordance with the Contract. No claim shall be made against such security after the issue of the Defects Liability Certificate in accordance with Sub-Clause 62.1 and such security shall be returned to the Contractor within 14 days of the issue of the said Defects Liability Certificate.

10.3 Claims under Performance Security

Prior to making a claim under the performance security the procuring agency shall, in every case, notify the Contractor stating the nature of the default in respect of which the claim is to be made.

11.1 Inspection of Site

Procuring agency shall have made available to the Contractor, before the submission by the Contractor of the Tender, such data on hydrological and sub-surface conditions as have been obtained by or on behalf of the procuring agency from investigations

undertaken relevant to the works but the Contractor shall be responsible for his own interpretation thereof.

The Contractor shall be deemed to have inspected and examined the site and its surroundings and information available in connection therewith and to have satisfied himself (so far as is practicable, having regard to considerations of cost and time) before submitting his Tender, as to:

- (a) the form and nature thereof, including the sub-surface conditions,
- (b) the hydrological and climatic conditions,
- (c) the extent and nature of work and materials necessary for the execution and completion of the works and the remedying of any defects therein, and
- (d) the means of access to the site and the accommodation he may require, and, in general, shall be deemed to have obtained all necessary information, subject as above mentioned, as to risks, contingencies and all other circumstances which may influence or affect his Tender.

The Contractor shall be deemed to have based his Tender on the data made available by the procuring agency and on his own inspection and examination, all as aforementioned.

12.1 Sufficiency of Tender

The Contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the Tender and of the rates and prices stated in the Bill of Quantities, all of which shall, except insofar as it is otherwise provided in the Contract, cover all his obligations under the Contract (including those in respect of the supply of goods, materials, Plant or services or of contingencies for which there is a Provisional Sum) and all matters and things necessary for the proper execution and completion of the works and the remedying of any defects therein.

12.2 Not Foreseeable Physical Obstructions or Conditions

If, however, during the execution of the works the Contractor encounters physical obstructions or physical conditions, other than climatic conditions on the site, which obstructions or conditions were, in his opinion, not foreseeable by an experienced contractor, the Contractor shall forthwith give notice thereof to the Engineer, with a copy to the procuring agency. On receipt of such notice, the Engineer shall if in his opinion such obstructions or conditions could not have been reasonably foreseen by an experienced contractor, after due consultation with the procuring agency and the Contractor, determine:

- (a) any extension of time to which the Contractor is entitled under Clause 44, and
- (b) the amount of any costs which may have been incurred by the Contractor by reason of such obstructions or conditions having been encountered, which shall be added to the Contract Price, and shall notify the Contractor accordingly, with a copy to the procuring agency. Such determination shall take account of any instruction which the Engineer may issue to the Contractor in connection therewith, and any proper and reasonable measures acceptable to the Engineer

which the Contractor may take in the absence of specific instructions from the Engineer.

13.1 Work to be in Accordance with Contract

Unless it is legally or physically impossible, the Contractor shall execute and complete the works and remedy any defects therein in strict accordance with the Contract to the satisfaction of the Engineer. The Contractor shall comply with and adhere strictly to the Engineer's instructions on any matter, whether mentioned in the Contract or not, touching or concerning the works. The Contractor shall take instructions only from the Engineer (or his delegate).

14.1 Programme to be submitted

The Contractor shall, within the time stated in Part II of these Conditions after the date of the Letter of Acceptance, submit to the Engineer for his consent a programme, in such form and detail as the Engineer shall reasonably prescribe, for the execution of the works. The Contractor shall, whenever required by the Engineer, also provide in writing for his information a general description of the arrangements and methods which the Contractor proposes to adopt for the execution of the works.

14.2 Revised Programme

If at any time it should appear to the Engineer that the actual progress of the works does not conform to the programme to which consent has been given under Sub-Clause 14.1, the Contractor shall produce, at the request of the Engineer, a revised programme showing the modifications to such programme necessary to ensure completion of the works within the Time for Completion.

14.3 Cash Flow Estimate to be submitted

The Contractor shall, within the time stated in Part II of these Conditions after the date of the Letter of Acceptance, provide to the Engineer for his information a detailed cash flow estimate, in quarterly periods, of all payments to which the Contractor will be entitled under the Contract and the Contractor shall subsequently supply revised cash flow estimates at quarterly intervals, if required to do so by the Engineer.

14.4 Contractor not Relieved of Duties or Responsibilities

The submission to and consent by the Engineer of such programmes or the provision of such general descriptions or cash flow estimates shall not relieve the Contractor of any of his duties or responsibilities under the Contract.

15.1 Contractor's Superintendence

The Contractor shall provide all necessary superintendence during the execution of the works and as long thereafter as the Engineer may consider necessary for the proper fulfilling of the Contractor's obligations under the Contract. The Contractor, or a competent and authorized representative approved of by the Engineer, which approval may at any time be withdrawn, shall give his whole time to the superintendence of the

works. Such authorized representative shall receive, on behalf of the Contractor, instructions from the Engineer.

If approval of the representative is withdrawn by the Engineer, the Contractor shall, as soon as is practicable, having regard to the requirement of replacing him as hereinafter mentioned, after receiving notice of such withdrawal, remove the representative from the works and shall not thereafter employ him again on the works in any capacity and shall replace him by another representative approved by the Engineer.

16.1 Contractor's Employees

The Contractor shall provide on the site in connection with the execution and completion of the works and the remedying of any defects therein:

- (a) only such technical assistants as are skilled and experienced in their respective callings and such foremen and leading hands as are competent to give proper superintendence of the works, and
- (b) such skilled, semi skilled and unskilled labour as is necessary for the proper and timely fulfilling of the Contractor's obligations under the Contract.

16.2 Engineer at Liberty to Object

The Engineer shall be at liberty to object to and require the Contractor to remove forthwith from the works any person provided by the Contractor who, in the opinion of the Engineer, misconducts himself, or is incompetent or negligent in the proper performance of his duties, or whose presence on site is otherwise considered by the Engineer to be undesirable, and such person shall not be again allowed upon the works without the consent of the Engineer. Any person so removed from the works shall be replaced as soon as possible.

17.1 Setting-out

The Contractor shall be responsible for:

- (a) the accurate setting-out of the works in relation to original points, lines and levels of reference given by the Engineer in writing,
- (b) the correctness, subject as above mentioned of the position, levels dimensions and alignment of all parts of the works, and
- (c) the provision of all necessary instruments, appliances and labour in connection with the foregoing responsibilities.

If, at any time during the execution of the works, any error appears in the position, levels, dimensions or alignment of any part of the works, the Contractor, on being required so to do by the Engineer, shall, at his own cost, rectify such error to the satisfaction of the Engineer, unless such error is based on incorrect data supplied in writing by the Engineer, in which case the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the procuring agency.

The checking of any setting-out or of any line or level by the Engineer shall not in any way relieve the Contractor of his responsibility for the accuracy thereof and the Contractor shall carefully protect and preserve all bench-marks, sight-rails, pegs and other things used in setting-out the works.

18.1 Boreholes and Exploratory Excavation

If, at any time during the execution of the works, the Engineer requires the Contractor to make boreholes or to carry out exploratory excavation, such requirement shall be the subject of an instruction in accordance with Clause 51, unless an item or a Provisional Sum in respect of such work is included in the Bill of Quantities.

19.1 Safety, Security and Protection of the Environment

The Contractor shall, throughout the execution and completion of the works and the remedying of any defects therein:

- (a) have full regard for the safety of all persons entitled to be upon the site and keep the site (so far as the same is under his control) and the works (so far as the same are not completed or occupied by the procuring agency) in an orderly state appropriate to the avoidance of danger to such persons,
- (b) provide and maintain at his own cost all lights, guards, fencing, warning signs and watching, when and where necessary or required by the Engineer or by any duly constituted authority, for the protection of the works or for the safety and convenience of the public or others, and
- (c) take all reasonable steps to protect the environment on and off the site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation.

19.2 Procuring Agency's Responsibilities

If under Clause 31 the procuring agency shall carry out work on the site with his own workmen he shall, in respect of such work:

- (a) have full regard to the safety of all persons entitled to be upon the site, and
- (b) keep the site in an orderly state appropriate to the avoidance of danger to such persons.

If under Clause 31 the procuring agency shall employ other contractors on the site he shall require them to have the same regard for safety and avoidance of danger.

20.1 Care of Works

The Contractor shall take full responsibility for the care of the works and materials and Plant for incorporation therein from the Commencement Date until the date of issue of the Taking-Over Certificate for the whole of the works, when the responsibility for the said care shall pass to the procuring agency. Provided that:

- (a) if the Engineer issues a Taking-Over Certificate for any Section or part of the Permanent Works the Contractor shall cease to be liable for the care of that Section or part from the date of issue of the Taking-Over Certificate, when the responsibility for the care of that Section or part shall pass to the procuring agency, and
- (b) the Contractor shall take full responsibility for the care of any outstanding works and materials and Plant for incorporation therein which he undertakes to finish during the Defects Liability Period until such outstanding works have been completed pursuant to Clause 49.

20.2 Responsibility to Rectify Loss or Damage

If any loss or damage happens to the works, or any part thereof, or materials or Plant for incorporation therein, during the period for which the Contractor is responsible for the care thereof, from any cause whatsoever, other than the risks defined in Sub-Clause 20.4, the Contractor shall, at his own cost, rectify such loss or damage so that the Permanent Works conform in every respect with the provisions of the Contract to the satisfaction of the Engineer. The Contractor shall also be liable for any loss or damage to the works occasioned by him in the course of any operations carried out by him for the purpose of complying with his obligations under Clauses 49 and 50.

20.3 Loss or Damage Due to Procuring Agency's Risks

In the event of any such loss or damage happening from any of the risks defined in Sub-Clause 20.4, or in combination with other risks, the Contractor shall, if and to the extent required by the Engineer, rectify the loss or damage and the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the procuring agency. In the case of a combination or risks causing loss or damage any such determination shall take into account the proportional responsibility of the Contractor and the procuring agency.

20.4 Procuring Agency's Risks

Procuring agency's risks are:

- (a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,
- (b) rebellion, revolution, insurrection, or military or usurped power, or civil war,
- (c) ionizing radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic

explosive, or other hazardous properties of any explosive nuclear assembly or nuclear component thereof,

- (d) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds,
- (e) riot, commotion or disorder, unless solely restricted to employees of the Contractor or of his Subcontractor and arising from the conduct of the works,
- (f) loss or damage due to the use or occupation by the procuring agency of any Section or part of the Permanent works, except as may be provided for in the Contract,
- (g) loss or damage to the extent that it is due to the design of the works, other than any part of the design provided by the Contractor or for which the Contractor is responsible, and
- (h) any operation of the forces of nature against which an experienced contractor could not reasonably have been expected to take precautions.

21.1 Insurance of Works and Contractor's Equipment

The Contractor shall, without limiting his or the procuring agency's obligations and responsibilities under Clause 20, insure:

- (a) the works, together with materials and Plant for incorporation therein, to the full replacement cost (the term "cost" in this context shall include profit),
- (b) an additional sum of 15 per cent of such replacement cost, or as may be specified in Part II of these Conditions, to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the works and of removing debris of whatsoever nature, and
- (c) the Contractor's Equipment and other things brought onto the site by the Contractor, for a sum sufficient to provide for their replacement at the site.

21.2 Scope of Cover

The insurance in paragraphs (a) and (b) of sub-clause 21.1 shall be in the joint names of the Contractor and the Procuring Agency and shall cover:

- (a) the procuring agency and the Contractor against all loss or damage from whatsoever cause arising, other than as provided in sub-clause 21.4, from the start of work at the site until the date of issue of the relevant Taking-Over Certificate in respect of the works or any Section or part thereof as the case may be, and
- (b) the Contractor for his liability:
 - (i) during the Defects Liability Period for loss or damage arising from a cause occurring prior to the commencement of the Defects Liability Periods, and

- (ii) for loss or damage occasioned by the Contractor in the course of any operations carried out by him for the purpose of complying with his obligations under Clauses 49 and 50.

21.3 Responsibility for Amounts not Recovered

Any amounts not insured or not recovered from the insurers shall be borne by the procuring agency or the Contractor in accordance with their responsibilities under Clause 20.

21.4 Exclusions

There shall be no obligation for the insurances in Sub-Clause 21.1 to include loss or damage caused by:

- (a) war, hostilities (where war be declared or not), invasion, act of foreign enemies,
- (b) rebellion, revolution, insurrection, or military or usurped power, or civil war,
- (c) ionizing, radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof, or
- (d) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds.

22.1 Damage to Persons and Property

The Contractor shall, except if and so far as the Contract provides otherwise, indemnify the procuring agency against all losses and claims in respect of:

- (a) death of or injury to any person, or
- (b) loss of or damage to any property (other than the works), which may arise out of or in consequence of the execution and completion of the works and the remedying of any defects therein, and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, subject to the exceptions defined in Sub-Clause 22.2.

22.2 Exceptions

The "exceptions" referred to in sub-clause 22.1 are:

- (a) the permanent use or occupation of land by the works, or any part thereof,
- (b) the right of the procuring agency to execute the works, or any part thereof, on, over, under, is or through any land,
- (c) damage to property which is the unavoidable result of the execution and completion of the works, or the remedying of any defects therein, in accordance with the Contract, and
- (d) death of or injury to persons or loss of or damage to property resulting from any act or neglect of the procuring agency, his agents servants or other contractors, not being employed by the Contractor, or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or,

where the injury or damage was contributed to by the Contractor, his servants or agents, such part of the said injury or damage as may be just and equitable having regard to the extent of the responsibility of the procuring agency, his servants or agents or other contractors for the injury or damage.

22.3 Indemnity by Procuring Agency

Procuring agency shall indemnify the Contractor against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the exceptions defined in sub-clause 22.2

23.1 Third Party Insurance (including procuring agency's Property)

The Contractor shall, without limiting his or the procuring agency's obligation and responsibilities under Clause 22, insure, in the joint names of the Contractor and the procuring agency, against liabilities for death of or injury to any person (other than as provided in Clause 24) or loss of or damage to any property (other than the works) arising out of the performance of the Contract, other than the exceptions defined in paragraphs (a), (b) and (c) of sub-clause 22.2.

23.2 Minimum Amount of Insurance

Such insurance shall be for at least the amount stated in the Appendix to Tender.

23.3 Cross Liabilities

The insurance policy shall include a cross liability clause such that the insurance shall apply to the Contractor and to the procuring agency as separate insured.

24.1 Accident or Injury to Workmen

Procuring agency shall not be liable for or in respect of any damages or compensation payable to any workman or other person in the employment of the Contractor or any Subcontractor, other than death or injury resulting from any act or default of the procuring agency, his agents or servants. The Contractor shall indemnify and keep indemnified the procuring agency against all such damages and compensation, other than those for which the procuring agency is liable as aforesaid, and against all claims, proceedings, damages, costs, charges, and expenses whatsoever in respect thereof or in relation thereto.

24.2 Insurance against Accident to Workmen

The Contractor shall insure against such liability and shall continue such insurance during the whole of the time that any persons are employed by him on the works. Provided that, in respect of any persons employed by any Subcontractor, the Contractor's obligations to insure as aforesaid under the sub-clause shall be satisfied if the Subcontractor shall have insured against the liability in respect of such persons in such manner that the procuring agency is indemnified under the policy, but the Contractor shall require such Subcontractor to produce to the procuring agency, when required, such policy of insurance and the receipt for the payment of the current premium.

25.1 Evidence and Terms of Insurances

The Contractor shall provide evidence to the procuring agency prior to the start of work at the site that the insurances required under the Contract have been affected and shall, within 84 days of the Commencement Date, provide the insurance policies to the procuring agency. When providing such evidence and such policies to the procuring agency, the Contractor shall notify the Engineer of so doing. Such insurance policies shall be consistent with the general terms agreed prior to the issue of the Letter of Acceptance. The Contractor shall affect all insurances for which he is responsible with insurers and in terms approved by the procuring agency.

25.2 Adequacy of Insurances

The Contractor shall notify the insurers of changes in the nature, extent or programme for the execution of the works and ensure the adequacy of the insurances at all times in accordance with the terms of the Contract and shall, when required, produce to the procuring agency the insurance policies in force and the receipts for payment of the current premiums.

25.3 Remedy on Contractor's Failure to Insure

If the Contractor fails to effect and keep in force any of the insurances required under the Contract, or fails to provide the policies to the procuring agency within the period required by Sub-Clause 25.1, then and in any such case the procuring agency may effect and keep in force any such insurances and pay any premium as may be necessary for that purpose and from time to time deduct the amount so paid from any monies due or to become due to the Contractor, or recover the same as a debt due from the Contractor.

25.4 Compliance with Policy Conditions

In the event that the Contractor or the procuring agency fails to comply with conditions imposed by the insurance policies affected pursuant to the Contract, each shall indemnify the other against all losses and claims arising from such failure.

26.1 Compliance with Statutes, Regulations

The Contractor shall conform in all respects, including by the giving of all notices and the paying of all fees, with the provisions of:

- (a) any National or State Statute, Ordinance, or other Law, or any regulation, or bye-law of any local or other duly constituted authority in relation to the execution and completion of the works and the remedying of any defects therein, and
- (b) the rules and regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the works, and the Contractor shall keep the procuring agency indemnified against all penalties and liability of every kind for breach of any such provisions. Provided always that the procuring agency shall be responsible for obtaining any planning, zoning or other similar permission required for the works to proceed and shall indemnify the Contractor in accordance with Sub-Clause 22.3.

27.1 Fossil

All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the site shall, as between the procuring agency and the Contractor, be deemed to be the absolute property of the procuring agency. The Contractor shall take reasonable precautions to prevent his workmen or any other persons from removing or damaging any such article or thing and shall, immediately upon discovery thereof and before removal, acquaint the Engineer of such discovery and carry out the Engineer's instructions for dealing with the same. If, by reason of such instructions, the Contractor suffers delay and/or incurs costs then the Engineer shall, after due consultation with the procuring agency and the Contractor, determine:

- (a) any extension of time to which the Contractor is entitled under Clause 44, and
- (b) the amount of such costs, which shall be added to the Contract Price, and shall notify the Contractor accordingly, with a copy to the procuring agency.

28.1 Patent Rights

The Contractor shall save harmless and indemnify the procuring agency from and against all claims and proceedings for or on account of infringement of any patent rights, design trademark or name or other protected rights in respect of any Contractor's Equipment, materials or Plant used for or in connection with or for incorporation in the works and from and against all damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, except where such infringement results from compliance with the design or Specification provided by the Engineer.

28.2 Royalties

Except where otherwise stated, the Contractor shall pay all tonnage and other royalties, rent and other payments or compensation, if any, for getting stone, sand, gravel, clay or other materials required for the works.

29.1 Interference with Traffic and Adjoining Properties

All operations necessary for the execution and completion of the works and the remedying of any defects therein shall, so far as compliance with the requirements of the Contract permits, be carried on so as not to interfere unnecessarily or improperly with:

- (a) the convenience of the public, or
- (b) the access to, use and occupation of public or private roads and footpaths to or of properties whether in the possession of the procuring agency or of any other person.

The Contractor shall save harmless and indemnify the procuring agency in respect of all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of, or in relation to, any such matters insofar as the Contractor is responsible therefore.

30.1 Avoidance of Damage to Roads

The Contractor shall use every reasonable means to prevent any of the roads or bridges communicating with or on the routes to the site from being damaged or injured by any traffic of the Contractor or any of his Subcontractors and, in particular, shall select routes, choose and use vehicles and restrict and distribute loads so that any such extraordinary traffic as will inevitably arise from the moving of materials, Plant, Contractor's Equipment or Temporary Works from and to the site shall be limited, as far as reasonably possible, and so that no unnecessary damage or injury may be occasioned to such roads and bridges.

30.2 Transport of Contractor's Equipment or Temporary Works

Save insofar as the Contract otherwise provides, the Contractor shall be responsible for and shall pay the cost of strengthening any bridges or altering or improving any road communicating with or on the routes to the site to facilitate the movement of Contractor's Equipment or Temporary Works and the Contractor shall indemnify and keep indemnified the procuring agency against all claims for damage to any such road or bridge caused by such movement, including such claims as may be made directly against the procuring agency, and shall negotiate and pay all claims arising solely out of such damage.

30.3 Transport of Materials or Plant

If, notwithstanding Sub-Clause 30.1, any damage occurs to any bridge or road communicating with or on the routes to the site arising from the transport of materials or Plant, the Contractor shall notify the Engineer with a copy to the procuring agency, as soon as he becomes aware of such damage or as soon as he receives any claim from the authority entitled to make such claim. Where under any law or regulation the haulier of such materials or Plant is required to indemnify the road authority against damage the procuring agency shall not be liable for any costs, charges or expenses in respect thereof or in relation thereto. In other cases the procuring agency shall negotiate the settlement of and pay all sums due in respect of such claim and shall indemnify the Contractor in respect thereof and in respect of all claims, proceedings damages, costs, charges and expenses in relation thereto. Provided that if and so far as any such claim or part thereof is, in the opinion of the Engineer, due to any failure on the part of the Contractor to observe and perform his obligations under sub-clause 30.1, then the amount determined by the Engineer, after due consultation with the procuring agency and the Contractor, to be due to such failure shall be recoverable from the Contractor by the procuring agency and may be deducted by the procuring agency from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the procuring agency. Provided also that the procuring agency shall notify the Contractor whenever a settlement is to be negotiated and, where any amount may be due from the Contractor, the procuring agency shall consult with the Contractor before such settlement is agreed.

30.4 Waterborne Traffic

Where the nature of the works is such as to require the use by the Contractor of waterborne transport the foregoing provisions of this Clause shall be construed as

though "road" included a lock, dock, sea wall or other structure related to a waterway and "vehicle" included craft, and shall have effect accordingly.

31.1 Opportunities for Other Contractors

The Contractor shall, in accordance with the requirements of the Engineer, afford all reasonable opportunities for carrying out their work to:

- (a) any other contractors employed by the procuring agency and their workmen,
- (b) the workmen of the procuring agency, and
- (c) the workmen of any duly constituted authorities who may be employed in the execution on or near the site of any work not included in the Contract or of any contract which the procuring agency may enter into in connection with or ancillary to the works.

31.2 Facilities for Other Contractors

If, however, pursuant to sub-clause 31.1 the Contractor shall, on the written request of the Engineer:

- (a) make available to any other contractor, or to the procuring agency or any such authority, any roads or ways for the maintenance of which the Contractor is responsible,
- (b) permit the use, by any such, of Temporary Works or Contractor's Equipment on the site, or
- (c) provide any other service of whatsoever nature for any such, the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the procuring agency.

32.1 Contractor to Keep Site Clear

During the execution of the works the Contractor shall keep the site reasonably free from all unnecessary obstruction and shall store or dispose of any Contractor's Equipment and surplus materials and clear away and remove from the site any wreckage, rubbish or Temporary Works no longer required.

33.1 Clearance of Site on Completion

Upon the issue of any Taking-Over Certificate the Contractor shall clear away and remove from that part of the site to which such Taking-Over Certificate relates all Contractor's Equipment, surplus materials, rubbish and Temporary Works of every kind, and leave such part of the site and works clean and in a workmanlike condition to the satisfaction of the Engineer. Provided that the Contractor shall be entitled to retain on site, until the end of the Defects Liability Period, such materials, Contractor's Equipment and Temporary Works as are required by him for the purpose of fulfilling his obligations during the Defects Liability Period.

Labour

34.1 Engagement of Staffs and Labour

The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.

35.1 Returns of Labour and Contractor's Equipment

The Contractor shall, if required by the Engineer, deliver to the Engineer a return in detail, in such form and at such intervals as the Engineer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the site and such information respecting Contractor's Equipment as the Engineer may require.

Materials, Plant and Workmanship

36.1 Quality of Materials, Plant and Workmanship

All materials, Plant and workmanship shall be:

- (a) of the respective kinds described in the Contract and in accordance with the Engineer's instructions, and
- (b) subjected from time to time to such tests as the Engineer may require at the place of manufacture, fabrication or preparation, or on the site or at such other place or places as may be specified in the Contract, or at all or any of such places.

The Contractor shall provide such assistance, labour, electricity, fuels, stores, apparatus and instruments as are normally required for examining, measuring and testing any materials or Plant and shall supply samples of materials, before incorporation in the works, for testing as may be selected and required by the Engineer.

36.2 Cost of Samples

All samples shall be supplied by the Contractor at his own cost if the supply thereof is clearly intended by or provided for in the Contract.

36.3 Cost of Tests

The cost of making any test shall be borne by the Contractor if such test is:

- (a) clearly intended by or provided for in the Contract, or
- (b) particularized in the Contract (in cases only for a test under load or of a test to ascertain whether the design of any finished or partially finished work is appropriate for the purposes which it was intended to fulfill) in sufficient detail to enable the Contractor to price or allow for the same in his Tender.

36.4 Cost of Tests not provided for

If any test required by the Engineer which is:

- (a) not intended by or provided for,
- (b) (in the cases above mentioned) not so particularized, or
- (c) (through so intended or provided for) required by the Engineer to be carried out at any place other than the site or the place of manufacture, fabrication or preparation of the materials or Plant tested, shows the materials, Plant or workmanship not to be in accordance with the provisions of the Contract to the satisfaction of the Engineer, then the cost of such test shall be borne by the Contractor, but in any other case Sub-Clause 36.5 shall apply.

36.5 Engineer's Determination where Tests not provided for

Where, pursuant to Sub-Clause 36.4, this Sub-Clause applies the Engineer shall, after due consultation with the procuring agency and the Contractor, determine:

- (a) any extension of time of which the Contractor is entitled under Clause 44, and
- (b) the amount of such costs, which shall be added to the Contract Price, and shall notify the Contractor accordingly, with a copy to the procuring agency.

37.1 Inspection of Operations

The Engineer, and any person authorized by him, shall at all reasonable times have access to the site and to all workshops and places where materials or Plant are being manufactured, fabricated or prepared for the works and the Contractor shall afford every facility for and every assistance in obtaining the right to such access.

37.2 Inspection and Testing

The Engineer shall be entitled, during manufacture, fabrication or preparation to inspect and test the materials and Plant to be supplied under the Contract. If materials or Plant are being manufactured, fabricated or prepared in workshops or places other than those of the Contractor, the Contractor shall obtain permission for the Engineer to carry out such inspection and testing in those workshops or places. Such inspection or testing shall not release the Contractor from any obligation under the Contract.

37.3 Dates for Inspection and Testing

The Contractor shall agree with the Engineer on the time and place for the inspection or testing of any materials or Plant as provided in the Contract. The Engineer shall give the Contractor not less than 24 hours notice of his intention to carry out the inspection or to attend the tests. If the Engineer, or his duly authorized representative, does not attend on the date agreed, the Contractor may, unless otherwise instructed by the Engineer, proceed with the tests, which shall be deemed to have been made in the presence of the Engineer. The Contractor shall forthwith forward to the Engineer duly

certified copies of the tests readings. If the Engineer has not attended the tests, he shall accept the said readings as accurate.

37.4 Rejection

If, at the time and place agreed in accordance with Sub-Clause 37.3, the materials or Plant are not ready for inspection or testing or if, as a result of the inspection or testing referred to in this Clause, the Engineer determines that the materials or Plant are defective or otherwise not in accordance with the Contract, he may reject the materials or Plant and shall notify the Contractor thereof immediately. The notice shall state the Engineer's objections with reasons. The Contractor shall then promptly make good the defect or ensure that rejected materials or Plant comply with the Contract. If the Engineer so requests, the tests of rejected materials or Plant shall be made or repeated under the same terms and conditions. All costs incurred by the procuring agency by the repetition of the test shall after due consultation with the procuring agency and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the procuring agency and may be deducted from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the procuring agency.

37.5 Independent Inspection

The Engineer may delegate inspection and testing of materials or Plant to an independent inspector. Any such delegation shall be affected in accordance with Sub-Clause 2.4 and for this purpose such independent inspector shall be considered as an assistant of the Engineer. Notice of such appointment (not being less than 14 days) shall be given by the Engineer to the Contractor.

38.1 Examination of Work before Covering up

No part of the works shall be covered up or put out of view without the approval of the Engineer and the Contractor shall afford full opportunity for the Engineer to examine and measure any such part of the works which is about to be covered up or put out of view and to examine foundations before any part of the works is placed thereon. The Contractor shall give notice to the Engineer whenever any such part of the works or foundations is or are ready or about to be ready for examination and the Engineer shall, without unreasonable delay, unless he considers it unnecessary and advises the Contractor accordingly, attend for the purpose of examining and measuring such part of the works or of examining such foundations.

38.2 Uncovering and Making Openings

The Contractor shall uncover any part of the works or make openings in or through the same as the Engineer may from time to time instruct and shall reinstate and make good such part. If any such part has been covered up or put out of view after compliance with the requirement of Sub-Clause 38.1 and is found to be executed in accordance with the Contract, the Engineer shall, after due consultation with the procuring agency and the Contractor, determine the amount the Contractor's costs in respect of such of uncovering, making openings in or through, reinstating and making good the same, which shall be added to the Contract Price, and shall notify the Contractor accordingly,

with a copy to the procuring agency. In any other case all costs shall be borne by the Contractor.

39.1 Removal of Improper Work, Materials or Plant

The Engineer shall have authority to issue instructions from time to time, for:

- (a) the removal from the site, within such time or times as may be specified in the instruction, of any materials or Plant which, in the opinion of the Engineer, are not in accordance with the Contract,
- (b) the substitution of proper and suitable materials or Plant, and
- (c) the removal and proper re-execution, notwithstanding any previous test thereof or interim payment there for, of any work which, in respect of
 - (i) materials, Plant or workmen ship, or
 - (ii) design by the Contractor or for which he is responsible, is not, in the opinion of the Engineer, in accordance with the Contract.

39.2 Default of Contractor in Compliance

In case of default on the part of Contractor in carrying out such instruction within the time specified therein or, if none, within a reasonable time, the procuring agency shall be entitled to employ and pay other persons to carry out the same and all costs consequent thereon or incidental thereto shall, after due consultation with the procuring agency and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the procuring agency, and may be deducted by the procuring agency from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the procuring agency.

Suspension

40.1 Suspension of Work

The Contractor shall, on the instructions of the Engineer, suspend the progress of the works or any part thereof for such time and in such manner as the Engineer may consider necessary and shall, during such suspension, properly protect and secure the works or such part thereof so far as is necessary in the opinion of the Engineer. Unless such suspension is:

- (a) otherwise provided for in the Contract,
- (b) necessary by reason of some default of or breach of contract by the Contractor or for which he is responsible,
- (c) necessary by reason of climatic conditions of the site, or
- (d) necessary for the proper execution of the works or for the safety of the works or any part thereof (save to the extent that such necessity arises from any act or default by the Engineer or the procuring agency or from any of the risks defined in sub-clause 20.4), sub-clause 40.2 shall apply.

40.2 Engineer's Determination following Suspension

Where, pursuant to Sub-Clause 40.1, this Sub-Clause applies the Engineer shall, after due consultation with the procuring agency and the Contractor, determine:

- (a) any extension of time to which the Contractor is entitled under Clause 44, and
- (b) the amount, which shall be added to the Contract Price, in respect of the cost incurred by the Contractor by reason of such suspension, and shall notify the Contractor accordingly, with a copy to the procuring agency.

40.3 Suspension lasting more than 84 Days

If the progress of the works or any part thereof is suspended on the written instructions of the Engineer and if permission to resume work is not given by the Engineer within a period for 84 days from the date of suspension then, unless such suspension is within paragraph (a), (b), (c) or (d) of sub-clause 40.1, the Contractor may give notice to the Engineer requiring permission, within 28 days from the receipt thereof, to proceed with the works or that part thereof in regard to which progress is suspended. If, within the said time, such permission is not granted, the Contractor may, but is not bound to, elect to treat the suspension, where it affects part only of the works, as an omission of such part under Clause 51 by giving a further notice to the Engineer to that effect, or, where it affects the whole of the works, treat the suspension as an event of default by the procuring agency and terminates his employment under the Contract in accordance with the provisions of Sub-Clause 69.1, whereupon the provisions of sub-clause 69.2 and 69.3 shall apply.

Commencement and Delays

41.1 Commencement of Works

The Contractor shall commence the works as soon as is reasonably possible after the receipt by him of notice to this effect from the Engineer, which notice shall be issued within the time stated in the Appendix to Tender after the date of the Letter of Acceptance. Thereafter, the Contractor shall proceed with the works with due expedition and without delay.

42.1 Possession of Site and Access Thereto

Save insofar as the Contract may prescribe:

- (a) the extent of portions of the site of which the Contractor is to be given possession from time to time,
- (b) the order in which such portions shall be made available to the Contractor, and, subject to any requirement in the Contract as to the order in which the works shall be executed, the procuring agency will, with the Engineer's notice to commence the works, give to the Contractor possession of
- (c) so much of the site, and

- (d) such access as, in accordance with the Contract, is to be provided by the procuring agency as may be required to enable the Contractor to commence and proceed with the execution of the works in accordance with the programme referred to in Clause 14, if any, and otherwise in accordance with such reasonable proposals as the Contractor shall, by notice to the Engineer with a copy to the procuring agency, make. Procuring agency will, from time to time as the works proceed, give to the Contractor possession of such further portions of the site as may be required to enable the Contractor to proceed with the execution of the works with due dispatch in accordance with such programme or proposals, as the case may be.

42.2 Failure to Give Possession

If the Contractor suffers delay and/or incurs costs from failure on the part of the procuring agency to give possession in accordance with the terms of Sub-Clause 42.1, the Engineer shall, after due consultation with the procuring agency and the Contractor, determine:

- (a) any extension of time to which the Contractor is entitled under Clause 44, and
- (b) the amount of such costs, which shall be added to the Contract Price, and shall notify the Contractor accordingly, with a copy to the procuring agency.

42.3 Rights of Way and Facilities

The Contractor shall bear all costs and charges for special or temporary way leaves required by him in connection with access to the site. The Contractor shall also provide at his own cost any additional facilities outside the site required by him for the purposes of the works.

43.1 Time for Completion

The whole of the works and, if applicable, any Section required to be completed within a particular time as stated in the Appendix to Tender, shall be completed, in accordance with the provisions of Clause 48, within the time stated in the Appendix to Tender for the whole of the works or the Section (as the case may be), calculated from the Commencement Date, or such extended time as may be allowed under Clause 44.

44.1 Extension of Time for Completion

In the event of:

- (a) the amount or nature of extra or additional work,
- (b) any cause of delay referred to in these Conditions,
- (c) exceptionally adverse climatic conditions,
- (d) any delay, impediment or prevention by the procuring agency, or
- (e) other special circumstances which may occur, other than through a default of or breach of contract by the Contractor or for which he is responsible, being such as fairly to entitle the Contractor to an extension of the Time for completion of the works, or any Section or part thereof, the Engineer shall, after due consultation with the procuring agency and the Contractor, determine the amount of such extension and shall notify the Contractor accordingly, with a copy to the procuring agency.

44.2 Contractor to Provide Notification and Detailed Particulars

Provided that the Engineer is not bound to make any determination unless the Contractor has

- (a) within 28 days after such event has first arisen notified the Engineer with a copy to the procuring agency, and
- (b) within 28 days or such other reasonable time as may be agreed by the Engineer, after such notification submitted to the Engineer detailed particulars of any extension of time to which he may consider himself entitled in order that such submission may be investigated at the time.

44.3 Interim Determination of Extension

Provided also that where an event has a continuing effect such that it is not practicable for the Contractor to submit detailed particulars within the period of 28 days referred to in Sub-Clause 44.2(b), he shall nevertheless be entitled to an extension of time provided that he has submitted to the Engineer interim particulars at intervals of not more than 28 days and final particulars within 28 days of the end of the effects resulting from the event. On receipt of such interim particulars, the Engineer shall, without undue delay, make an interim determination of extension of time and, on receipt of the final particulars, the Engineer shall review all the circumstances and shall determine an overall extension of time in regard to the event. In both such cases the Engineer shall make his determination after due consultation with the procuring agency and the Contractor and shall notify the Contractor of the determination, with a copy to the procuring agency. No final review shall result in a decrease of any extension of time already determined by the Engineer.

45.1 Restriction on Working Hours

Subject to any provision to the contrary contained in the Contract, none of the works shall, save as hereinafter provided, be carried on during the night or on locally recognized days of rest without the consent of the Engineer, except when work is unavoidable or absolutely necessary for the saving of life or property or for the safety of the works, in which case the Contractor shall immediately advise the Engineer. Provided that the provisions of this Clause shall not be applicable in the case of any work which it is customary to carry out by multiple shifts.

46.1 Rate of Progress

If for any reason, which does not entitle the Contractor to an extension of time, the rate of progress of the works or any Section is at any time, in the opinion of the Engineer, too slow to comply with the Time for Completion, the Engineer shall so notify the Contractor who shall thereupon take such steps as are necessary, subject to the consent of the Engineer, to expedite progress so as to comply with the Time for Completion. The Contractor shall not be entitled to any additional payment for taking such steps. If, as a result of any notice given by the Engineer under this Clause, the Contractor considers that it is necessary to do any work at night or on locally recognized days of rest, he shall be entitled to seek the consent of the Engineer so to do. Provided that if any steps, taken by the Contractor in meeting his obligations under this Clause, involve

the procuring agency in additional supervision costs, such cost shall, after due consultation with the procuring agency and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the procuring agency, and may be deducted by the procuring agency from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the procuring agency.

47.1 Liquidated Damages for Delay

If the Contractor fails to comply with the Time for Completion in accordance with Clause 48, for the whole of the works or, if applicable, any Section within the relevant time prescribed by Clause 43, then the Contractor shall pay to the procuring agency the relevant sum stated in the Appendix to Tender as liquidated damages for such default and not as a penalty (which sum shall be the only monies due from the Contractor for such default) for every day or part of a day which shall elapse between the relevant Time for Completion and the date stated in a Taking-Over Certificate of the whole of the works or the relevant Section, subject to the applicable limit stated in the Appendix to Tender. Procuring agency may, without prejudice to any other method of recovery, deduct the amount of such damages from any monies due or to become due to the Contractor. The payment or deduction of such damages shall not relieve the Contractor from his obligation to complete the works, or from any other of his obligations and liabilities under the Contract.

47.2 Reduction of Liquidated Damages

If, before the Time for Completion of the whole of the works or, if applicable, any Section, a Taking-Over Certificate has been issued for any part of the works or of a Section, the liquidated damages for delay in completion of the remainder of the works or of that Section shall, for any period of delay after the date stated in such Taking-Over Certificate, and in the absence of Alternative provisions in the Contract, be reduced in the proportion which the value of the part so certified bears to the value of the whole of the works or Section, as applicable. The provisions of this Sub-Clause shall only apply to the rate of liquidated damages and shall not affect the limit thereof.

48.1 Taking-Over Certificate

When the whole of the works have been substantially completed and have satisfactorily passed any Tests on Completion prescribed by the contract, the contractor may give a notice to that effect to the Engineer with a copy to the procuring agency, accompanied by a written undertaking to finish with due expedition any outstanding work during the Defects Liability Period. Such notice and undertaking shall be deemed to be a request by the contractor for the Engineer to issue a Taking-Over Certificate in respect of the works. The Engineer shall within 21 days of the date of delivery of such notice, either issue to the contractor, with a copy to the procuring agency, a Taking-Over Certificate, stating the date on which, in his opinion, the works were substantially completed in accordance with the contract, or give instructions in writing to the contractor specifying all the work which, in the Engineer's opinion, is required to be done by the contractor before the issue of such certificate. The Engineer shall also notify the contractor of any defects in the works affecting substantial completion that may appear after such instructions and before completion of the works specified therein. The contractor shall be entitled to receive such Taking-Over Certificate within 21 days of completion, to the

satisfaction of the Engineer, of the works so specified and remedying any defects so notified.

48.2 Taking Over of Sections or Parts

Similarly, in accordance with the procedure set out in Sub-Clause 48.1, the contractor may request and the Engineer shall issue a Taking-Over Certificate in respect of:

- (a) any Section in respect of which a separate Time for Completion is provided in the Appendix to Tender,
- (b) any substantial part of the Permanent Works which has been both completed to the satisfaction of the Engineer and, otherwise than as provided for in the Contract, occupied or used by the procuring agency, or
- (c) any part of the Permanent Works which the procuring agency has elected to occupy or use prior to completion (where such prior occupation or use is not provided for in the Contract or has not been agreed by the Contractor as a temporary measure).

48.3 Substantial Completion of Parts

If any part of the Permanent Works has been substantially completed and has satisfactorily passed any Tests on Completion prescribed by the Contractor, the Engineer may issue a Taking-Over Certificate in respect of that part of the Permanent Works before completion of the whole of the works and, upon the issue of such Certificate, the Contractor shall be deemed to have undertaken to complete with due expedition any outstanding work in that part of the Permanent Works during the Defects Liability Period.

48.4 Surfaces Requiring Reinstatement

Provided that a Taking-Over Certificate given in respect of any Section or part of the Permanent Works before completion of the whole of the works shall not be deemed to certify completion of any ground or surfaces requiring reinstatement, unless such Taking-Over Certificate shall expressly so state.

Defects Liability

49.1 Defects Liability Period

In these Conditions the expression "Defects Liability Period" shall mean the defects liability period named in the Appendix to Tender, calculated from:

- (a) the date of completion of the works certified by the Engineer in accordance with Clause 48, or
- (b) in the event of more than one certificate having issued by the Engineer under Clause 48, the respective dates so certified, and in relation to the Defects Liability Period the expression "the Works" shall be construed accordingly.

49.2 Completion of Outstanding Work and Remedying Defects

To the intent that the works shall, at or as soon as practicable after the expiration of the Defects Liability Period, be delivered to the procuring agency in the condition required by the Contract, fair wear and tear excepted, to the satisfaction of the Engineer, the Contractor shall:

- (a) complete the work, if any, outstanding on the date stated in the Taking-Over Certificate as soon as practicable after such date, and
- (b) execute all such work of amendment, reconstruction, and remedying defects, shrinkages or other faults as the Engineer may, during the Defects Liability Period or within 14 days after its expiration, as a result of an inspection made by or on behalf of the Engineer prior to its expiration, instruct the Contractor to execute.

49.3 Cost of Remedying Defects

All work referred to in Sub-Clause 49.2(b) shall be executed by the Contractor at his own cost if the necessity thereof is, in the opinion of the Engineer, due to:

- (a) the use of materials, Plant or workmanship not in accordance with the Contract,
- (b) where the Contractor is responsible for the design of part of the Permanent Works, any fault in such design, or
- (c) the neglect or failure on the part of the Contractor to comply with any obligation, expressed or implied, on the Contractor's part under the Contract.

If, in the opinion of the Engineer, such necessity is due to any other cause, he shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the procuring agency.

49.4 Contractor's Failure to Carry Out Instructions

In case of default on the part of the Contractor in carrying out such instruction within a reasonable time, the procuring agency shall be entitled to employ and pay other persons to carry out the same and if such work is work which, in the opinion of the Engineer, the Contractor was liable to do at his own cost under the Contract, then all cost consequent thereon or incidental thereto shall, after due consultation with the procuring agency and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the procuring agency, and may be deducted by the procuring agency from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the procuring agency.

50.1 Contractor to Search

If any defect, shrinkage or other fault in the works appears at any time prior to the end of the Defects Liability Period, the Engineer may instruct the Contractor, with a copy to the procuring agency, to search under the directions of the Engineer for the cause thereof. Unless such defect, shrinkage or other fault is one for which the Contractor is

liable under the Contract, the Engineer shall, after due consultation with the procuring agency and the Contractor, determine the amount in respect of the costs of such search incurred by the Contractor, which shall be added to the Contract Price and shall notify the Contractor accordingly, with a copy to the procuring agency. If such defect, shrinkage or other fault is one for which the Contractor is liable, the cost of the work carried out in searching as aforesaid shall be borne by the Contractor and he shall in such case remedy such defect, shrinkage or other fault at his own cost in accordance with the provisions of Clause 49.

Alterations, Additions and Omissions

51.1 Variations

The Engineer shall make any variation of the form, quality or quantity of the works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion, be appropriate, he shall have the authority to instruct the Contractor to do and the Contractor shall do any of the following:

- (a) increase or decrease the quantity of any work included in the Contract,
- (b) omit any such work (but not if the omitted work is to be carried out by the procuring agency or by another contractor),
- (c) change the character or quality or kind of any such work,
- (d) change the levels, lines, position and dimensions of any part of the works,
- (e) execute additional work of any kind necessary for the completion of the works, or
- (f) change any specified sequence or timing of construction of any part of the works.

No such variation shall in any way vitiate or invalidate the Contract, but the effect, if any, of all such variations shall be valued in accordance with Clause 52. Provided that where the issue of an instruction to vary the works is necessitated by some default of or breach of contract by the Contractor or for which he is responsible, any additional cost attributable to such default shall be borne by the Contractor.

51.2 Instructions for Variations

The Contractor shall not make any such variation without an instruction of the Engineer. Provided that no instruction shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an instruction given under this Clause, but is the result of the quantities exceeding or being less than those stated in the Bill of Quantities.

52.1 Valuation of Variations

All variations referred to in Clause 51 and any additions to the Contract Price which are required to be determined in accordance with Clause 52 (for the purposes of this Clause referred to as "varied work"), shall be valued at the rates and prices set out in the Contract if, in the opinion of the Engineer, the same shall be applicable. If the Contract does not contain any rates or prices applicable to the varied work, the rates and prices in the Contract shall be used as the basis for valuation so far as may be reasonable, failing which, after due consultation by the Engineer with the procuring agency and the Contractor, suitable rates or prices shall be agreed upon between the

Engineer and the Contractor. In the event of disagreement, the Engineer shall fix such rates or prices as are, in his opinion, appropriate and shall notify the Contractor accordingly, with a copy to the procuring agency. Until such time as rates or prices are agreed or fixed, the Engineer shall determine provisional rates or prices to enable on-account payments to be included in certificates issued in accordance with Clause 60.

52.2 Power of Engineer to Fix Rates

Provided that if the nature or amount of any varied work relative to the nature or amount of the whole of the works or to any part thereof, is such that, in the opinion of the Engineer, the rate or price contained in the Contract for any item of the works is, by reason of such varied work, rendered inappropriate or inapplicable, then, after due consultation by the Engineer with the procuring agency and the Contractor, a suitable rate or price shall be agreed upon between the Engineer and the Contractor. In the event of disagreement, the Engineer shall fix such other rate or price as is, in his opinion, appropriate and shall notify the Contractor accordingly, with a copy to the procuring agency. Until such time as rates or prices are agreed or fixed, the Engineer shall determine provisional rates or prices to enable on-account payments to be included in certificates issued in accordance with Clause 60.

Provided also that no varied work instructed to be done by the Engineer pursuant to Clause 51 shall be valued under Sub-Clause 52.1 or under this Sub-Clause unless, within 14 days of the date of such instruction and, other than in the case of omitted work, before the commencement of the varied work, notice shall have been given either:

- (a) by the Contractor to the Engineer of his intention to claim extra payment or a varied rate or price, or
- (b) by the Engineer to the Contractor of his intention to vary a rate or price.

52.3 Variations Exceeding 15 per cent

If, on the issue of the Taking-Over Certificate for the whole of the works, it is found that as a result of:

- (a) all varied work valued under Sub-Clauses 52.1 and 52.2, and
- (b) all adjustments upon measurement of the estimated quantities set out in the Bill of Quantities, excluding Provisional Sums, day works and adjustment of price made under Clause 70. but not from any other cause, there have been additions to or deductions from the Contract Price which taken together are in excess of 15 per cent of the "Effective Contract Price" (which for the purposes of this Sub-Clause shall mean the Contract Price, excluding Provisional Sums and allowance for day works, if any) then and in such event (subject to any action already taken under any other Sub-Clause of this Clause), after due consultation by the Engineer with the procuring agency and the Contractor, there shall be added to or deducted from the Contract Price such further sums as may be agreed between the Contractor and the Engineer or, failing agreement, determined by the Engineer having regard to the Contractor's site and general overhead costs of the Contract. The Engineer shall notify the Contractor of any

determination made under this Sub-Clause, with a copy to the procuring agency. Such sum shall be based only on the amount by which such additions or deductions shall be in excess of 15 per cent of the Effective Contract Price.

52.4 Day work

The Engineer may, if in his opinion it is necessary or desirable, issue an instruction that any varied work shall be executed on a day work basis. The Contractor shall then be paid for such varied work under the terms set out in the day work schedule included in the Contract and at the rates and prices affixed thereto by him in the Tender.

The Contractor shall furnish to the Engineer such receipts or other vouchers as may be necessary to provide the amounts paid and, before ordering material, shall submit to the Engineer quotations for the same for his approval.

In respect of such of the works executed on a day work basis, the Contractor shall during the continuance of such work, deliver each day to the Engineer an exact list in duplicate of the names, occupation and time of all workmen employed on such work and a statement, also in duplicate, showing the description and quantity of all materials and Contractor's Equipment used thereon or there for other than Contractor's Equipment which is included in the percentage addition in accordance with such day work schedule. One copy of each list and statement will, if correct, or when agreed, be signed by the Engineer and returned to the Contractor.

At the end of each month the Contractor shall deliver to the Engineer a priced statement of the labour, materials and Contractor's Equipment, except as aforesaid, used and the Contractor shall not be entitled to any payment unless such lists and statements have been fully and punctually rendered. Provided always that if the Engineer considers that for any reason the sending of such lists or statements by the Contractor, in accordance with the foregoing provision, was impracticable he shall nevertheless be entitled to authorize payment for such work, either as day work, on being satisfied as to the time employed and the labour, materials and Contractor's Equipment used on such work, or at such value there for as shall, in his opinion, be fair and reasonable.

Procedure for Claims

53.1 Notice of Claims

Notwithstanding any other provision of the Contract, if the Contractor intends to claim any additional payment pursuant to any Clause of these Conditions or otherwise, he shall give notice of his intention to the Engineer with a copy to the procuring agency, within 28 days after the event giving rise to the claim has first arisen.

53.2 Contemporary Records

Upon the happening of the event referred to in Sub-Clause 53.1, the Contractor shall keep such contemporary records as may reasonably be necessary to support any claim he may subsequently wish to make. Without necessarily admitting the procuring agency's liability, the Engineer shall, on receipt of a notice under Sub-Clause 53.1, inspect such contemporary records and may instruct the Contractor to keep any further

contemporary records as are reasonable and may be material to the claim of which notice has been given. The Contractor shall permit the Engineer to inspect all records kept pursuant to this Sub-Clause and shall supply him with copies thereof as and when the Engineer so instructs.

53.3 Substantiation of Claims

Within 28 days, or such other reasonable time as may be agreed by the Engineer, of giving notice under Sub-Clause 53.1, the Contractor shall send to the Engineer an account giving detailed particulars of the amount claimed and the grounds upon which the claim is based. Where the event giving rise to the claim has a continuing effect, such account shall be considered to be an interim account and the Contractor shall, at such intervals as the Engineer may reasonably require, send further interim accounts giving the accumulated amount of the claim and any further grounds upon which it is based. In cases where interim accounts are sent to the Engineer, the Contractor shall send a final account within 28 days of the end of the effects resulting from the event. The Contractor shall, if required by the Engineer so to do, copy to the procuring agency all accounts sent to the Engineer pursuant to this Sub-Clause.

53.4 Failure to Comply

If the contractor fails to comply with any of the provisions of this Clause in respect of any claim which he seeks to make, his entitlement to payment in respect thereof shall not exceed such amount as the Engineer or any arbitrator or arbitrators appointed pursuant to Sub-Clause 67.3 assessing the claim considers to be verified by contemporary records (whether or not such records were brought to the Engineer's notice as required under Sub-Clause 53.2 and 53.3).

53.5 Payment of Claims

The Contractor shall be entitled to have included in any interim payment certified by the Engineer pursuant to Clause 60 such amount in respect of any claim as the Engineer, after due consultation with the procuring agency and the Contractor, may consider due to the Contractor provided that the Contractor has supplied sufficient particulars to enable the Engineer to determine the amount due. If such particulars are insufficient to substantiate the whole of the claim, the Contractor shall be entitled to payment in respect of such part of the claim as such particulars may substantiate to the satisfaction of the Engineer. The Engineer shall notify the Contractor of any determination made under this Sub-Clause, with a copy to the procuring agency.

Contractor's Equipment, Temporary Works and Materials

54.1 Contractor's Equipment, Temporary Works and Materials; Exclusive Use for the Works

All Contractor's Equipment, Temporary Works and materials provided by the Contractor shall, when brought on to the site, be deemed to be exclusively intended for the execution of the works and the Contractor shall not remove the same or any part thereof, except for the purpose of moving it from one part of the site to another, without the consent of the Engineer. Provided that consent shall not be required for

vehicles engaged in transporting any staff, labour, Contractor's Equipment, Temporary Works, Plant or materials to or from the site.

54.2 Procuring Agency not Liable for Damage

Procuring agency shall not at any time be liable, save as mentioned in Clauses 20 and 65, for the loss of or damage to any of the said Contractor's Equipment, Temporary Works or materials.

54.3 Customs Clearance

Procuring agency will use his best endeavors in assisting the Contractor, where required, in obtaining clearance through the Customs of Contractor's Equipment, materials and other things required for the works.

54.4 Re-export of Contractor's Equipment

In respect of any Contractor's Equipment which the Contractor has imported for the purposes of the works, the procuring agency will use his best endeavors to assist the Contractor, where required, in procuring any necessary Government consent to the re-export of such Contractor's Equipment by the Contractor upon the removal thereof pursuant to the terms of Contract.

54.5 Conditions of Hire of Contractor's Equipment

With a view to securing, in the event of termination under Clause 63, the continued availability, for the purpose of executing the works, of any hired Contractor's Equipment, the Contractor shall not bring on to the site any hired Contractor's Equipment unless there is an agreement for hire thereof (which agreement shall be deemed not to include an agreement for hire purchase) which contains a provision that the owner thereof will, on request in writing made by the procuring agency within 7 days after the date on which any termination has become effective, and on the procuring agency undertaking to pay all hire charges in respect thereof from such date, hire such Contractor's Equipment to the procuring agency on the same terms in all respect as the same was hired to the Contractor save that the procuring agency shall be entitled to permit the use thereof by any other contractor employed by him for the purpose of execution and completing the works and remedying any defects therein, under the terms of the said Clause 63.

54.6 Costs for the Purpose of Clause 63

In the event of the procuring agency entering into any agreement for the hire of Contractor's Equipment pursuant to Sub-Clause 54.5, all sums properly paid by the procuring agency under the provision of any such agreement and all costs incurred by him (including stamp duties) in entering into such agreement shall be deemed, for the purpose of Clause 63, to be part of the cost of executing and completing the works and the remedying of any defects therein.

54.7 Incorporation of Clause in Subcontracts

The Contractor shall, where entering into any subcontract for the execution of any part of the works, incorporate in such subcontract (by reference or otherwise) the provisions of this Clause in relation to Contractor's Equipment, Temporary Works or materials brought on to the site by the Subcontractor.

54.8 Approval of Materials not implied

The operation of this Clause shall not be deemed to imply any approval by the Engineer of the materials or other matters referred to therein nor shall it prevent the rejection of any such materials at any time by the Engineer.

Measurement

55.1 Quantities

The quantities set out in the Bill of Quantities are the estimated quantities for the works, and they are not to be taken as the actual and correct quantities of the works to be executed by the Contractor in fulfillment of his obligations under the Contract.

56.1 Works to be measured

The Engineer shall, except as otherwise stated, ascertain and determine by measurement the value of the works in accordance with the Contract and the Contractor shall be paid that value in accordance with Clause 60. The Engineer shall, when he requires any part of the works to be measured, give reasonable notice to the Contractor's authorized agent, who shall:

- (a) forthwith attend or send a qualified representative to assist the Engineer in making such measurement, and
- (b) supply all particulars required by the Engineer. Should the Contractor not attend, or neglect or omit to send such representative, then the measurement made by the Engineer or approved by him shall be taken to be the correct measurement of such part of the works. For the purpose of measuring such Permanent Works as are to be measured by records and drawings, the Engineer shall prepare records and drawings as the work proceeds and the Contractor, as and when called upon to do so in writing, shall, within 14 days, attend to examine and agree such records and drawings with the Engineer and shall sign the same when so agreed.

If the Contractor does not attend to examine and agree such records and drawings, they shall be taken to be correct. If, after examination of such records and drawings, the Contractor does not agree the same or does not sign the same as agreed, they shall nevertheless be taken to be correct, unless the Contractor, within 14 days of such examination, lodges with the Engineer notice of the respects in which such records and drawings are claimed by him to be incorrect. On receipt of such notice, the Engineer shall review the records and drawings and either confirm or vary them.

57.1 Method of Measurement

The works shall be measured net, notwithstanding any general or local custom, except where otherwise provided for in the Contract.

57.2 Breakdown of Lump Sum Items

For the purposes of statements submitted in accordance with Sub-Clause 60.1, the Contractor shall submit to the Engineer, within 28 days after the receipt of the Letter of Acceptance, a breakdown for each of the lump sum items contained in the Tender. Such breakdowns shall be subject to the approval of the Engineer.

Provisional Sums

58.1 Definition of "Provisional Sum"

"Provisional Sum" means a sum included in the Contract and so designated in the Bill of Quantities for the execution of any part of the works or for the supply of goods, materials, Plant or services, or for contingencies, which sum may be used, in whole or in part, or not at all, on the instructions of the Engineer. The Contractor shall be entitled to only such amounts in respect of the work, supply or contingencies to which such Provisional Sums relate as the Engineer shall determine in accordance with this Clause. The Engineer shall notify the Contractor of any determination made under this Sub-Clause, with a copy to the procuring agency.

58.2 Use of Provisional Sums

In respect of every Provisional Sum the Engineer shall have authority to issue instructions for the execution of work or for the supply of goods, material, Plant or services by:

- (a) the Contractor, in which case the Contractor shall be entitled to an amount equal to the value thereof determined in accordance with Clause 52, and
- (b) a nominated Subcontractor, as hereinafter defined, in which case the sum to be paid to the Contractor therefore shall be determined and paid in accordance with Sub-Clause 59.4.

58.3 Production of Vouchers

The Contractor shall produce to the Engineer all quotations, invoices, vouchers and accounts or receipts in connection with expenditure in respect of Provisional Sums, except where work is valued in accordance with rates or prices set out in the Tender.

Nominated Subcontractors

59.1 Definition of "Nominated Subcontractors"

All specialists, merchants, tradesmen and others executing any work or supplying any goods, materials, Plant or services for which Provisional Sums are included in the Contract, who may have been or be nominated or selected or approved by the procuring agency or the Engineer, and all persons to whom by virtue of the provisions

of the Contract the Contractor is required to subcontract shall, in the execution of such work or the supply of such goods, materials, Plant or services, be deemed to be subcontractors to the Contractor and are referred to in this Contract as "nominated Subcontractors".

59.2 Nominated Subcontractors; Objection to Nomination

The Contractor shall not be required by the procuring agency or the Engineer, or be deemed to be under any obligation, to employ any nominated Subcontractor against whom the Contractor may raise reasonable objection or who declines to enter into subcontract with the Contractor containing provisions:

- (a) that in respect of the work, goods, materials, Plant or services the subject of the subcontract, the nominated Subcontractor will undertake towards the Contractor such obligations and liabilities as will enable the Contractor to discharge his own obligations and liabilities towards the procuring agency under the terms of the Contract and will save harmless and indemnify the Contractor from and against the same and from all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of or in connection therewith, or arising out of or in connection with any failure to perform such obligations or to fulfill such liabilities, and
- (b) that the nominated Subcontractor will save harmless and indemnify the Contractor from and against any negligence by the nominated Subcontractor, his agents, workmen and servants and from and against any misuse by him or them of any Temporary Works provided by the Contractor for the purposes of the Contract and from all claims as aforesaid.

59.3 Design Requirements to be Expressly Stated

If in connection with any Provisional Sum the services to be provided include any matter of design or specification of any part of the Permanent Works or of any Plant to be incorporated therein, such requirement shall be expressly stated in the Contract and shall be included in any nominated Subcontract. The nominated Subcontract shall specify that the nominated Subcontractor providing such services will save harmless and indemnify the Contractor from and against the same and from all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of or in connection with any failure to perform such obligations or to fulfill such liabilities.

59.4 Payments to Nominated Subcontractors

For all work executed or goods, materials, Plant or services supplied by any nominated Subcontractor, the Contractor shall be entitled to:

- (a) the actual price paid or due to be paid by the Contractor, on the instructions of the Engineer, and in accordance with the subcontract;
- (b) in respect of labour supplied by the Contractor, the sum, if any, entered in the Bill of Quantities or, if instructed by the Engineer pursuant to paragraph (a) of Sub-Clause 58.2, as may be determined in accordance with Clause 52; and

- (c) in respect of all other charges and profit, a sum being a percentage rate of the actual price paid or due to be paid calculated, where provision has been made in the Bill of Quantities for a rate to be set against the relevant Provisional Sum, at the rate inserted by the Contractor against that item or, where no such provision has been made, at the rate inserted by the Contractor in the Appendix to Tender and repeated where provision for such is made in a special item provided in the Bill of Quantities for such purpose.

59.5 Certification of Payments to Nominated Subcontractors

Before issuing, under Clause 60 any certificate, which includes any payment in respect of work done or goods, materials, Plant or services supplied by any nominated Subcontractor, the Engineer shall be entitled to demand from the Contractor reasonable proof that all payments, less retentions, included in previous certificates in respect of the work or goods, materials, Plant or services of such nominated Subcontractor have been paid or discharged by the Contractor. If the Contractor fails to supply such proof then, unless the Contractor:

- (a) satisfies the Engineer in writing that he has reasonable cause for withholding or refusing to make such payment, and
- (b) produces to the Engineer reasonable proof that he has so informed such nominated Subcontractor in writing, the procuring agency shall be entitled to pay to such nominated Subcontractor direct, upon the certificate of the Engineer, all payments, less retention, provided for in the nominated Subcontract, which the Contractor has failed to make to such nominated Subcontractor and to deduct by way of set-off the amount so paid by the procuring agency from any sums due or to become due from the procuring agency to the Contractor.

Provided that, where the Engineer has certified and the procuring agency has paid direct as aforesaid, the Engineer shall in issuing any further certificate in favour of the Contractor, deduct from the amount thereof the amount so paid, direct as aforesaid, but shall not withhold or delay the issue of the certificate itself when due to be issued under the terms of the Contract.

Certificates and Payment

60.1 Monthly Statements

The Contractor shall submit to the Engineer after the end of each month six copies, each signed by the Contractor's representative approved by the Engineer in accordance with the Sub-Clause 15.1, of a statement, in such form as the Engineer may from time to time prescribe, showing the amounts to which the Contractor considers himself to be entitled up to the end of the month in respect of:

- (a) the value of the Permanent Works executed,
- (b) any other items in the Bill of Quantities including those for Contractor's Equipment, Temporary Works, day works and the like,

- (c) the percentage of the invoice value of listed materials, all as stated in the Appendix to Tender, and Plant delivered by the Contractor on the site for incorporation in the Permanent Works but not incorporated in such works, (d) adjustments under Clause 70, and
- (e) any other sum to which the Contractor may be entitled under the Contract or otherwise.

60.2 Monthly Payments

The Engineer shall, within 28 days of receiving such statement, certify to the procuring agency the amount of payment to the Contractor which he considers due and payable in respect thereof, subject:

- (a) firstly, to the retention of the account calculated by applying the Percentage of Retention stated in the Appendix to Tender, to the amount to which the Contractor is entitled under paragraph (a), (b), (c) and (e) of sub-clause 60.1 until the amount so retained reaches the Limit of Retention Money stated in the Appendix to Tender, and
- (b) secondly, to the deduction, other than pursuant to Clause 47, of any sums which may have become due and payable by the Contractor to the procuring agency.

Provided that the Engineer shall not be bound to certify any payment under this Sub-Clause if the net amount thereof, after all retentions and deductions, would be less than the Minimum Amount of Interim Payment Certificates stated in the Appendix to Tender.

Notwithstanding the terms of this Clause or any other Clause of the Contract no amount will be certified by the Engineer for payment until the performance security, if required under the Contract, has been provided by the Contractor and approved by the procuring agency.

60.3 Payment of Retention Money

- (a) Upon the issue of the Taking-Over Certificate with respect to the whole of the works, one half of the Retention Money, or upon the issue of a Taking-Over Certificate with respect to a Section or part of the Permanent Works only such proportion thereof as the Engineer determines having regard to the relative value of such Section or part of the Permanent Works, shall be certified by the Engineer for payment to the Contractor.
- (b) Upon the expiration of the Defects Liability Period for the works the other half of the Retention Money shall be certified by the Engineer for payment to the Contractor. Provided that, in the event of different Defects Liability Periods having become applicable to different Sections or part of the Permanent Works pursuant to Clause 48, the expression "expiration of the Defects Liability Period" shall, for the purposes of this Sub-Clause, be deemed to mean the expiration of the latest of such periods. Provided also that if at such time, there shall remain to be executed by the Contractor any work instructed, pursuant to Clause 49 and 50, in respect of the works, the Engineer shall be entitled to

withhold certification until completion of such work of so much of the balance of the Retention Money as shall, in the opinion of the Engineer, represent the cost of the work remaining to be executed.

60.4 Correction of Certificates

The Engineer may by any Interim Payment Certificate make any correction or modification in any previous certificate which shall have been issued by him and shall have authority, if any work is not being carried out to his satisfaction, to omit or reduce the value of such work in any Interim Payment Certificate.

60.5 Statement at Completion

Not later than 84 days after the issue of the Taking-Over Certificate in respect of the whole of the works, the Contractor shall submit to the Engineer a Statement at Completion with supporting documents showing in detail, in the form approved by the Engineer:

- (a) the final value of all work done in accordance with the Contract up to the date stated in such Taking-Over Certificate,
- (b) any further sums which the Contractor considers to be due, and
- (c) an estimate of amounts which the Contractor considers will become due to him under the Contract.

The estimated amounts shall be shown separately in such Statement at Completion. The Engineer shall verify payment in accordance with Sub-Clause 60.2.

60.6 Final Statement

Not later than 56 days after the issue of the Defects Liability Certificate pursuant to Sub-Clause 62.1, the Contractor shall submit to the Engineer for consideration a draft final statement with supporting documents showing in detail, in the form approved by the Engineer:

- (a) the value of all work done in accordance with the Contract, and
- (b) any further sums which the Contractor considers to be due to him under the Contract.

If the Engineer disagrees with or cannot verify any part of the draft final statement, the Contractor shall submit such further information as the Engineer may reasonably require and shall make such changes in the draft as may be agreed between them. The Contractor shall then prepare and submit to the Engineer the final statement as agreed (for the purposes of these Conditions referred to as the "Final Statement").

If, following discussions between the Engineer and the Contractor and any changes to the draft final statement which may be agreed between them, it becomes evident that a dispute exists, the Engineer shall deliver to the procuring agency an Interim Payment

Certificate for those parts of the draft final statement, if any, which are not in dispute. The dispute may then be settled in accordance with Clause 67.

60.7 Discharge

Upon submission of the Final Statement, the Contractor shall give to the procuring agency, with a copy to the Engineer, a written discharge confirming that the total of the Final Statement represents full and final settlement of all monies due to the Contractor arising out of or in respect of the Contract. Provided that such discharge shall become effective only after payment due under the Final Payment Certificate issued pursuant to Sub-Clause 60.8 has been made and the performance security referred to in sub-clause 10.1, if any, has been returned to the Contractor.

60.8 Final Payment Certificate

Within 28 days after receipt of the Final Statement, and the written discharge, the Engineer shall issue to the procuring agency (with a copy to the Contractor) a Final Payment Certificate stating:

- (a) the amount which, in the opinion of the Engineer, is finally due under the Contract or otherwise, and
- (b) after giving credit to the procuring agency for all amounts previously paid by the procuring agency and for all sums to which the procuring agency is entitled other than under Clause 47, the balance, if any, due from the procuring agency to the Contractor or from the Contractor to the procuring agency as the case may be.

60.9 Cessation of Procuring Agency's Liability

Procuring agency shall not be liable to the Contractor for any matter or thing arising out of or in connection with the Contract or execution of the works, unless the Contractor shall have included a claim in respect thereof in his Final Statement and (except in respect of matters or things arising after the issue of the Taking-Over Certificate in respect of the whole of the works) in the Statement at Completion referred to in Sub-Clause 60.5.

60.10 Time for Payment

The amount due to the Contractor under any Interim Payment Certificate issued by the Engineer pursuant to this Clause, or to any other term of the Contract, shall, subject to Clause 47, be paid by the procuring agency to the Contractor within 28 days after such Interim Payment Certificate has been delivered to the procuring agency, or, in the case of the Final Payment Certificate referred to in Sub-Clause 60.8, within 56 days, after such Final Payment Certificate has been delivered to the procuring agency. In the event of the failure of the procuring agency to make payment within the times stated, the procuring agency shall pay to the Contractor interest at the rate stated in the Appendix to Tender upon all sums unpaid from the date by which the same should have been paid. The provisions of this Sub-Clause are without prejudice to the Contractor's entitlement under Clause 69 or otherwise.

61.1 Approval only by Defects Liability Certificate

Only the Defects Liability Certificate, referred to in Clause 62, shall be deemed to constitute approval of the works.

62.1 Defects Liability Certificate

The Contract shall not be considered as completed until a Defects Liability Certificate shall have been signed by the Engineer and delivered to the procuring agency, with a copy to the Contractor, stating the date on which the Contractor shall have completed his obligations to execute and complete the works and remedy any defects therein to the Engineer's satisfaction. The Defects Liability Certificate shall be given by the Engineer within 28 days after the expiration of the Defects Liability Period, or, if different defects liability periods shall become applicable to different Sections or parts of the Permanent works, the expiration of the latest such period, or as soon thereafter as any works instructed, pursuant to Clause 49 and 50, have been completed to the satisfaction of the Engineer. Provided that the issue of the Defects Liability Certificate shall not be a condition precedent to payment to the Contractor of the second portion of the Retention Money in accordance with the conditions set out in Sub-Clause 60.3.

62.2 Unfulfilled Obligations

Notwithstanding the issue of the Defects Liability Certificate the Contractor and the procuring agency shall remain liable for the fulfillment of any obligation incurred under the provisions of the Contract prior to the issue of the Defects Liability Certificate which remains unperformed at the time of such Defects Liability Certificate is issued and, for the purposes of determining the nature and extent of any such obligation, the Contract shall be deemed to remain in force between the parties to the Contract.

Remedies

63.1 Default of Contractor

If the Contractor is deemed by law unable to pay his debts as they fall due, or enters into voluntary or involuntary bankruptcy, liquidation or dissolution (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), or becomes insolvent, or makes an arrangement with, or assignment in favour of, his creditors, or agrees to carry out the Contract under a committee of inspection of his creditors, or if a receiver, administrator, trustee or liquidator is appointed over any substantial part of his assets, or if, under any law or regulation relating to reorganization, arrangement or readjustment of debts, proceedings are commenced against the Contractor or resolutions passed in connection with dissolution or liquidation or if any steps are taken to enforce any security interest over a substantial part of the assets of the Contractor, or if any act is done or event occurs with respect to the Contractor or his assets which, under any applicable law has a substantially similar effect to any of the foregoing acts or events, or if the Contractor has contravened Sub-Clause 3.1, or has an execution levied on his goods, or Contract, if the Engineer certifies to the procuring agency, with a copy to the Contractor, that, in his opinion, the Contractor:

- (a) has repudiated the Contract, or

- (b) without reasonable excuse has failed
- (i) to commence the works in accordance with Sub-Clause 41.1,
- (ii) to proceed with the works, or any Section thereof, within 28 days after receiving notice pursuant to Sub-Clause 46.1,
- (c) has failed to comply with a notice issued pursuant to Sub-Clause 37.4 or an instruction issued pursuant to Sub-Clause 39.1 within 28 days after having received it
- (d) despite previous warning from the Engineer, in writing, is otherwise persistently or flagrantly neglecting to comply with any of his obligations under the Contract, or
- (e) has contravened Sub-Clause 4.1, then the procuring agency may, after giving 14 days' notice to the Contractor, enter upon the site and the works and terminate the employment of the Contractor without thereby releasing the Contractor from any of his obligations or liabilities under the Contract, or affecting the rights and authorities conferred on the procuring agency or the Engineer by the Contract, and may himself complete the works or may employ any other contractor to complete the works. Procuring agency or such other contractor may use for such completion so much of the Contractor's Equipment, Temporary Works and materials as he or they may think proper.

63.2 Valuation at Date of Termination

The Engineer shall, as soon as may be practicable after any such entry and termination by the procuring agency, fix and determine ex parte, or by or after reference to the parties or after such investigation or enquiries as he may think fit to make or institute, and shall certify:

- (a) what amount (if any) had, at the time of such entry and termination, been reasonably earned by or would reasonably accrue to the Contractor in respect of work then actually done by him under the Contract, and
- (b) the value of any of the said unused or partially used materials, any Contractor's Equipment and any Temporary Works.

63.3 Payment after Termination

If the procuring agency terminates the Contractor's employment under this Clause, he shall not be liable to pay to the Contractor any further amount (including damages) in respect of the Contract until the expiration of the Defects Liability Period and thereafter until the costs of execution, completion and remedying of any defects, damages for delay in completion (if any) and all other expenses incurred by the procuring agency have been ascertained and the amount thereof certified by the Engineer. The Contractor shall then be entitled to receive only such sum (if any) as the Engineer may certify would have been payable to him upon due completion by him after deducting the said amount. If such amount exceeds the sum which would have been payable to the Contractor on due completion by him, then the Contractor shall,

upon demand, pay to the procuring agency the amount of such excess and it shall be deemed a debt due by the Contractor to the procuring agency and shall be recoverable accordingly.

63.4 Assignment of Benefit of Agreement

Unless prohibited by law, the Contractor shall, if so instructed by the Engineer within 14 days of such entry and termination referred to in sub-clause 63.1, assign to the procuring agency the benefit of any agreement for the supply of any goods or materials or services and/or for the execution of any work for the purposes of the Contract, which the Contractor may have entered into.

64.1 Urgent Remedial Work

If, by reason of any accident, or failure, or other event occurring to, in, or in connection with the works, or any part thereof, either during the execution of the works, or during the Defects Liability Period, any remedial or other work is, in the opinion of the Engineer, urgently necessary for the safety of the works and the Contractor is unable or unwilling at once to do such work, the procuring agency shall be entitled to employ and pay other persons to carry out such work as the Engineer may consider necessary. If the work or repair so done by the procuring agency is work which, in the opinion of the Engineer, the Contractor was liable to do at his own cost under the Contract, then all costs consequent thereon or incidental thereto shall, after due consultation with the procuring agency and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the procuring agency, and May be deducted by the procuring agency from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the procuring agency. Provided that the Engineer shall, as soon after the occurrence of any such emergency as may be reasonably practicable, notify the Contractor thereof.

Special Risks

65.1 No Liability for Special Risks

The Contractor shall be under no liability whatsoever in consequence of any of the special risks referred to in sub-clause 65.2, whether by way of indemnity or otherwise, for or in respect of:

- (a) destruction of or damage to the works, save to work condemned under the provisions of Clause 39 prior to the occurrence of any of the said special risks,
- (b) destruction of or damage to property, whether of the procuring agency or third parties, or
- (c) injury or loss of life.

65.2 Special Risks

The Special Risks are:

- (a) the risks defined under paragraphs (a), (c), (d) and (e) of sub-clause 20.4, and

- (b) the risks defined under paragraph (b) of sub-clause 20.4 insofar as these relate to the country in which the works are to be executed.

65.3 Damage to Works by Special Risks

If the works or any materials or Plant on or near or in transit to the site, or any of the Contractor's Equipment, sustain destruction or damage by reason of any of the said special risks, the Contractor shall be entitled to payment in accordance with the Contract for any Permanent Works duly executed and for any materials or Plant so destroyed or damaged and, so far as may be required by the Engineer or as may be necessary for the completion of the works, to payment for:

- (a) rectifying any such destruction or damage to the works, and
- (b) replacing or rectifying such materials or Contractor's Equipment, and the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 (which shall in the case of the cost of replacement of Contractor's Equipment include the fair market value thereof as determined by the Engineer) and shall notify the Contractor accordingly, with a copy to the procuring agency.

65.4 Projectile, Missile

Destruction, damage, injury or loss of life caused by the explosion or impact, whenever and wherever occurring, of any mine, bomb, shell, grenade, or other projectile, missile, munitions, or explosive of war, shall be deemed to be a consequence of the said special risks.

65.5 Increased Costs arising from Special Risks

Save to the extent that the Contractor is entitled to payment under any other provision of the Contract, the procuring agency shall repay to the Contractor any costs of the execution of the Work (other than such as may be attributable to the cost of reconstructing work condemned under the provisions of Clause 39 prior to the occurrence of any special risk) which are howsoever attributable to or consequent on or the result of or in any way whatsoever connected with the said special risks, subject however to the provisions in this Clause hereinafter contained in regard to outbreak of war, but the Contractor shall, as soon as any such cost comes to his knowledge, forthwith notify the Engineer thereof. The Engineer shall, after due consultation with the procuring agency and the Contractor, determine the amount of the Contractor's costs in respect thereof which shall be added to the Contract Price and shall notify the Contractor accordingly, with a copy to the procuring agency.

65.6 Outbreak of War

If, during the currency of the Contract, there is an outbreak of war, whether war is declared or not, in any part of the world which, whether financially or otherwise, materially affects the execution of the works, the Contractor shall, unless and until the Contract is terminated under the provisions of this Clause, continue to use his best endeavor to complete the execution of the works. Provided that the procuring agency shall be entitled, at any time after such outbreak of war, to terminate the Contract by

giving notice to the Contractor and, upon such notice being given, the Contract shall, except as to the rights of the parties under this clause and Clause 67, terminate, but without prejudice to the rights of either party in respect of any antecedent breach thereof.

65.7 Removal of Contractor's Equipment on Termination

If the Contract is terminated under the provisions of sub-clause 65.6, the Contractor shall, with all reasonable dispatch, remove from the site all Contractor's Equipment and shall give similar facilities to his Subcontractors to do so.

65.8 Payment if Contract Terminated

If the Contract is terminated as aforesaid, the Contractor shall be paid by the procuring agency, insofar as such amounts or items have not already been covered by payments on account made to the Contractor, for all work executed prior to the date of termination at the rates and prices provided in the Contract and in addition:

- (a) the amounts payable in respect of any preliminary items referred to in the Bill of Quantities, so far as the work or service comprised therein has been carried out or performed, and a proper portion of any such items which have been partially carried out or performed;
- (b) the cost of materials, plant or goods reasonably ordered for the works which have been delivered to the Contractor or of which the Contractor is legally liable to accept delivery, such materials, plant or goods becoming the property of the procuring agency upon such payments being made by the procuring agency;
- (c) a sum being the amount of any expenditure reasonably incurred by the Contractor in the expectation of completing the whole of the works insofar as such expenditure has not been covered by any other payments referred to in this Sub-Clause;
- (d) any additional sum payable under the provisions of sub-clauses 65.3 and 65.5;
- (e) such proportion of the cost as may be reasonable, taking into account payments made or to be made for work executed, of removal of Contractor's Equipment under sub-clause 65.7 and, if required by the Contractor, return thereof to the Contractor's main plant yard in his country of registration or to other destination, at no greater cost; and
- (f) the reasonable cost of repatriation of all the Contractor's staff and workmen employed on or in connection with the works at the time of such termination. Provided that against any payment due from the procuring agency under this Sub- Clause, the procuring agency shall be entitled to be credited with any outstanding balances due from the Contractor for advances in respect of Contractor's Equipment, materials and plant and any other sums which, at the date of termination, were recoverable by the procuring agency from the Contractor under the terms of Contract.

Any sums payable under this Sub-Clause shall, after due consultation with the procuring agency and the Contractor, be determined by the Engineer who shall notify the Contractor accordingly, with a copy to the procuring agency.

Release from Performance

66.1 Payment in Event of Release from Performance

If any circumstance outside the control of both parties arises after the issue of the Letter of Acceptance which renders it impossible or unlawful for either party to fulfill his or their contractual obligations, or under the law governing the Contract the parties are released from further performance, then the parties shall be discharged from the Contract, except as to their rights under this Clause and Clause 67 and without prejudice to the rights of either party in respect of any antecedent breach of the Contract, and the sum payable by the procuring agency to the Contractor in respect of the work executed shall be the same as that which would have been payable under Clause 65 if the Contract had been terminated under the provisions of Clause 65.

Settlement of Disputes

67.1 Engineer's Decision

If a dispute of any kind whatsoever arises between the procuring agency and the Contractor in connection with, or arising out of, the contract or the execution of the works, whether during the execution of the works or after their completion and whether before or after repudiation or other termination of the contract, including any dispute as to any opinion, instruction, determination, certificate or valuation of the Engineer, the matter in dispute shall, in the first place, be referred in writing to the Engineer, with a copy to the other party. Such reference shall state that it is made pursuant to this Clause. No later than the eighty-fourth day after the day on which he received such reference the Engineer shall give notice of his decision to the procuring agency and the Contractor. Such decision shall state that it is made pursuant to this Clause.

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

If either the procuring agency or the Contractor be dissatisfied with any decision of the Engineer, or if the Engineer fails to give notice of his decision on or before the eighty-fourth day on which he received the reference, then either the procuring agency or the Contractor may, on or before the seventieth day after the day on which he received notice of such decision, or on or before the seventieth day after the day on which the said period of 84 days expired, as the case may be, give notice to the other party, with a copy for information to the Engineer, of his intention to commence arbitration, as hereinafter provided, as to the matter in dispute. Such notice shall establish the entitlement of the party giving the same to commence arbitration, as hereinafter provided, as to such dispute and, subject to Sub-Clause 67.4, no arbitration in respect thereof may be commenced unless such notice is given.

If the Engineer has given notice of his decision as to a matter in dispute to the procuring agency and the Contractor and no notice of intention to commence arbitration as to such dispute has been given by either the procuring agency or the Contractor on or before the seventieth day after the day on which the parties received notice as to such decision from the Engineer, the said decision shall become final and binding upon the procuring agency and the Contractor.

67.2 Amicable Settlement

Where notice of intention to commence arbitration as to a dispute has been given in accordance with sub-clause 67.1, the parties shall attempt to settle such dispute amicably before the commencement of arbitration. Provided that, unless the parties otherwise agree, arbitration may be commenced on or after the fifty-sixth day after the day on which notice of intention to commence arbitration of such dispute was given, even if no attempt at amicable settlement thereof has been made.

67.3 Arbitration

Any dispute in respect of which:

- (a) the decision, if any, of the Engineer has not become final and binding pursuant to sub-clause 67.1, and
- (b) amicable settlement has not been reached within the period stated in subclause 67.2, shall be finally settled, unless otherwise specified in the Contract, under the Rules of Conciliation and Arbitration of the International Chamber of Commerce, by one or more arbitrators appointed under such Rules. The said arbitrator/s shall have full power to open up, review and revise any decision, opinion, instruction, determination, certificate or valuation of the Engineer related to the dispute.

Neither party shall be limited in the proceedings before such arbitrator(s) to the evidence or arguments put before the Engineer for the purpose of obtaining his said decision pursuant to sub-clause 67.1. No such decision shall disqualify the Engineer from being called as a witness and giving evidence before the arbitrator/s on any matter whatsoever relevant to the dispute.

Arbitration may be commenced prior to or after completion of the works, provided that the obligations of the procuring agency, the Engineer and the contractor shall not be altered by reason of the arbitration being conducted during the progress of the works.

67.4 Failure to Comply with Engineer's Decision

Where neither the procuring agency nor the Contractor has given notice of intention to commence arbitration of a dispute within the period stated in Sub-Clause 67.1 and the related decision has become final and binding, either party may, if the other party fails to comply with such decision, and without prejudice to any other rights it may have, refer the failure to arbitration in accordance with sub-clause 67.3. The provisions of sub-clause 67.1 and 67.2 shall not apply to any such reference.

Notices

68.1 Notice to Contractor

All certificates, notices or instructions to be given to the Contractor by the procuring agency or the Engineer under the terms of the Contract shall be sent by post, cable, telex or facsimile transmission to or left at the Contractor's principal place of business or such other address as the Contractor shall nominate for that purpose.

68.2 Notice to Procuring Agency and Engineer

Any notice to be given to the procuring agency or to the Engineer under the terms of the Contract shall be sent by post, cable, telex or facsimile transmission to or left at the respective addresses nominated for that purpose in Part II of these Conditions.

68.3 Change of Address

Either party may change a nominated address to another address in the country where the works are being executed by prior notice to the other party, with a copy to the Engineer, and the Engineer may do so by prior notice to both parties.

Default of Procuring Agency

69.1 Default of Procuring Agency

In the event of the procuring agency:

- (a) failing to pay to the Contractor the amount due under any certificate of the Engineer within 28 days after the expiry of the time stated in Sub-Clause 60.10 within which payment is to be made, subject to any deduction that the procuring agency is entitled to make under the Contract,
- (b) interfering with or obstructing or refusing any required approval to the issue of any such certificate,
- (c) becoming bankrupt or, being a company, going into liquidation, other than for the purpose of a scheme of reconstruction or amalgamation, or
- (d) giving notice to the Contractor that for economic reasons it is impossible for him to continue to meet his contractual obligations, the Contractor shall be entitled to terminate his employment under the Contract by giving notice to the procuring agency, with a copy to the Engineer. Such termination shall take effect 14 days after the giving of the notice.

69.2 Removal of Contractor's Equipment

Upon the expiry of the 14 days' notice referred to in sub-clause 69.1, the Contractor shall, notwithstanding the provisions of sub-clause 54.1, with all reasonable dispatch, remove from the site all Contractor's Equipment brought by him thereon.

69.3 Payment on Termination

In the event of such termination the procuring agency shall be under the same obligations to the Contractor in regard to payment as if the Contract had been terminated under the provisions of Clause 65, but, in addition to the payments specified in sub-clause 65.8, the procuring agency shall pay to the Contractor the amount of any loss or damage to the Contractor arising out of or in connection with or by consequence of such termination.

69.4 Contractor's Entitlement to Suspend Work

Without prejudice to the Contractor's entitlement to interest under Sub-Clause 60.10 and to terminate under sub-clause 69.1, the Contractor may, if the procuring agency fails to pay the Contractor the amount due under any certificate of the Engineer within 28 days after the expiry of the time stated in sub-clause 60.10 within which payment is to be made, subject to any deduction that the procuring agency is entitled to make under the Contract, after giving 28 days' prior notice to the procuring agency, with a copy to the Engineer, suspend work or reduce the rate of work.

If the Contractor suspends work or reduces the rate of work in accordance with the provisions of this sub-clause and thereby suffers delay or incurs costs the Engineer shall, after due consultation with the procuring agency and the Contractor, determine:

- (a) any extension of time to which the Contractor is entitled under Clause 44, and
- (b) the amount of such costs, which shall be added to the Contract Price, and shall notify the Contractor accordingly, with a copy to the procuring agency.

69.5 Resumption of Work

Where the Contractor suspends work or reduces the rate of work, having given notice in accordance with sub-clause 69.4, and the procuring agency subsequently pays the amount due, including interest pursuant to sub-clause 60.10, the Contractor's entitlement under sub-clause 69.1 shall, if notice of termination has not been given, lapse and the Contractor shall resume normal working as soon as is reasonably possible.

Changes in Cost and Legislation

70.1 Increase or Decrease of Cost

There shall be added to or deducted from the Contract Price such sums in respect of rise or fall in the cost of labour and/or materials or any other matters affecting the cost of the execution of the works as may be determined in accordance with part II of these Conditions.

70.2 Subsequent Legislation

If, after the date 28 days prior to the latest date for submission of tenders for the Contract there occur in the country in which the works are being or are to be executed changes to any National or State Statute, Ordinance, Decree or other Law or any regulation or bye-law of any local or other duly constituted authority, or the

introduction of any such State Statute, Ordinance, Decree, Law, regulation or bye-law which causes additional or reduced cost to the Contractor, other than under sub-clause 70.1, in the execution of the Contract, such additional or reduced cost shall, after due consultation with the procuring agency and the Contractor, be determined by the Engineer and shall be added to or deducted from the Contract Price and the Engineer shall notify the Contractor accordingly, with a copy to the procuring agency.

Currency and Rates of Exchange

71.1 Currency Restrictions

If, after the date 28 days prior to the latest date for submission of tenders for the Contract, the Government or authorized agency of the Government of the country in which the works are being or are to be executed imposes currency restrictions and/or transfer of currency restrictions in relation to the currency or currencies in which the Contract Price is to be paid, the procuring agency shall reimburse any loss or damage to the Contractor arising there from, without prejudice to the right of the Contractor to exercise any other rights or remedies to which he is entitled in such event.

72.1 Rates of Exchange

Where the Contract provides for payment in whole or in part to be made to the Contractor in foreign currency or currencies, such payment shall not be subject to variations in the rate or rates of exchange between such specified foreign currency or currencies and the currency of the country in which the works are to be executed.

72.2 Currency Proportions

Where the procuring agency has required the Tender to be expressed in a single currency but with payment to be made in more than one currency and the Contractor has stated the proportions or amounts of other currency or currencies in which he requires payment to be made, the rate or rates of exchange applicable for calculating the payment of such proportions or amounts shall, unless otherwise stated in Part II of these Conditions, be those prevailing, as determined by the Central Bank of the country in which the works are to be executed, on the date 28 days prior to the latest date for the submission of tenders for the Contract, as has been notified to the Contractor by the procuring agency prior to the submission of tenders or as provided for in the Tender.

72.3 Currencies of Payment for Provisional Sums

Where the Contract provides for payment in more than one currency, the proportions or amounts to be paid in foreign currencies in respect of Provisional Sums shall be determined in accordance with the principles set forth in sub-clauses 72.1 and 72.2 as and when these sums are utilized in whole or in part in accordance with the provisions of Clauses 58 and 59.

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PART II - SPECIAL CONDITIONS OF CONTRACT

1.1 Definitions

- (i) Procuring agency is

Procurement Manager

Establishment of Environmental Engineering Department at

QUEST, Sakrand Road, Nawabshah:

Tel: 0224-937-0381-5 (5 lines); Fax: 0224-937-0367; 0224-937-0357

Attention: Engr. Dr. Abdul Sattar Saand, Procurement Manager

Mobile: 0331-388-2896

- (ii) The Engineer is

Zaheeruddin Consultants (Pvt.) Ltd

5-A Sindhi Muslim Housing Society,

Karachi – 74400. (Pakistan)

Telephone: +92-21-3455-0321

Facsimile: +92-21-3455-5251

Email Address: zclghi@gmail.com

or any other competent person appointed by the procuring agency, and notified to the contractor, to act in replacement of the Engineer. Provided always that except in cases of professional misconduct, the outgoing Engineers is to formulate his certifications/recommendations in relation to all outstanding matters, disputes and claims relating to the execution of the works during his tenure.

The following paragraph is added:

- (b) (ix) “Programme” means the programme to be submitted by the contractor in accordance with Sub-Clause 14.1 and any approved revisions thereto.

- (e) (i) The text is deleted and substituted with the following:

“Contract Price” means the sum stated in the Letter of Acceptance as payable to the contractor for the execution and completion of the works subject to such additions thereto or deductions there from as may be made and remedying of any defects therein in accordance with the provisions of the contract.

2.1 Engineer's Duties and Authority

With reference to Sub-Clause 2.1(b), the following provisions shall also apply;

The Engineer shall obtain the specific approval of the procuring agency before carrying out his duties in accordance with the following Clauses

- (a) Consenting to the sub-letting of any part of the works under Sub-Clause 4.1 “Subcontracting”.
- (b) Certifying additional cost determined under Sub-Clause 12.2 “Not Foreseeable Physical Obstructions or Conditions”.
- (c) Any action under Clause 10 “Performance Security” and Clauses 21,23,24 & 25 “Insurance” of sorts.
- (d) Any action under Clause 40 “Suspension”.
- (e) Any action under Clause 44 “Extension of Time for Completion”.
- (f) Any action under Clause 47 “Liquidated Damages for Delay” or Payment of Bonus for Early Completion of works (PCC Sub-Clause 47.3).
- (g) Issuance of “Taking Over Certificate” under Clause 48.
- (h) Issuing a Variation Order under Clause 51, except:
 - i) in an emergency* situation, as stated here below, or
 - ii) if such variation would increase the Contract Price by less than the amount stated in the Appendix-A to Bid.
- (i) Fixing rates or prices under Clause 52.
- (j) Extra payment as a result of Contractor’s claims under Clause 53.
- (k) Release of Retention Money to the Contractor under Sub-Clause 60.3 “Payment of Retention Money”.
- (l) Issuance of “Final Payment Certificate” under Sub-Clause 60.8.
- (m) Issuance of “Defect Liability Certificate” under Sub-Clause 62.1.
- (n) Any change in the ratios of Contract currency proportions and payments thereof under Clause 72 “Currency and Rate of Exchange”.

(Note: Procuring agency may further vary according to need of the project)

* (If in the opinion of the Engineer an emergency occurs affecting the safety of life or of the works or of adjoining property, the Engineer may, without relieving the Contractor of any of his duties and responsibilities 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 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 52 and shall notify the Contractor accordingly, with a copy to the procuring agency.)

2.2 Engineer's Representative

The following paragraph is added:

Procuring agency shall ensure that the Engineer's Representative is a professional engineer as defined in the Pakistan Engineering Council Act 1975 (V of 1976) The following Sub-Clauses 2.7 and 2.8 are added

2.7 Engineer Not Liable

Approval, reviews and inspection by the Engineer of any part of the works does not relieve the contractor from his sole responsibility and liability for the supply of materials, plant and equipment for construction of the works and their parts in accordance with the Contract and neither the Engineer's authority to act nor any decision made by him in good faith as provided for under the Contract whether to exercise or not to exercise such authority shall give rise to any duty or responsibility of the Engineer to the Contractor, any Subcontractor, any of their representatives or employees or any other person performing any portion of the works.

2.8 Replacement of the Engineer

If the procuring agency intends to replace the Engineer, the procuring agency shall, not less than 14 days before the intended date of replacement, give notice to the contractor, of the name, address and relevant experience of the intended replacement Engineer. Procuring agency shall not replace the Engineer with a person against whom the contractor raises reasonable objection by notice to the procuring agency, with supporting particulars.

5.1 Language(s) and Law

- (a) The Contract Documents, shall be drawn up in the English language.
- (b) The Contract shall be subject to the Laws of Islamic Republic of Pakistan.

5.2 Priority of Contract Documents

The documents listed at (1) to (6) of the Sub-Clause are deleted and substituted with the following:

- (a) The Contract Agreement (if completed);
- (b) The Letter of Acceptance;
- (c) The Completed Form of Bid;
- (d) Special Stipulations (Appendix-A to Bid);
- (e) The Special Conditions of Contract – Part II;
- (f) The General Conditions – Part I;

- (g) The Priced Bill of Quantities (Appendix-D to Bid);
- (h) The Completed Appendices to Bid (B, C, E to L);
- (i) The Drawings;
- (j) The Specifications; and
- (k) _____(any other).

In case of discrepancies between drawings, those of larger scale shall govern unless they are superseded by a drawing of later date regardless of scale. All Drawings and Specifications shall be interpreted in conformity with the contract and these Conditions. Addendum, if any, shall be deemed to have been incorporated at the appropriate places in the documents forming the contract.

The following Sub-Clauses 6.6 and 6.7 are added:

6.6 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 be construed as a complete check but will indicate only that the general method of construction and detailing is satisfactory and that the Engineer's review or approval shall not relieve the contractor of any of his responsibilities under the contract.

6.7 As-Built Drawings

At the completion of the works under the contract, the contractor shall furnish to the Engineer 6 copies and one reproducible of all drawings amended to conform to the works as built. The price of such Drawings shall be deemed to be included in the Contract Price.

10.1 Performance Security

The text is deleted and substituted with the following:

The contractor shall provide Performance Security to the procuring agency in the prescribed form. The Performance Security shall be 5% of the Contract Price stated in the Letter of Acceptance.

Besides obtaining 5% as Performance Security, the Security Deposit at rate of 5% will also be deducted from running bills, thus amount equal to 10% of the Contract Price is obtained from contractor i.e. 5% as performance security and 5% security deposit as retention money. Deductions from interim/running bills will be made from successful bidder after the bidder has furnished the required performance security and signed the contract agreement;

The cost of complying with requirements of this Sub-Clause (performance security) shall be borne by the contractor.

The following Sub-Clause 10.4 is added:

10.4 Performance Security Binding on Variations and Changes

The Performance Security shall be binding irrespective of changes in the quantities or variations in the works or extensions in Time for Completion of the works which are granted or agreed upon under the provisions of the contract.

14.1 Programme to be Submitted

The programme shall be submitted within 42 days from the date of receipt of Letter of Acceptance, which shall be in the form of:

- a) Bar Chart identifying the critical activities.
- b) Critical Path Method (CPM) identifying the critical path/activities.

14.3 Cash Flow Estimate to be Submitted

The detailed Cash Flow Estimate shall be submitted within 21 days from the date of receipt of Letter of Acceptance

The following Sub-Clause 14.5 is added:

14.5 Detailed Programme and Monthly Progress Report

- a) For purposes of Sub-Clause 14.1, the contractor shall submit to the Engineer detailed programme for the following:
 - (i) Execution of Works;
 - (ii) Labour Employment;
 - (iii) Local Material Procurement;
 - (iv) Material Imports, if any; and
 - (v) Other details as required by the Engineer.
- (b) During the period of the contract, the contractor shall submit to the Engineer not later than the 8th day of the following month, 10 copies each of Monthly Progress Reports covering:
 - (i) A Construction Schedule indicating the monthly progress in percentage;
 - (ii) Description of all work carried out since the last report;
 - (iii) Description of the work planned for the next 56 days sufficiently detailed to enable the Engineer to determine his programme of inspection and testing;
 - (iv) Monthly summary of daily job record;
 - (v) Photographs to illustrate progress; and

- (vi) Information about problems and difficulties encountered, if any, and proposals to overcome the same.
- (c) During the period of the contract, the contractor shall keep a daily record of the work progress, which shall be made available to the Engineer as and when requested. The daily record shall include particulars of weather conditions, number of men working, deliveries of materials, quantity, location and assignment of contractor's equipment.

The following Sub-Clauses 15.2 and 15.3 are added:

15.2 Language Ability of Contractor's Representative

The contractor's authorized representative shall be fluent in the English language. Alternately an interpreter with ability of English language shall be provided by the contractor on full time basis.

15.3 Contractor's Representative

The contractor's authorised representative and his other professional engineers working at site shall register themselves with the Pakistan Engineering Council.

The contractor's authorised representative at site shall be authorised to exercise adequate administrative and financial powers on behalf of the contractor so as to achieve completion of the works as per the contract.

The following sub-clauses 16.3 and 16.4 are added in (GCC):

16.3 Language Ability of Superintending Staff of Contractor

A reasonable proportion of the contractor's superintending staff shall have a working knowledge of the English language. If the contractor's superintending staffs is not fluent in English language, the contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Engineer.

16.4 Employment of Local Personnel

The contractor is encouraged, to the extent practicable and reasonable, to employ staff and labour from sources within Pakistan.

The following sub-clauses 19.3 and 19.4 are added in(GCC):

19.3 Safety Precautions

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 make, maintain and submit reports to the Engineer concerning safety, health and welfare of persons and damage to property, as the Engineer may from time to time prescribe.

19.4 Work at Night

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's Representative.

20.4 Procuring Agency's Risks

Procuring agency's risks are:

Delete the text and substitute with the following:

- (a) insofar as they directly affect the execution of the works in Sindh Province:
 - (i) war and hostilities (whether war be declared or not), invasion, act of foreign enemies,
 - (ii) rebellion, revolution, insurrection, or military or usurped power, or civil war,
 - (iii) ionizing radiations, or contamination by radioactivity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radioactive toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof,
 - (iv) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds,
 - (v) riot, commotion or disorder, unless solely restricted to the employees of the contractor or of his subcontractors and arising from the conduct of the works;
- (b) loss or damage due to the use or occupation by the procuring agency of any section or part of the permanent works, except as may be provided for in the contract;
- (c) loss or damage to the extent that it is due to the design of the works, other than any part of the design provided by the contractor or for which the contractor is responsible; and
- (d) any operation of the forces of nature (insofar as it occurs on the site) which an experienced contractor:
 - (i) could not have reasonably foreseen, or

- (ii) could reasonably have foreseen, but against which he could not reasonably have taken at least one of the following measures:
 - a. prevents loss or damage to physical property from occurring by taking appropriate measures, or

21.1 Insurance of Works and Contractor's Equipment

The Contractor shall, without limiting his or the Employer's obligations and responsibilities under Clause 20, insure:

- (a) The Works, together with materials and Plant for incorporation therein, to the full replacement cost (the term "cost" in this context shall include profit).
- (b) An additional sum of 15 per cent of such replacement cost, or as may be specified in Part II of these Conditions, to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature, and
- (c) The Contractor's Equipment and other things brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.

21.2 Scope of Cover

The insurance in paragraphs (a) and (b) of Sub-Clause 21.1 shall be in the joint names of the Contractor and the Employer and shall cover:

- (a) The Employer and the Contractor against all loss or damage from whatsoever cause arising, other than as provided in Sub-Clause 21.4, from the start of work at the Site until the date of issue of the relevant Taking-Over Certificate in respect of the Works or any Section or part thereof as the case may be, and
- (b) The Contractor for his liability:
 - (i) During the Defects Liability Period for loss or damage arising from a cause occurring prior to the commencement of the Defects Liability Periods, and
 - (ii) For loss or damage occasioned by the Contractor in the course of any operations carried out by him for the purpose of complying with his obligations under Clauses 49 and 50.

21.3 Responsibility for Amounts not Recovered

Any amounts not insured or not recovered from the insurers shall be borne by the Employer or the Contractor in accordance with their responsibilities under Clause 20.

21.4 Exclusions

The text is deleted and substituted with the following:

There shall be no obligation for the insurances in Sub-Clause 21.1 to include loss or damage caused by the risks listed under sub-clause 20.4 paras (a) (i) to (iv).

21.5 Exclusions

There shall be no obligation for the insurances in Sub-Clause 21.1 to include loss or damage caused by:

- (a) War, hostilities (where war be declared or not), invasion, act of foreign enemies,
- (b) Rebellion, revolution, insurrection, or military or usurped power, or civil war,
- (c) Ionizing, radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof, or
- (d) Pressure waves caused by aircraft or other aerial devices traveling at sonic or supersonic speeds.

21.6 Damage to Persons and Property

The Contractor shall, except if and so far as the Contract provides otherwise, indemnify the Employer against all losses and claims in respect of:

- (a) Death of or injury to any person, or
- (b) Loss of or damage to any property (other than the Works), which may arise out of or in consequence of the execution and completion of the Works and the remedying of any defects therein, and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, subject to the exceptions defined in Sub-Clause 22.2.

21.7 Exceptions

The "exceptions" referred to in Sub-Clause 22.1 are:

- (a) The permanent use or occupation of land by the Works, or any part thereof,
- (b) The right of the Employer to execute the Works, or any part thereof, on, over, under, is or through any land,
- (c) Damage to property which is the unavoidable result of the execution and completion of the Works, or the remedying of any defects therein, in accordance with the Contract, and
- (d) Death of or injury to persons or loss of or damage to property resulting from any act or neglect of the Employer, his agents servants or other contractors, not being employed by the Contractor, or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or, where the injury or damage was contributed to by the Contractor, his servants or agents, such part of the said injury or damage as may be just and equitable having regard to the extent of the responsibility of the Employer, his servants or agents or other contractors for the injury or damage.

21.8 Indemnity by Employer

The Employer shall indemnify the Contractor against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the exceptions defined in Sub-Clause 22.2

21.9 Third Party Insurance (including Employer's Property)

The Contractor shall, without limiting his or the Employer's obligation and responsibilities under Clause 22, insure, in the joint names of the Contractor and the Employer, against liabilities for death of or injury to any person (other than as provided in Clause 24) or loss of or damage to any property (other than the Works) arising out of the performance of the Contract, other than the exceptions defined in paragraphs (a), (b) and (c) of Sub-Clause 22.2.

21.10 Minimum Amount of Insurance

Such insurance shall be for at least the amount stated in the Appendix to Tender.

21.11 Cross Liabilities

The insurance policy shall include a cross liability clause such that the insurance shall apply to the Contractor and to the Employer as separate insured.

21.12 Accident or Injury to Workmen-Liability for

The Employer shall not be liable for or in respect of any damages or compensation payable to any workman or other person in the employment of the Contractor or any Subcontractor, other than death or injury resulting from any act or default of the Employer, his agents or servants. The Contractor shall indemnify and keep indemnified the Employer against all such damages and compensation, other than those for which the Employer is liable as aforesaid, and against all claims, proceedings, damages, costs, charges, and expenses whatsoever in respect thereof or in relation thereto.

21.13 Accident or injury to Workmen - Insurance Against

The Contractor shall insure against such liability and shall continue such insurance during the whole of the time that any persons are employed by him on the Works. Provided that, in respect of any persons employed by any Subcontractor, the Contractor's obligations to insure as aforesaid under the Sub-Clause shall be satisfied if the Subcontractor shall have insured against the liability in respect of such persons in such manner that the Employer is indemnified under the policy, but the Contractor shall require such Subcontractor to produce to the Employer, when required, such policy of insurance and the receipt for the payment of the current premium.

21.14 Evidence and Terms of Insurances

The Contractor shall provide evidence to the Employer prior to the start of work at the Site that the insurances required under the Contract have been effected and shall,

within 14 days of the Commencement Date, provide the insurance policies to the Employer. When providing such evidence and such policies to the Employer, the Contractor shall notify the Engineer of so doing. Such insurance policies shall be consistent with the general terms agreed prior to the issue of the Letter of Acceptance. The Contractor shall affect all insurances for which he is responsible with insurers and in terms approved by the Employer.

21.15 Adequacy of Insurances

The Contractor shall notify the insurers of changes in the nature, extent or programme for the execution of the Works and ensure the adequacy of the insurances at all times in accordance with the terms of the Contract and shall, when required, produce to the Employer the insurance policies in force and the receipts for payment of the current premiums.

21.16 Remedy on Contractor's Failure to Insure

If the Contractor fails to effect and keep in force any of the insurances required under the Contract, or fails to provide the policies to the Employer within the period required by Sub-Clause 25.1, then and in any such case the Employer may effect and keep in force any such insurances and pay any premium as may be necessary for that purpose and from time to time deduct the amount so paid from any monies due or to become due to the Contractor, or recover the same as a debt due from the Contractor.

21.17 Compliance with Policy Conditions

In the event that the Contractor or the Employer fails to comply with conditions imposed by the insurance policies affected pursuant to the Contract, each shall indemnify the other against all losses and claims arising from such failure.

21.18 Compliance with Statutes, Regulations

The Contractor shall conform in all respects, including by the giving of all notices and the paying of all fees, with the provisions of:

- (a) any National or State Statute, Ordinance, or other Law, or any regulation, or bye-law of any local or other duly constituted authority in relation to the execution and completion of the Works and the remedying of any defects therein, and
- (b) The rules and regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the Works, and the Contractor shall keep the Employer indemnified against all penalties and liability of every kind for breach of any such provisions. Provided always that the Employer shall be responsible for obtaining any planning, zoning or other

similar permission required for the Works to proceed and shall indemnify the Contractor in accordance with Sub-Clause 22.3

The following sub-clause 25.5 is added in (GCC):

25.5 Insurance Company

The contractor shall be obliged to place all insurances relating to the contract (including, but not limited to, the insurances referred to in Clauses 21, 23 and 24) with National Insurance Corporation of Pakistan.

Costs of such insurances shall be borne by the contractor.

The following Sub-Clause 31.3 is added in (GCC)

31.3 Co-operation with other Contractors

During the execution of the works, the contractor shall co-operate fully with other contractors working for the procuring agency at and in the vicinity of the site and also shall provide adequate precautionary facilities not to make himself a nuisance to local residents and other contractors.

The following sub-clauses 34.2 to 34.12 are added in (GCC):

34.2 Rates of Wages and Conditions of Labour

The contractor shall pay rates of wages and observe conditions of labour not less favourable than those established for the trade or industry where the work is carried out, as per the Labour Laws for the time being in force. In the absence of any rates of wages or conditions of labour so established, the contractor shall pay rates of wages and observe conditions of labour which are not less favourable than the general level of wages and conditions observed by other procuring agency whose general circumstances in the trade or in industry in which the contractor is engaged are similar.

34.3 Employment of Persons in the Service of Others

The contractor shall not recruit his staff and labour from amongst the persons in the services of the procuring agency or the Engineer; except with the prior written consent of the procuring agency.

34.4 Housing for Labour

Save insofar as the contract otherwise provides, the contractor shall provide and maintain such housing accommodation and amenities as he may consider necessary for all his supervisory staff and labour, employed for the purposes of or in connection with the contract including all fencing, electricity supply, sanitation, cookhouses, fire prevention, water supply and other requirements in connection with such housing accommodation or amenities. On completion of the contract, these facilities shall be handed over to the procuring agency without charges or if the procuring agency so desires, the temporary camps or housing provided by the contractor shall be removed

and the site reinstated to its original condition with the approval of the Engineer to his satisfaction.

34.5 Health and Safety

Due precautions shall be taken by the contractor, and at his own cost, to ensure the safety of his staff and labour at all times throughout the period of the contract. The contractor shall further ensure that suitable arrangements are made for the prevention of epidemics and for all necessary welfare and hygiene requirements.

34.6 Epidemics

In the event of any outbreak of illness of an 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 purpose of dealing with and overcoming the same.

34.7 Supply of Water

The contractor shall, so far as is reasonably practicable, having regard to local conditions, provide on the site, to the satisfaction of the Engineer or his representative, adequate supply of drinking and other water for the use of his staff and labour.

34.8 Alcoholic Liquor or Drugs

The contractor shall not, otherwise than in accordance with the statutes, Ordinances and Government Regulations or Orders for the time being in force, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or suffer any such importation, sale, gift, barter or disposal by his subcontractors, agents, staff or labour.

34.9 Arms and Ammunition

The contractor shall not give, or otherwise dispose of to any person or persons, any arms or ammunition of any kind or permit or suffer the same as aforesaid.

34.10 Festivals and Religious Customs

The contractor shall in all dealings with his staff and labour have due regard to all recognised festivals, days of rest and religious and other customs.

34.11 Disorderly Conduct

The contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst staff and labour and for the preservation of peace and protection of persons and property in the neighborhood of the works against the same.

34.12 Compliance by Subcontractors

The contractor shall be responsible for compliance by his subcontractors of the provisions of this Clause. sub-clauses 35.2 and 35.3 are added in (GCC):

35.2 Records of Safety and Health

The contractor shall maintain such records and make such reports concerning safety, health and welfare of persons and damage to property as the Engineer may from time to time prescribe.

35.3 Reporting of Accidents

The contractor shall report to the Engineer details of any accident as soon as possible after its occurrence. In the case of any fatality or serious accident, the contractor shall, in addition, notify the Engineer immediately by the quickest available means.

The following sub-clause 36.6 is added in (GCC):

36.6 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.

41.1 Commencement of Works

The text is deleted and substituted with the following:

The contractor shall commence the works on site within the period named in Appendix-A to Bid from the date of receipt by him from the Engineer of a written Notice to Commence. Thereafter, the contractor shall proceed with the works with due expedition and without delay.

The following sub-clause 47.3 is added in (GCC):

47.3 Bonus for Early Completion of Works

Not Applicable.

48.2 Taking Over of Sections or Parts

For the purposes of Para (a) of this sub-clause, separate Times for Completion shall be provided in the Appendix-A to Bid "Special Stipulations".

51.2 Instructions for Variations

At the end of the first sentence, after the word "Engineer", the words "in writing" are added.

52.1 Valuation of Variations

In the tenth line, after the words “Engineer shall” the following is added:

Within a period not exceeding one-eighth of the completion time subject to a minimum of 56 days from the date of disagreement whichever is later.

53.4 Failure to Comply

This sub-clause is deleted in its entirety.

54.3 Customs Clearance

(Procuring Agency may vary this sub-clause)

54.4 Conditions of Hire of Contractor’s Equipment

The following paragraph is added in (GCC):

The Contractor shall, upon request by the Engineer at any time in relation to any item of hired Contractor’s Equipment, forthwith notify the Engineer in writing the name and address of the Owner of the equipment and shall certify that the agreement for the hire thereof contains a provision in accordance with the requirements set forth above.

The following sub-clauses 59.4 & 59.5 are added in (GCC):

59.4 Payments to Nominated Subcontractors

The Contractor shall pay to the nominated subcontractor the amounts which the Engineer certifies to be due in accordance with the subcontract. These amounts plus other charges shall be included in the Contract Price in accordance with Clause 58 [Provisional Sums], except as stated in sub-clause 59.5 [Certification of Payments].

59.5 Certification of Payments & Nominated Subcontractors

The text is deleted and substituted with the following:

Before issuing a Payment, Certificate which includes an amount payable to a nominated subcontractor, the Engineer may request the Contractor to supply reasonable evidence that the nominated subcontractor has received all amounts due in accordance with previous Payment Certificates, less applicable deductions for retention or otherwise. Unless the Contractor:

- a) Submits reasonable evidence to the Engineer, or
- b)
 - i) satisfies the Engineer in writing that the Contractor is reasonably entitled to withhold or refuse to pay these amounts, and
 - ii) submits to the Engineer reasonable evidence that the nominated subcontractor has been notified of the Contractors entitlement, then the procuring agency may (at its sole discretion) pay direct to the nominated

subcontractor, part or all of such amounts previously certified (less applicable deductions) as are due to the nominated subcontractor and for which the Contractor has failed to submit the evidence described in subparagraphs (a) or (b) above. The Contractor shall then repay, to the procuring agency, the amount which the nominated subcontractor was directly paid by the procuring agency.

60.1 Monthly Statements

In the first line after the word “shall”, the following is added:

“on the basis of the joint measurement of work done under Clause 56.1,”

In Para (c) the words “the Appendix to Tender” are deleted and substituted with the words “ Sub-Clause 60.11 (a)(6) hereof”.
(in case Clause 60.11 is applicable)

60.10 Time for Payment

The text is deleted.

The following Sub-Clause 60.11 is added:

60.11 Secured Advance on Materials

- a) The Contractor shall be entitled to receive from the procuring agency Secured Advance against an INDENTURE BOND in Public Works Account Form No. 31(Fin. R. Form No. 2) acceptable to the procuring agency of such sum as the Engineer may consider proper in respect of non-perishable materials brought at the site but not yet incorporated in the Permanent Works provided that:
 - (i) The materials are in accordance with the specifications for the permanent works;
 - (ii) Such materials have been delivered to the site and are properly stored and protected against loss or damage or deterioration to the satisfaction and verification of the Engineer but at the risk and cost of the Contractor;
 - (iii) The Contractor’s records of the requirements, orders, receipts and use of materials are kept in a form approved by the Engineer, and such records shall be available for inspection by the Engineer;
 - (iv) The Contractor shall submit with his monthly statement the estimated value of the materials on site together with such documents as may be required by the Engineer for the purpose of valuation of materials and providing evidence of ownership and payment therefore;
 - (v) Ownership of such materials shall be deemed to vest in the procuring agency and these materials shall not be removed from the site or otherwise disposed of without written permission of the procuring agency;

- (vi) The sum payable for such materials on site shall not exceed 75% of the (i) landed cost of imported materials, or (ii) ex-factory / ex-warehouse price of locally manufactured or produced materials, or (iii) market price of stands other materials;
- (vii) Secured Advance shall not be allowed unless and until the previous advance, if any, is fully recovered;
- (viii) Detailed account of advances must be kept in part II of running account bill or a separate statement; and
- (ix) Secured Advance may be permitted only against materials/quantities anticipated to be consumed / utilized on the work within a period of 3 months from the date of issue of secured advance and in no case for full quantities of materials for the entire work/contract.

(c) Recovery of Secured Advance:

- (i) Secured Advance paid to the Contractor under the above provisions shall be effected from the monthly payments on actual consumption basis, but not later than period specified in the rules not more than three months (even if unutilized);
- (ii) As recoveries are made the outstanding accounts of the items concerned in Part II /statement should be reduced by making deduction entries in the column; “deduct quantity utilized in work measured since previous bill,” equivalent to the quantities of materials used by the contractor on items of work shown as executed in part I of the bill/bill of quantities.

The following sub-clause 60.12 is added in (GCC):

60.11 Financial Assistance to Contractor

Financial assistance shall be made available to the Contractor by the procuring agency by adopting any one of the following two Alternatives:

(Appropriate alternative only to be retained)

(a) Alternative One: Mobilization Advance

- (i) Mobilization advance up to 10% of the Contract Price may be paid by the procuring agency to the Contractor on the works costing Rs2.5 million or above on following conditions:
 - a. on submission by the Contractor of a mobilization advance guarantee for the full amount of the advance in the specified form, from a Scheduled Bank in Pakistan, to the procuring agency;
 - b. contractor shall pay interest on the mobilization advance at the rate of 10% per annum on the advance; and

- (ii) This Advance including the interest shall be recovered in 5 equal installments from the 5 R.A bills and in case the number of bills is less than 5 then 1/5 of the advance inclusive of the interest thereon shall be recovered from each bill and the balance together with interest be recovered from the final bill. It may be insured that there is sufficient amount in the final bill to enable recovery of the Mobilization Advance.

63.1 Default of Contractor

The following Para is added at the end of the sub-clause:

Provided further that in addition to the action taken by the procuring agency against the Contractor under this Clause, the procuring agency may also refer the case of default of the Contractor to Pakistan Engineering Council for punitive action under the Construction and Operation of Engineering Works Bye-Laws 1987, as amended from time to time.

65.2 Special Risks

The text is deleted and substituted with the following:

The Special Risks are the risks defined under sub-clause 20.4 sub paragraphs (a) (i) to (v).

67.3 Arbitration

In the sixth to eight lines, the words “shall be finally settled appointed under such Rules” are deleted and substituted with the following:

shall be finally settled under the provisions of the Arbitration Act, 1940 as amended or any statutory modification or re-enactment thereof for the time being in force.

The following paragraph is added:

The place of arbitration shall be Larkana in Sindh Province.

68.1 Notice to Contractor

The following paragraph is added:

For the purposes of this Sub-Clause, the Contractor shall, immediately after receipt of Letter of Acceptance, intimate in writing to the procuring agency and the Engineer by registered post, the address of his principal place of business or any change in such address during the period of the Contract. If the change in address has not been notified by the Contractor, then procuring agency shall not be responsible for delivery of the notice.

68.2 Notice to Procuring Agency and Engineer

For the purposes of this Sub-Clause, the respective address are:

- a) The Procuring Agency:

Procurement Manager
Establishment of Environmental Engineering Department at
QUEST, Sakrand Road, Nawabshah:
Tel: 0224-937-0381-5 (5 lines); Fax: 0224-937-0367; 0224-937-0357

Attention: Engr. Dr. Abdul Sattar Saand, Procurement Manager
Mobile: 0331-388-2896

- b) The Engineer:

Zaheeruddin Consultants (Pvt.) Ltd
5-A Sindhi Muslim Housing Society,
Karachi – 74400. (Pakistan)
Telephone: +92-21-3455-0321
Facsimile: +92-21-3455-5251
Email Address: zclghi@gmail.com

70.1 Increase or Decrease of Cost

Sub-clause 70.1 in (GCC) is deleted in its entirety, and substituted with the following:

- (a) **Locally funded Projects/Schemes.**

The amounts payable to the Contractor, pursuant to Sub-Clause 60.1, shall be adjusted in respect of the rise or fall in the cost of materials only, and will be paid to the contractor as per notification issued by finance department after the date of opening the tender (new escalation) on those items mentioned in it.

Similarly, reduction in the cost of these materials will also be recovered from the contractor accordingly.

All escalations notified prior to date of opening of the tender will not be claimable in the contract.

73.1 Payment of Income Tax, SRB Sales services tax

The Contractor, Subcontractors and their employees shall be responsible for payment of all applicable taxes on income arising out of the Contract and the rates and prices stated in the Contract shall be deemed to cover all such taxes.

73.2 Customs Duty & Taxes

Not Applicable

74.1 Integrity Pact (for contracts worth Rs.10.0 million and above)

If the Contractor or any of his Subcontractors, agents or servants is found to have violated or involved in violation of the Integrity Pact signed by the Contractor as Appendix-L to his Bid, then the procuring agency shall be entitled to:

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

The termination under sub-para (b) of this Sub-Clause shall proceed in the manner prescribed under sub-clauses 63.1 to 63.4 and the payment under Sub-Clause 63.3 shall be made after having deducted the amounts due to the procuring agency under Sub-Para (a) and (c) of this Sub-Clause.

75.1 Termination of Contract for Procuring Agency's Convenience

Procuring agency shall be entitled to terminate the Contract at any time for the procuring agency's convenience after giving 56 days prior notice to the Contractor, with a copy to the Engineer. In the event of such termination, the Contractor:

- (a) shall proceed as provided in sub-clause 65.7 hereof; and
- (b) shall be paid by the procuring agency as provided in sub-clause 65.8 hereof.

76.1 Liability of Contractor

The Contractor or his Subcontractors or assignees shall follow strictly, all relevant labour laws including the Workmen's Compensation Act and the procuring agency shall be fully indemnified for all claims, damages etc. arising out of any dispute between the Contractor, his Subcontractors or assignees and the labour employed by them.

77.1 Joint and Several Liabilities

If the Contractor is a joint venture of two or more persons, all such persons shall be jointly and severally bound to the procuring agency for the fulfillment of the terms of the Contract and shall designate one of such persons to act as leader with authority to bind the joint venture. The composition or the constitution of the joint venture shall not be altered without the prior consent of the procuring agency.

78.1 Details to be Confidential

The Contractor shall treat the details of the Contract as private and confidential, save in so far as may be necessary for the purposes thereof, and shall not publish or disclose the same or any particulars thereof in any trade or technical paper or elsewhere without the prior consent in writing of the procuring agency or the Engineer. If any dispute arises as to the necessity of any publication or disclosure for the purpose of the Contract, the same shall be referred to the decision of the Engineer whose award shall be final.

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Copy can be procured from the Works and Services Department)

Quaid e Awam University of Engineering Science & Technology at Nawab Shah

**Establishment of Environmental Engineering Department at their
Main Campus in Nawabshah**

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**QUAID E AWAM UNIVERSITY OF ENGINEERING SCIENCE &
TECHNOLOGY AT NAWAB SHAH**

CONSTRUCTION OF ENVIRONMENTAL ENGINEERING DEPARTMENT

SECTION 100 - GENERAL

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- Appendix - E (III) Schedule of Survey Equipment
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SECTION 100 - GENERAL

Description of the Works

Location of the Works

- 101** The location of the works covered by this Contract are the main campus of Quaid e Awam University of Engineering Sciences and Technology located at Sakrand Road, Nawabshah.

General Description of the Works

- 102** The Construction of Environmental Engineering Department complete in all respect and strict in accordance with this section of the specifications and the applicable drawings, general Sindh PWD specifications and subject to the terms and conditions of the contract.

Existing site Information

Ground Investigations

- 103** The geotechnical investigation report is attached. The bidders are advised that Client and the Consultants are not responsible for the results shown there in and those they have to make their own interpretations. Report is attached as Annexure – B.

Surveys

Setting Out Grid

- 104** The setting out for the Works shall be related to existing works which will be defined by the Engineer on site.

Site Survey

- 105** Before commencing the Works the Contractor, shall carry out jointly with the Engineer's Representative a topographic survey of the whole area of the site, in which the position and levels of all the existing features shall be accurately measured. The area of this existing survey shall extend a minimum of 20 m beyond the area of the Works shown on the drawings. The Contractor shall prepare survey drawings showing the location of all existing infrastructure, installations and features as well as survey stations and spot levels. The survey shall be plotted to a scale of 1:250. The survey drawings shall be signed by the Contractor's Agent and the Engineer's Representative, the Contractor shall supply the Engineer with 3 copies of the drawings and a reproducible negative.

The survey will be used by the Engineer to confirm or modify the precise locations of all new works shown in the Drawings and will be the basis for the layout of works shown on the Working Drawings.

Condition Survey

- 106** Before commencing the Works the Contractor shall undertake jointly with the Engineer's Representative a condition survey of the structures and installations which are affected by the Works, and shall prepare a report of the condition of the structure and installations. The agreed record shall be signed by the Contractor's Agent, the Engineer's Representative, and the Client's representative. 3 copies of the report shall be given by the Contractor to the Engineer's Representative.

Movement and Settlement Monitoring

- 107** The Contractor shall monitor the lateral movement and settlement of the near and existing structure at all stages of construction and commissioning by means of precise level measurement taken on a minimum number of permanent points to be established by the Contractor at the location agreed with the Engineer's Representative

Conduct of the Works

Method of Carrying Out the Works

- 108** Within 14 days of the Letter of Acceptance the Contractor shall submit to the Engineer for his approval a short-term programme setting out in detail how he intends to carry out the work.

Within 28 days after the date of the Letter of Acceptance the Contractor shall submit to the Engineer for his approval a statement setting out in detail how he intends to carry out the works. The statement shall describe the methods to be employed in carrying out the works, the Investigation and Construction Equipment, and Temporary Works which the Contractor intends to supply or use with estimated dates on which the various sections of the Works will commence together with the estimated rate of construction so that the Whole of the Works may be completed within the Contract Period.

The contractor shall construct temporary diversion ways whenever the works interfere with the existing foot or road traffic drainage channels. Diversion ways shall be to the approval of the Engineer's Representative and client, and shall have a capacity not less than that of the routes which they replace. They shall be constructed in advance of any works likely to cause interference with the existing roads or footways and shall be maintained to provide adequately for the traffic flows.

Programme

- 109** In preparing his Programme the Contractor shall take into full account that the Works are located within a busy university campus and residential area. Areas adjacent to his working areas shall continue to be fully in use at all times.

The method statement shall strictly comply with the sequence of construction set out in Appendix C of the Specifications, unless otherwise agreed in writing by the Engineer.

Care shall be taken to avoid any hindrance to the normal operations and other Contractors working in the Client's area. The Contractor shall also take into account the clause on Limitations on Working.

The Contractor is to ensure that the Programme submitted is strictly adhered to at all times. The Contractor shall submit detailed programmes of the various sections of the Works as and when required by the Engineer.

Notice of Operation

- 110** Notwithstanding the submission by the Contractor and approval by the Engineer and Employer of the Programme for the Works no important operation shall be carried out without the written consent of the Engineer's Representative. The Contractor shall give to the Engineer's Representative sufficient notice in advance of the time of the operation (not less than 24 hours) to enable him to make such arrangements as he may deem necessary for checking and supervision of the Works.

Responsibility Unaffected by Approval

- 111** The examination or approval by the Engineer or Engineer's Representative of any part of the Works or of any document or sample submitted by the Contractor shall not relieve the Contractor of any of his responsibilities or liabilities.

The Contractor shall observe all agreements entered into by the Employer with any person or persons relating to occupation of the properties by the Employer and the execution of the Works thereon. Provided always that compliance with such agreement shall not relieve the Contractor of his obligations under Clause 29 of the Conditions of Contract. The Contractor will be given on request copies of any agreement or part thereof relating to such matters.

Temporary Works

- 112** The Contractor shall submit to the Engineer drawings and full particulars of all Temporary Works he intends to construct at least fourteen days before he intends to commence such Works. The Engineer may require modifications with Employer to be made if he considers the proposals to be insufficient and the Contractor shall give effect to such modifications at his own cost but shall not be relieved of his responsibility for the sufficiency thereof.

The Contractor shall take upon himself the full and entire responsibility for the sufficiency of plant, centering, scaffolding, timbering, machinery, tools or implements and generally for all means used for the fulfillment of the Contract whether such means may or may not be approved or recommended by the Engineer.

The Contractor shall be deemed to have satisfied himself with regards to the existing strength of the existing quay structure and its capacity to carry the loads imposed by his Equipment. Any damage to the structure due to the use of the Contractor's Equipment shall be rectified by the Contractor at his own expense.

The Contractor shall at his own expense provide and erect to the approval of the Engineer all supports as may be required to protect efficiently all structures and works requiring support as a result of the Works and remove the same on completion. Such approval of the Engineer shall not relieve the Contractor of any of his obligations under this clause.

Safety Rules

- 113** The Contractor shall strictly adhere to all Safety Rules for Contractors and all other Regulations and Rules and all other local regulations which may be in force at the time of execution of the Works.

Land

- 114** The Employer will arrange the provision of all land and easements for the Permanent Works and the Contractor may, where approved by the Engineer in concurrence with employer, so far as they are available, use the same for temporary purposes.

Use of Site

- 115** The following provisions shall be deemed to apply to the possession and use of the Site:
- (1) The Contractor shall at any time move any vehicles, machine, vessels, or any other obstruction within his control that may be required by the Engineer and the Employer to be moved for any purpose and the Contractor shall move such things or such obstructions promptly on instructions being given and at his own cost unless the Engineer shall decide with the concurrence of Employer otherwise.
 - (2) The Contractor shall maintain access for the inspection, operation and maintenance of any of the plant on the Works belonging to the Employer or other Statutory Authorities which lie within the Site or elsewhere.
 - (3) The Contractor shall not use any portion of the Site for any purpose not connected with the Works unless the prior written permission of the Engineer has been obtained.

- (4) Contractor shall strictly conform to the regulations of the Employer and any other controlling authority in force at, or in the vicinity of the Site of the Works with respect to the precautions to be taken against fire hazards. Before any works are commenced the Contractor shall have agreed with the Employer the extent of the precautions to be taken, and shall have installed the number of fire-fighting appliances deemed necessary by the Authority. All costs of complying with the requirements of the Employer and all standby fees for the Fire Services shall be at the Contractor's cost.

Progress Meetings

- 116 Progress meetings will be convened by the Engineer or his Representative at both weekly intervals and at other times as appropriate. The purpose of the meetings will be to review the progress of the Works, to discuss the Contractor's programmes and to cover such other matters under the Contract as may be specified or notified by either the Engineer or his Representative or the Contractor. Such meetings shall be attended by an authorized representative of the Contractor and the Employer.

The agenda and minutes of each meeting and the Employer will be prepared by the Engineer or his Representative with a copy to the Contractor. The Contractor shall record his agreement of the minutes, either by signing them or by minuted verbal agreement at the following meeting.

Attendance upon Trades

- 117 Each trade shall provide for and shall make good as necessary for all other trades so that each section of the work is carried out in its correct sequence and completed in accordance with the Specification.

Setting Out of Works

- 118 The Contractor shall give the Engineer's Representative and Employer reasonable notice of his intention to set out or take levels for any part of the Works so that arrangements may be made for checking the work. The accuracy of setting out and leveling shall be within the tolerances called for in the Specification or directed by the Engineer. The tolerances specified in BS 5606 shall be the minimum requirement.

Existing Services

- 119 The Contractor is to execute the Works in such a manner that he does not damage or interfere with existing services which are located beneath or in proximity to the Site. The Contractor shall accept responsibility and shall allow in his rates for any damage or interference which may be caused to these services due to the execution of the Works and shall carry out all necessary repairs at his own expense and to the satisfaction of the Engineer and the Employer. The Contractor shall be responsible for locating the existing services within the Works and for protecting them during the progress of the Work.

Where appropriate the Contractor shall open up the ground in advance of the main work by hand digging if necessary to locate precisely the position and details of the services which are likely to affect his operations.

All diversions shall be reinstated and all other temporary works shall be removed on completion of the main works to the satisfaction of the appropriate authority and the Engineer's Representative.

Service Authorities

- 120 The Contractor shall comply in all respects with the regulations of all Service Authorities whether for temporary or permanent work in connection with these Authorities in carrying out his obligations under the Contract, if included.

Interference with Existing Works

- 121 The Contractor shall not interfere in any way with any existing works whether the property of the Employer or of a third party and whether or not the position of such works is indicated to the Contractor by the Engineer except where such interference is specifically required under the Contract.

Project Signs

- 122 If the Contractor wishes to erect project signs at the sites of the Works, he shall first submit his proposed details and arrangement for the approval of the Engineer's Representative and the Employer.

Fencing, Hoardings, Watching & Lighting

- 123 The Contractor shall provide and maintain continuous fencing or hoardings around the areas of work, storage, offices, etc., and all necessary watching and lighting as deemed necessary by Employer. The Contractor shall be required to have at least one watchman at the Site at all times even when work is not in progress.

For work at night the Contractor shall arrange adequate lighting at each area of operation with adequate reserve in case of failure. The Contractor shall be required to satisfy the relevant authorities that such lighting will not constitute a hazard to traffic by land, in the areas adjacent to the Site.

Traffic Safety & Control

- 124 The Contractor shall provide, erect and maintain such traffic signs, lights, barriers and other measures as may be necessitated by the execution of the Works. The measures shall be to the approval of the Engineer's Representative and of the relevant authorities.

Security Passes

- 125 The Contractor shall ensure that all his employees and those of his subcontractors are issued with security passes and identification cards required by Employer.

Visitors

- 126 The Contractor shall not allow any unauthorized visitors on the Site. He is to keep a visitors' book which all authorized visitors shall sign. The Contractor shall provide safety helmets and any other appropriate protective clothing for such visitors for the duration of their visit.

Transport of Materials and Plant

- 127 The Contractor is to ensure that damage to any public or private roads, footpaths and tracks used by any vehicles or plant proceeding to or from the Site shall be kept to a minimum and he shall be responsible for the cost of all repairs necessary to restore such roads, tracks or footpaths to the satisfaction of the Engineer.

Cleaning & Clearing of Roadways and Footpaths

- 128 The Contractor shall ensure that existing roadways and footpaths within the vicinity of the Site used by vehicles or equipment of the Contractor or his suppliers or subcontractors are kept clean and clear of all materials, dirt, soil or debris.

Noise Control

- 129 The Contractor shall as far as possible follow the general recommendations of BS 5228: Part 1 to minimize noise and vibration.

Health and Safety Generally

- 130** The Contractor shall throughout the progress of the Works comply with the health and safety requirements of in vogue in Pakistan and the Specification and with the health and safety recommendations for building and civil engineering work published by the International Labour Organization.

The Contractor shall employ at the Site an officer responsible for the safety and protection against accidents of all staff and labour. He shall be experienced in his work and shall have the Authority to issue instructions for taking measures for the prevention of accidents.

First Aid Facilities

- 131** The Contractor shall provide and maintain at the Site first aid medical facilities for the use of the Contractor's personnel and also those of the Employer and the Engineer.

Contractor's Radio Equipment

- 132** Radio frequencies used by the Contractor shall be to the approval of any duly constituted authority having jurisdiction. The Contractor shall be responsible for arranging entirely at his own expense the necessary licenses and permits which he requires to operate radio and other communications equipment during the Contract Period.

Facilities for Engineer's Representative

Office and Residential Accommodation

- 133** Office requirements are given in Appendix "D". No residential accommodation is required

Materials Testing Laboratory

- 134** The Contractor shall supply, erect, clean and maintain and remove on completion a furnished laboratory, 40 m², for the use of both the Contractor and the Engineer, for the testing of materials on Site in accordance with the Specification, including such additional tests as may be required. It shall be operated by staff provided by the Contractor working under the direction of the Engineer's Representative.

The laboratory shall be in a self-contained temporary building to the approval of the Engineer, located close to the office for the Engineer's Representative. It shall have a plan area sufficient to accommodate all the equipment, materials, functions and test programmes laid down in the Specification and any further testing required by the Contractor to ensure the quality of the Works.

The Contractor shall equip the laboratory with power, light, potable water and air conditioning together with sufficient new equipment of the best quality to carry out the laboratory tests as required in the Specification.

The laboratory, furnishings and test equipment shall be provided within 14 days of the Commencement Date. The test equipment shall remain the property of the Contractor and shall revert to him upon the authorized removal of the laboratory, or at such prior time as instructed by the Engineer's Representative.

The Contractor shall be responsible for ensuring that all test equipment is correctly calibrated before it is used for testing, and shall provide evidence of this if required by the Engineer's Representative. The Contractor shall in addition arrange periodic calibration checks in accordance with the manufacturer's recommendations, or as stated in the relevant standard or directed by the Engineer's Representative.

The laboratory shall incorporate space and facilities for storing and curing of concrete test cubes and other test samples in accordance with the Specification.

For all testing which is not carried out at the Site, the Contractor shall arrange for testing to be carried out at an approved laboratory as directed by the Engineer's Representative. The Contractor shall be responsible for all costs associated with testing at the approved laboratory.

Transport for Use of Engineer's Representative

Transport

- 135** The Contractor shall provide for the sole use of the Engineer's Representative and his staff. One Suzuki Alto VXR or equivalent approved. All vehicles shall be new and equipped with air-conditioning and provided drivers. After the completion of the project, these vehicles will revert back to the Contractor. The cost of vehicle and all its running maintenance, fuel, driver etc would be included in quoted rate. In the case the vehicle is not handed to the Engineer's representative, a cost of Rs. 150,000/- per month will be deducted from the contractors IPC's.

Attendance upon Engineer's Representative

General Assistance

- 136** The Contractor shall have a responsible person permanently on site during normal working hours who is capable of receiving, and acting upon, instructions received from the Engineer or Employer representative.

The Contractor shall provide such assistance and supply such labour, materials and equipment as may be required by the Engineer's Representative and his staff to enable them to carry out their duties under the Contract.

Setting Out and Surveys

- 137** The Contractor shall provide at all reasonable times, the services of competent chainmen, staff men and labourers and shall supply survey equipment materials and small tools such as pegs, poles, lines, spirit levels and other items required by the Engineer's Representative for checking the setting out of the Works or carrying out surveys.

Materials Testing

- 138** The Contractor shall provide suitably experienced, qualified technicians and assistants to carry out under the direction of the Engineer's Representative the sampling and testing of materials in the field and the testing of materials in the laboratory at the Site. The Contractor shall provide transport as required for transferring the samples to the Site laboratory and to the approved off-site laboratory.

Accommodation and Facilities for Contractor

Working Area and Access

- 139** An area has been designated for site offices and Contractor's Area as shown in Appendix -A which will be provided to the Contractor free of cost. Further areas if required will be made available within Employer boundary and the Contractor shall limit his use of the area to essential functions only.

No guarantee can be given that the extra area can be acquired. If extra areas cannot be acquired or if the Contractor shall require any land other than the Site for the storage or preparation of materials or for other purposes in connection with the Works, he shall provide it at his own cost.

Contractor's Office, Stores, Workshops, etc.

- 140** The Contractor shall be responsible for providing all necessary offices, stores workshops and other temporary works or facilities which he may need to construct the works. Details of the proposed use of designated working areas shall be submitted to the Engineer for approval.

Staff Quarters

- 141** The Contractor shall make all his own arrangements for the provision of living accommodation and other off-site facilities and amenities including transport for his work force.

Services for Contractor

Services for Contractor's Use

- 142** The Contractor shall arrange for all his own water, electricity, compressed air and telecommunications services for the performance of the Contract including the provision of any cables, pipes, valves, meters, storage tanks, etc. Water pipes, cables and the like will not be permitted to trail across working areas of the College. However, if water and electricity is to be provided by employer, deductions would be made from the running payments as per prevailing rules.

Drinking Water

- 143** The Contractor shall provide an adequate supply of drinking water, with all necessary drainage, on the Site for the use of his staff and the work people and shall make all the necessary arrangements therefore with the competent authorities. The number, capacity and location of the installations shall be to the satisfaction of the Engineer.

Records

- 144** The Contractor shall keep and promptly forward to the Engineer's Representative, at weekly intervals, records giving dates and details of all important operations and daily weather. The cost of provision of all the records shall be deemed to be included in the quoted rates.

Progress Photographs

- 145** The Contractor shall arrange for dated progress photographs, 5 copies of each, in colour to be taken at monthly intervals or as otherwise directed, to cover all areas and stages of the Works. Where necessary the Engineer's Representative shall indicate the subject matter of the photographs. The Contractor shall supply one negative and four 200x250mm size prints on single weight glossy paper of each photograph. The negative size shall be at least 24 x 36mm. The negatives and one 200 x 250mm print of the photographs shall be supplied to, and be the property of the Employer and no prints from these negatives may be supplied to any person or persons unless under the authority of the Employer or of the Engineer.

Progress Reports

- 146** The Contractor shall submit to the Engineer's Representative, at the end of each month, a report on progress of the Works during the month and showing the cumulative progress to

date of important sections of the Works and their status with regard to the programme. The cost of provision of all the records shall be deemed to be included in the quoted rates.

Returns of Labour and Equipment

- 147 The Contractor shall supply to the Engineer's Representative as described in the Conditions of Contract, both daily and monthly reports. The cost of provision of all the records shall be deemed to be included in the quoted rates.

Submission of Information and Records

- 148 All reports, statements, returns, drawings, diagrams, programmes, etc., which the Contractor shall be required to submit during the progress of the Works to the Engineer or Engineer's Representative are to be furnished in triplicate unless otherwise directed. The cost of provision of all the records shall be deemed to be included in the quoted rates.

As-made Drawings

- 149 On completion of the Works the Contractor shall prepare and submit within 28 days a complete set of 'as-made' drawings in duplicate for the portions of the Works for which he was responsible for design. Once approved by the Engineer the Contractor shall provide a negative for each 'as-made' drawing. The cost of provision of all the records shall be deemed to be included in the quoted rates.

Drawings, Designs and Standards

Contract Drawings

- 150 The Contract Drawings provided for Tender purposes are listed in Appendix A.

Working Drawings

- 151 When the Contract is awarded the Engineer will prepare his Working Drawings which will be based on and supplement the Contract Drawings and cover all civil works with the exception of detailed designs for which the Contractor is responsible. The Working Drawings will be issued to the Contractor at or near the commencement of the Works and from time to time during the Contract. The Contractor shall be responsible for advising the Engineer of his programme for receiving the detailed Working Drawings so that his construction programme is not delayed.

Interpretation of Drawings

- 152 All Permanent Works shall be constructed to dimensions marked on the Drawings and not based on dimensions scaled from these drawings if no dimension is marked. The Contractor shall be responsible for requesting from the Engineer in due time any clarification of the Drawings or any additional information which he requires on the Drawings in order to construct the Works or to place orders for materials or supplies.

Contractor's Designs

- 153 The Contractor shall be responsible for the detailed design of all works where so specified and of all works for which he has proposed an alternative which is accepted by the Engineer. Designs shall be undertaken by the Contractor, at his own expense, to the Engineer's design criteria and to the satisfaction of the Engineer. Approval by the Engineer of the Contractor's designs shall in no way relieve the Contractor of his responsibility for such designs.

Contractor's Working Drawings

- 154** The Contractor shall, at his own expense, prepare and submit for the approval of the Engineer copies in duplicate (in the first instance) of detailed drawings of those parts of the Permanent Works for which he is responsible for design or specification or for which it is necessary to prepare shop or fabrication drawings.

The Engineer will, after indicating any alterations which he may require to be made by the Contractor, return one copy to the Contractor who shall amend the drawings in accordance therewith. The Contractor shall forward to the Engineer three additional copies and a reproducible of the amended drawings and the Engineer will then return one copy to the Contractor signed with his approval.

If the Contractor wishes to modify or alter any details of the Permanent Works for which he is not responsible for design or specification he shall prepare at his own expense such detailed drawings and shall submit these to the Engineer in accordance with the above, drawing the Engineer's attention to the proposed modification or, when required, such further calculations, etc., as the Engineer may require.

In all cases where drawings for any work included in the Contract are specified or required to be supplied by the Contractor for the approval of the Engineer, or where the Contractor opts to propose modifications to the Engineer's design, any alteration to such drawings which the Engineer may require shall be made, without additional cost, by the Contractor.

Alternative Design Proposals

- 155** The Contractor may put forward design alternative proposals to those specified shown in the Drawings provided that:

- (i) The design criteria are maintained and such additional criteria to suit the proposed design are stated.
- (ii) Sufficient drawings, calculations, specifications and samples are submitted to enable the Engineer to appraise and evaluate the alternative to his satisfaction.
The information shall be submitted at the Contractor's expense and in sufficient time to enable the Engineer to make his assessment.
- (iii) The other terms, conditions and instructions relating to the Contract are not varied.
- (iv) The additional costs incurred by the Engineer in checking the alternative proposals, including any consequential work done by the Engineer or his Representative, shall be deducted from the moneys paid to the Contractor under the Contract as provided for in the Bill of Quantities.

Such alternative design proposals may be accepted by the Engineer provided that they are at least equivalent to the designs specified in respect of stability, durability, maintenance and safety standards and operational characteristics.

Standards and Codes of Practice

- 156** The British and other Standards and Codes of Practice referred to in this Specification are listed at the end of each section in which reference is made to them.

A full set of all Standards, Codes of Practice and other publications listed in the Specification shall be provided by the Contractor within 30 days of the Commencement Date. They shall be kept on the Site and shall be available at all times for use by the Engineer's Representative.

The Standards, Codes of Practice and other publications referred to in this Section are as follows:-

BS 5228 Noise control on construction sites

Part 1: 1984 Code of practice for basic information and procedures for noise control

BS 5606:1978 Code of practice for accuracy in building

Safety and Health in Building and Civil Engineering Work (ILO Code of Practice 1985)

Appendix -A
LIST OF TENDER DRAWINGS

CONSTRUCTION OF ENVIRONMENTAL ENGINEERING DEPARTMENT

Appendix –A

LIST OF TENDER DRAWINGS

SEE PART-3

APPENDIX - B

GEOTECHNICAL INVESTIGATION REPORT

(REPORT ATTACHED)

APPENDIX - C

CONSTRUCTION SEQUENCE

APPENDIX - C

CONSTRUCTION SEQUENCE

The construction sequence shall be as follows:-

1. Baseline Survey of Site
2. Layout
3. Excavation of Foundations
4. Concreate works of Foundations
5. Casting of pick up columns
6. Casting of plinth beams
7. Casting of Columns; Ground floor to first floor
8. Casting of Roof Slab, ground floor
9. Casting of Columns First floor to top of roof
10. Beams and slab of first floor roof
11. Screeding works on roof
12. Paint finishing of internal roofs
13. Finishing works, doors, window
14. Plumbing works of Bathrooms
15. Internal Electrical Works
16. External Electrifications
17. External Water supply and drainage
18. Extremal Roads, path ways etc.
19. Hand-over of building

Note: Sufficient time shall be allowed for the concrete to achieve the required strength before the commencement of any activity which imposes loading on a reinforced concrete columns/pile, beam, slabs or other member.

APPENDIX - D

**SCHEDULE OF SITE OFFICE
ACCOMMODATION, FURNITURE
FIXTURES AND EQUIPMENT**

SCHEDULE OF OFFICE ACCOMMODATION
FURNITURE AND EQUIPMENT
FOR ENGINEER'S SITE OFFICE

OFFICE ACCOMMODATION

1. The office building specified in Clause 150 shall have a minimum total area of 36 m² on one floor and in one building which shall have a single internal corridor with all rooms opening onto it. The following accommodation shall be provided with minimum areas given for each room or office:

	<u>m²</u>
• Engineer's Representatives office:	17
• Spare office:	9
• Toilet (male and female):	10
	<hr/>
Total (minimum):	36
	<hr/>

2. The office provided for the Engineer in the Laboratory shall have a minimum area of 6m².
3. All the offices are to be adequately well ventilated where as the Conference Room is to be air conditioned.

* * *

SCHEDULE OF FURNITURE AND FIXTURES
FOR ENGINEER'S SITE OFFICE

OFFICE FURNITURE AND FIXTURES

3. The following furniture shall be provided to be distributed between the offices and rooms specified in 1 and 2 as required by the Engineer's Representative:

• Desk (2.1 x 1.1m):	2
(1.5 x 0.8m) typist/Computer table:	1
• Table (1.8 x 0.8m):	1
• Chairs/arm/swiveling:	3
• Chair/arm/fixed:	8
• Chairs/typist:	1
• Bookcase (1.0 x 1.0 x 0.3m) with glass fronts:	3

SCHEDULE OF EQUIPMENT
FOR ENGINEER'S SITE OFFICE

S.No.	Particulars	Engineer Site Office
01.	Laptop Dell Inspiron 5301 Core i7 11th Gen 8GB 512GB SSD 13.3 FHD 2GB MX350	1
02.	Printer HP LaserJet (Black), A4, HP M107A or equivalent approved	1
03.	Software's with License: (for all system)	
	i) Auto CAD 2016	1
	ii) MS Office XP 2010	1
	iii) Adobe Photoshop CS	1
	iv) Acrobat Library	1
	v) Kaspersky Full Security 2024	1
	vi) Microsoft Project	1
	vi) Windows 10 or 11	1

APPENDIX - E
SCHEDULE OF
SURVEY EQUIPMENT

SCHEDULE OF SURVEY EQUIPMENT
FOR ENGINEER'S STAFF

	<u>No.</u>
• Theodolite direct reading in degrees/minutes/seconds reading to 1 sec. of arc with tripod (WILD T2 or equal approved):	1
• Electronic distance measuring instrument (EDM) with accuracy of ± 10 mm over 2.5 km range (PANTAX DISTOMAT or equal approved):	1
• Automatic level with tripod (PANTAX or equal approved):	2
• Metal sectional leveling staff (meter):	2
• Steel tape - 30 m length:	2
• Retractable steel tape - 3 m length:	5
• Steel tape repairs kit:	1
• Ranging rods:	4

(Survey Equipment to be available at site on 2 hours notice)

APPENDIX - F
BASIC RATES

APPENDIX - E

APPENDIX - F

BASIC RATES

A. CEMENT

- Ordinary Portland Cement Rs_____ * per ton
- sulphate resisisting cement Rs_____ * per ton
- Slag Cement Rs_____ *per ton

B. STEEL

- Reinforcing Steel
 - a) Above 1" Size Rs_____ *per ton
 - b) ½" to 1" Rs_____ *per ton
 - c) below ½" Rs_____ *per ton
- Structural Steel Section Rs_____ *per ton

NOTE:

- To be filled by Contractor and duly supported by manufactures quotations

C. Fuel

- Diesel Rs_____ *per litre
- Petrol Rs_____ *per litre

D. Copper per ton

Rs_____ *per ton

E. Bitumen per ton

Rs_____ *per ton

F. Labour

Skilled Rs_____ *per day

Unskilled Rs_____ *per day

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CONSTRUCTION OF ENVIRONMENTAL ENGINEERING DEPARTMENT

SECTION 200 - SETTING OUT OF WORKS AND TOLERANCES

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SECTION 200 - SETTING OUT OF WORKS AND TOLERANCES

Responsibility

- 201 The Contractor shall be solely responsible for the true and proper setting out of the Works, for the correctness of the dimensions, position, levels and alignment of all parts of the Works and for ensuring that all parts of the Works are so constructed that all other parts of the structure, finishes, items to be fixed against or between structural members, within formed openings or in external Works will properly fit the as constructed dimensions of the adjacent part of the Works.

Engineering and Non Engineering Tolerances

- 202 To this end the structural and engineering construction tolerances the Contractor proposes to use, together with full details of the proposed setting out procedures, shall be submitted for review in accordance with Section 100.

Tolerances required by Manufacturers, Suppliers, Sub-contractors or other parties shall be taken into account in determining the structural and other engineering construction tolerances proposed to be used.

Non-Compliance

- 203 Notwithstanding that a part of the structure or engineering works may be constructed within the specified construction tolerances the Engineer may require any part of the Works to be removed and reconstructed which is constructed such as to prevent the finishes, services or other parts of the Works to be fixed in their proper position or is unacceptable in any other way.

Blinding Concrete

- 204 The top surface level of blinding concrete beneath reinforced concrete shall be such that the required cover to the reinforcement shall be provided entirely above the blinding surface.

Reinforced Concrete

- 205 In respect of in-situ or precast reinforced concrete construction the following limitations shall apply:-

- (a) The cover specified on the Drawings is the nominal cover as defined in BS 8110. This nominal cover shall not be reduced or increased by more than 5 mm due to any cause except in the circumstances described in BS 8110 Part 1 Clause 7.3(b) when the maximum increase in cover specified therein shall apply.

Where the achieved construction tolerances from any cause, including inter alia bending and fixing of reinforcement and construction of form work, are in excess of the assumed construction tolerance and will result in a variation of the specified cover in excess of 5 mm, then any necessary adjustment shall be made by modifying the reinforcement bending dimensions so as to limit the variation of the actual cover from the specified nominal cover to no more than that specified herein or by other agreed methods. The methods proposed shall be submitted for agreement in accordance with Clause 110.

- (b) The effective depth of the reinforcement at any point in a member (that is the distance from the centroid of each layer of steel to the remote face of the concrete section) shall not be reduced by more than 2.5% subject to a maximum reduction of 15 mm in any member.

- (c) Clause 3.12.8.6 of BS 8110 requiring the minimum length of straight bar beyond the last bend in a link shape shall be regarded as an absolute requirement which overrides other permissible deviations. If difficulty is found in bending reinforcement to comply the cutting lengths shall be amended so that these requirements can be met.
- (d) Deductions for permissible deviations used in determining the dimensions of bars on the reinforcement schedules are confined to those given in BS 8110 Table 3.26. Where construction tolerances are chosen resulting in permissible deviations in excess of those given in BS 8110: Clause 3.12.1.4 then the larger deductions referred to in that clause shall be allowed for during bending.

Diaphragm Walls

206 In respect of diaphragm walls the following limitations shall apply:-

- (a) The face of the wall that will be exposed shall, at the level of the guide trench, not deviate from the theoretical position by more than 25 mm and the deviation from the vertical of the wall face to be exposed and the ends of panels shall not exceed 1 in 80 subject to e) below.
- (b) The thickness shall not be less than the design thickness.
- (c) Where recesses are to be formed by inserts in the wall, they shall not deviate in position by more than 75 mm from the location indicated.
- (d) The reinforcement shall not deviate in position by more than the following:-
 - (i) The longitudinal position of the cage head at the top of the diaphragm wall measured along the wall: 75mm
 - (ii) The level of cage head at the top of the diaphragm wall: +0 mm - 50 mm
 - (iii) The other appropriate requirements of the previous clause for reinforced concrete.
- (e) The minimum limitation of any overall or local deviation of the exposed face from the theoretical shall be as defined in Appendix 1 which dimension has been used to determine the location of adjacent walls, plant etc.

Pavements

208 The pavement as constructed shall be within a horizontal tolerance of + 25 mm from its theoretical position and level so as not to deviate by more than 3 mm from the theoretical position.

The level of any point on the constructed surface of the pavement courses shall be the design level subject to the appropriate of the following tolerances in Surface Levels of Pavement Courses:-

	<u>Deviation from True Surface Level</u>	<u>Max. Depression under 3m straight edge</u>
Finished Surface	± 6 mm	3 mm
Road base	± 8 mm	6 mm
Sub-bases	+ 10 mm - 30 mm	-

For checking compliance measurements of the surface levels of all courses shall be taken on a 5 m square grid. In any length of pavement, compliance shall be deemed to be met for all surfaces, other than the final road surface, when not more than one of ten consecutive measurements taken longitudinally in any transverse line, exceeds the tolerances given above provided that this one measurement shall not exceed by more than 5 mm the tolerance for the course concerned. For the final road surface the tolerance given shall apply to any point on that surface.

The combination of permitted tolerances in the levels of different pavement courses shall not result in a reduction in thickness of the pavement, excluding the sub-base, by more than 15 mm from the specified thickness nor a reduction in the thickness of the sand bedding course by more than 5 mm from that specified.

Formation Levels

- 209** Excavation and/or fill formations shall, after completion of any sub-grade drainage, completion of compaction and remedial works and immediately before laying overlying materials have a surface level tolerance within +20 mm and -30 mm relative to its designed level or such other tighter tolerance required so as not to detrimentally affect the level or thickness of the overlying material.

Precast Units

- 210** For structural precast concrete the maximum allowable limitations shall be those contained in Clause 6.11.3 of BS 8110: Part unless otherwise specified.

The following limitations shall also apply subject to the over-riding requirement that the error does not adversely affect the proper assembly of the whole structure:-

- (a) Position of connection bolts or holes, projecting steel or other devices in an associated group, including the joining of two units, from its theoretical position 3 mm
- (b) Longitudinal location of such group from its true position ± 6 mm

Instruments

- 211** All instruments, appliances, labour etc, required to set out to the necessary standard of accuracy shall be readily available on site. Only accurate and regularly calibrated tapes and instruments shall be used on the site.

Standards and Codes of Practice

- 212** The Standards, Codes of Practice and other publications referred to in this Section are as follows:-

BS 4	Part 1	: Structural steel sections - Hot-rolled sections
BSCP 297		: Precast concrete cladding (non-load bearing)
BS 5606		: Code of practice for accuracy in building
BS 5950		: Structural use of steelwork in building
BS 8110		: Structural use of concrete

CIRIA Technical Note 113 "A suggested design procedure for accuracy in building"

CIRIA Report No. 87: Lack of fit in steel structures

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SECTION 300 - MATERIALS AND WORKMANSHIP GENERALLY

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SECTION 300 - MATERIALS AND WORKMANSHIP

GENERALLY

Quality Generally

Quality of Materials

- 301 All materials supplied by the Contractor for incorporation in the Permanent Works shall be new and of good quality and in accordance with the provisions of the Contract. For the purpose of the Specification, "materials" shall be deemed to include "Plant" as defined in the Conditions of Contract.

Quality of Workmanship

- 302 Workmanship shall comply with the requirements of the Specification and all specified Standards and Codes of Practice. If no relevant clauses are included in the Specification and if no Standard or Code of Practice is specified, then the workmanship standard required for the Works to be constructed shall be the best quality.

Quality Control

- 303 The Contractor shall be responsible for quality control in respect of all materials and workmanship, and shall also be required to demonstrate that the required quality is being achieved. The Contractor shall provide evidence of the suitability of his quality control procedures and those of his subcontractors, both before they are instituted and during the progress of the Works. Notwithstanding the inspection and testing carried out by or under the direction of the Engineer's Representative, any failure by the Contractor or his subcontractors or suppliers shall not relieve the Contractor of his responsibility to meet the contractual requirements for quality.

Contractor's Equipment and Temporary Works

- 304 The Contractor shall be responsible for the design, supply, safe use and maintenance of all the Contractor's Equipment and Temporary Works and he shall ensure that they are suitable for the Works. Contractor's Equipment shall be in good working order and shall be operated and maintained in such a manner as to ensure its efficient and safe working. Temporary Works shall be of sound materials and shall be sufficient for the safe execution of the Works.

The Contractor shall if requested submit to the Engineer or his Representative for approval full details of any Contractor's Equipment and Temporary Works which he intends to use on the Works. Such approval shall not relieve the Contractor of his responsibility for the adequacy of the Equipment and Temporary Works, and the Engineer or his Representative may direct that Contractor's Equipment or Temporary Works which is in his opinion prejudicial to the quality, safety or progress of the Works be removed from the Site and replaced and/or augmented by suitable Equipment or Temporary Works, at no extra cost to the Contractor.

Sources of Materials

- 305 Only approved sources of supply of materials shall be used. Sources once approved shall not be changed without the prior written approval of the Engineer's Representative.

Proprietary Names

- 306 Proprietary names are stated in the Contract Documents to define the quality and standard of materials required. Alternative materials may be proposed by the Contractor provided that they are in all respects equal to or better than those specified, and spares and replacements are equally available in Pakistan.

In respect of any alternative proposed by the Contractor, he shall reimburse to the Employer the costs incurred by the Engineer associated with checking that his proposed alternatives are acceptable, with checking the effect of any such alternative on the performance of the Permanent Works, and with carrying out any alterations to the Drawings or other Contract Documents.

Approval of Materials

Approval of Manufacturers and Suppliers

- 307 The Contractor shall notify the Engineer's Representative at least 14 days in advance of placing orders for any materials for incorporation in the Permanent Works. The Contractor shall if required submit for the approval of the Engineer's Representative, at least 7 days before the date by which he requires to place the order, the following information: -

- (i) Name of manufacturer or supplier proposed;
- (ii) Sufficient evidence to prove that the materials proposed comply in all respects with the Specification and a declaration stating the Standards with which they comply;
- (iii) Declaration that the materials will be supplied with the specified markings and certificates;
- (iv) Particulars listed under the general heading "Information to be furnished by the Supplier" where this occurs in the relevant Standard or such other particulars as may be specified or the Engineer may require;
- (v) Manufacturer's current instructions and explanatory data;
- (vi) Details of fabrication and painting arrangements where appropriate;
- (vii) Declaration that the whole quantity required to complete the work can be supplied from the same source, with written evidence if requested.

Materials shall not be used in the Permanent Works until the Engineer's Representative has given his written approval. Such approval shall not relieve the Contractor of his responsibility for the materials.

Contractor's Working

Drawings

- 308 Where the Contractor or his supplier or subcontractor has to prepare working drawings, schematic diagrams or schedules for materials to be supplied or work to be undertaken by him, these are to be submitted by the Contractor to the Engineer at least 7 days before approval is required by the Contractor. Such drawings, diagrams or schedules must be approved in writing before work is put in hand.

Samples

- 309 Samples or test pieces of all materials and workmanship proposed for the execution of the Works shall be taken by the Contractor in accordance with the relevant Standard or when ordered by the Engineer's Representative and submitted to the Engineer's Representative by the Contractor in labelled boxes suitable for storage.

Samples must be supplied in sufficient time to allow for testing and approval as directed, due allowance being made for availability of testing facilities and the fact that if samples are rejected further samples will be required. Delay to the progress of the Works arising from the late submission of samples will not be accepted as a reason for delay in the completion of the Works.

The samples when approved will be kept by the Engineer's Representative. All materials and workmanship not corresponding in character and quality with the approved samples will be rejected. The Contractor shall remove the samples from the Site when they are no longer required.

Costs

- 310 All costs incurred by the Contractor in demonstrating that his proposed materials comply with Specification shall be borne by the Contractor.

General Requirements for Materials

Ordering Materials

- 311 Materials shall be ordered in accordance with the information shown on the Working Drawings issued from time to time by the Engineer or, if authorized by the Engineer, from the Contract Drawings. Orders for materials shall not be placed on the basis of items in the Bill of Quantities.

Except where specifically agreed to the contrary in writing, the Contractor shall, at the time of placing the order, furnish to the Engineer's Representative copies in duplicate of all orders given for materials for incorporation in the Permanent Works together with two copies of every drawing referred to in the orders.

The Contractor shall, within 3 days of receiving the information, notify the Engineer's Representative of the estimated dates for delivery to the Site for all major materials and materials which are critical for the programme.

Delivery and Storage of Materials on Site

- 312 The Contractor shall not deliver materials to the Site until he has provided adequate facilities at the Site for their proper unloading and storage pending their incorporation in the Works.

All materials brought on to the Site for incorporation in the Permanent Works shall be stored and protected in such a manner as to prevent any damage or deterioration from any cause whatsoever until such time as they are incorporated in the Works. Stacking shall be such as to permit ready inspection and checking and in such a manner that parts are available in proper sequence as required and different items are stacked separately. Methods of storage, protection and handling of materials shall be in accordance with the manufacturer's recommendations and the Specification and to the Engineer's Representative's approval.

The Contractor shall be responsible for ensuring that adequate quantities of approved materials are stored on Site to avoid delays to the construction programme.

Proprietary Products

- 313 Proprietary products shall be used, applied or fixed strictly in accordance with the manufacturer's instructions and to the Engineer's Representative's approval. The Contractor shall be responsible for ensuring that he obtains these instructions by requesting them at or before at the time of ordering. He shall submit a copy of the instructions to the Engineer's Representative.

Use of Materials for Temporary Works

- 314 Materials to be incorporated in the Permanent Works shall not be used for Temporary Works prior to their incorporation in the Permanent Works unless otherwise approved in writing by the Engineer's Representative.

Damaged or Defective Materials

- 315 Immediately any damage or defect is discovered in materials for incorporation in the Permanent Works, the Contractor shall submit a written report to the Engineer. The report shall include the Contractor's proposals for the action to be taken, which shall be subject to the Engineer's Representative's approval.

All damaged or defective materials shall be stored separately and be given conspicuous paint marks or labels. They shall not be used in their damaged or defective condition.

If repairs are possible locally and are approved in writing by the Engineer's Representative, such repaired materials subject to inspection and the approval of the Engineer's Representative before use in the Works.

Rejected materials shall be removed from the Site by the Contractor immediately after written rejection by the Engineer's Representative. If the Contractor fails to remove rejected materials from the Site, the Employer may arrange their removal and will then deduct all expenses thereby incurred by him from the amount of any money due to the Contractor.

The Contractor shall be responsible for all additional costs and delays which occur as a result of the discovery of any damage or defect in materials.

Inspection, Testing and Certification

Inspections and Tests Generally

- 315 All materials for incorporation in the Permanent Works and all workmanship shall be subjected to inspections and tests as provided for in the Conditions of Contract and the Specification. This requirement includes any materials to be supplied by the Employer.

Certificates

- 317 Except where specifically agreed to the contrary in writing, all materials supplied by the Contractor for incorporation in the Permanent Works shall be accompanied by certificates demonstrating compliance of the materials with the Specification. The certificates shall refer to the materials actually dispatched to the Site and to the markings specified in Clause 318. The original and one copy of each certificate shall be submitted to the Engineer's Representative for his approval prior to dispatch of the materials to the Site and sufficiently in advance of the time when they are required on Site to avoid delays to the construction programme.

Each certificate shall be signed by an authorised officer of the manufacturer and shall contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies.

Certification shall not be construed as relieving the Contractor from furnishing satisfactory materials if, after tests are performed on selected samples, the materials are found not to comply with the Specification.

Markings

- 318 All materials for which test certificates are to be supplied by the manufacturer shall be indelibly marked with the date of manufacture, batch number and project reference, in such a way that the batch of materials may be readily identified against the certificates. Where permanent protective coatings are applied to materials the marking shall be applied to the coating.

Verification

- 319 The Contractor shall be responsible for providing all information necessary to enable the Engineer's Representative to verify that materials which are to be incorporated in the Permanent Works can be identified with the corresponding test certificate.

Where a batch of tested material is subsequently broken down into smaller components for incorporation in the Permanent Works, the Contractor shall submit a schedule identifying each such component in the Works with the particular tested batch.

If the Engineer's Representative is not able to verify particular materials he shall require the Contractor to arrange at no extra cost to the Contract such additional tests and examinations as may be necessary to demonstrate that those materials fully comply with the Specification. Materials which the Engineer's Representative is not able to verify shall not be accepted nor shall they be certified for payment.

Inspection and Testing on the Site

- 320 All materials delivered to the Site and workmanship on the Site shall be subjected to inspection and testing by the Contractor in the presence of the Engineer's Representative or, when so directed, at an approved local testing laboratory.

The Contractor shall be responsible for providing samples as specified and for informing the Engineer's Representative in writing on each occasion that inspection or testing is required by the Specification. He shall give such notice as the Engineer's Representative shall agree is sufficient for each category of inspection or tests.

The Contractor shall, when so directed, be required to witness tests performed by or under the direction of the Engineer's Representative. If the Contractor fails or refuses to witness such tests, he shall nevertheless be deemed to have witnessed them. The Contractor may also, if he so chooses, witness any other such tests.

The Engineer's Representative shall have the power to carry out or order from the Contractor additional samples, inspections or tests where necessary to ensure that materials and workmanship are in accordance with the Specification. The cost of such additional samples, inspections and tests shall be paid by the Contractor and shall be borne by him except where provided otherwise by the Conditions of Contract.

The Contractor shall ensure that the Engineer's Representative receives a copy of all test results signed by an authorised representative of the testing organization.

Tests on Completion

- 321 Except where specifically agreed to the contrary in writing, the Contractor shall present all Plant and systems installed under the Contract for Tests on Completion, at least 14 days before the date for the Taking-Over Certificate for the Works. These tests are in addition to any works tests performed by the manufacturer and tests the Contractor may need to carry out in order to set up the systems to his own satisfaction.

Before the Contractor offers Plant and systems for Tests on Completion, all associated systems and installations are to be complete, checked, adjusted and set up. Final paint work must be complete and a complete lubrication service applied where appropriate. Tests on Completion shall not be carried out until the approved operation and maintenance manuals have been provided.

The Contractor shall submit to the Engineer's Representative a detailed Schedule and Programme of Tests on Completion, to be agreed and completed 28 days before the commencement of testing.

Testing shall be carried out in the presence of, and to the satisfaction of the Engineer's Representative and in the presence of one or more representatives of the Employer to demonstrate that the Plant and systems perform in accordance with the Specification and are ready for operation. The Contractor shall in addition conduct such further demonstrations as are necessary to ensure that the designated representatives of the Employer are able to operate the Plant and systems without assistance. Undertaking of the tests shall be the responsibility of the Contractor.

The Contractor shall provide all rigs, test loads, instrumentation and labour assistance necessary for the proper performance of the Tests on Completion, and shall take and record such readings as are required.

Any defects discovered during the Tests on Completion shall be recorded by the Contractor and Engineer's Representative and shall be duly rectified by the Contractor. Following rectification, the Contractor shall repeat the tests before final handover of the Plant or system.

On completion of the Tests on Completion the Contractor shall provide three copies of the Test Schedule completed for all observed tests and data readings. A Test Certificate shall be submitted in triplicate for signature by the Engineer's Representative.



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**CONSTRUCTION OF ENVIRONMENTAL ENGINEERING DEPARTMENT
AT QUEST NAWABSHAH**

Tender Documents

Part – III

(Tender No. QUEST-NS-Envir-Engr-002a-Civil Works)

Drawings

Consultants:



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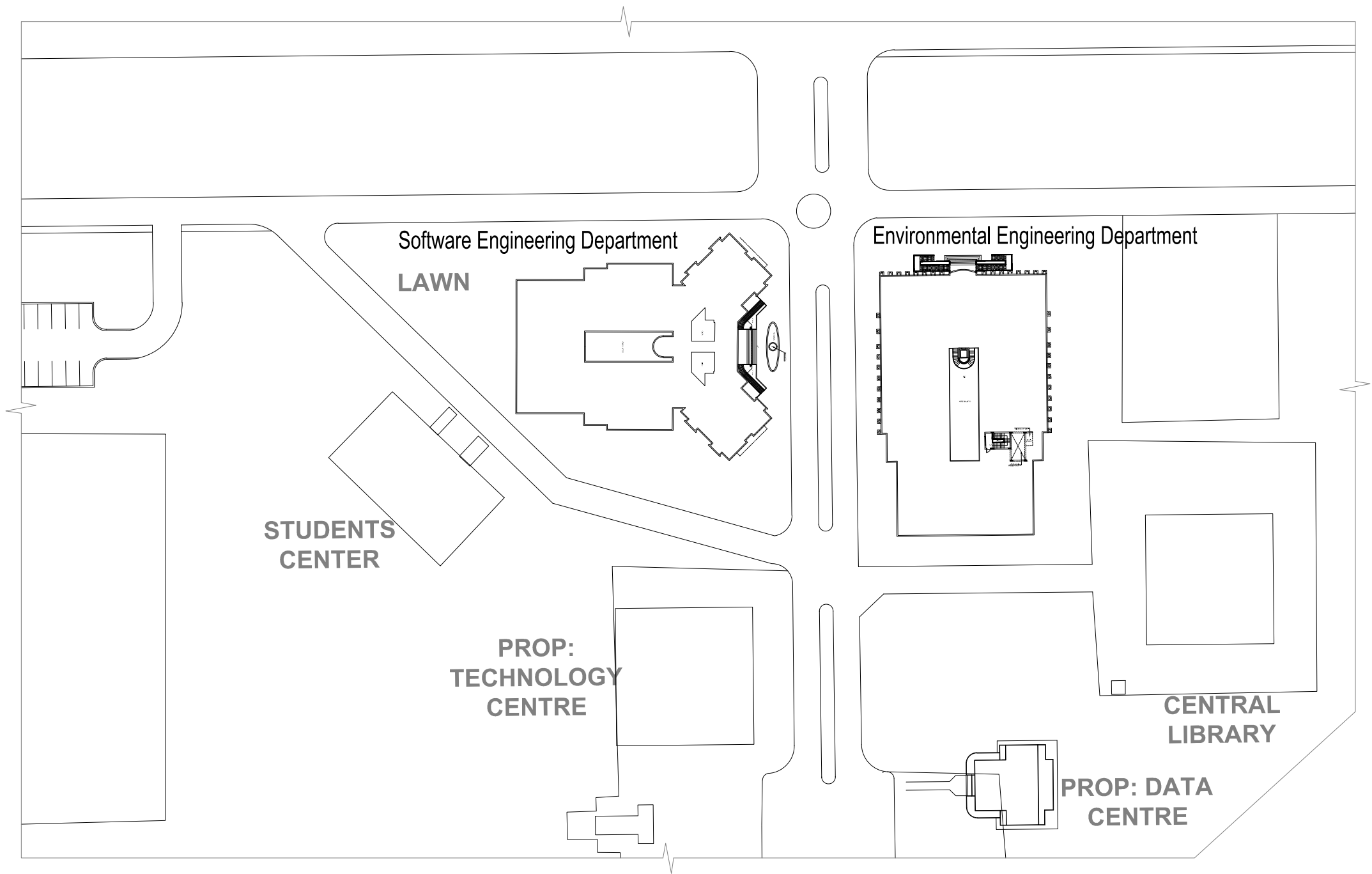
LIST OF DRAWINGS

ENVIRONMENTAL ENGINEERING DEPARTMENT

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S.NO	ARCHITECTURAL DRAWINGS		S.NO	PLUMBING DRAWINGS	
01. 02. 03. 04. 05. 06. 07. 08. 09. 10. 11. 12. 13. 14. 15. 16. 17.	DRAWING TITLE		54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69.	DRAWING TITLE	
	ZCL / QUEST-EED / A-01	ENLARGED MASTER PLAN		ZCL / QUEST-EED / P-01	GENERAL NOTES & LEGEND
	ZCL / QUEST-EED / A-02	GROUND FLOOR PLAN		ZCL / QUEST-EED / P-02	GROUND FLOOR PLAN (Sewerage, Water Supply & Gas)
	ZCL / QUEST-EED / A-03	FIRST FLOOR PLAN		ZCL / QUEST-EED / P-03	FIRST FLOOR PLAN (Sewerage, Water Supply & Gas)
	ZCL / QUEST-EED / A-04	ROOF PLAN		ZCL / QUEST-EED / P-04	ROOF PLAN SHOWING WATER SUPPLY DISTRIBUTION LINES
	ZCL / QUEST-EED / A-05	ELEVATION-1,2		ZCL / QUEST-EED / P-05	ROOF PLAN SHOWING STORM WATER DRAINAGE
	ZCL / QUEST-EED / A-06	ELEVATION-3,4		ZCL / QUEST-EED / P-06	DETAIL OF TOILETS - 1 , 2 , 3 & 4 GROUND FLOOR (Sewerage)
	ZCL / QUEST-EED / A-07	SECTION AA,BB		ZCL / QUEST-EED / P-07	DETAIL OF TOILETS - 5 , 6 , & 7 GROUND FLOOR (Sewerage)
	ZCL / QUEST-EED / A-08	DETAIL OF DOOR		ZCL / QUEST-EED / P-08	DETAIL OF TOILETS - 8 , 9 , 10 & 11 FIRST FLOOR (Sewerage)
	ZCL / QUEST-EED / A-09	DETAIL OF WINDOWS		ZCL / QUEST-EED / P-09	DETAIL OF KITCHEN - 1 & TOILETS - 12,13 & 14 FIRST FLOOR (SEWERAGE)
	ZCL / QUEST-EED / A-10	DETAILS OF TOILET		ZCL / QUEST-EED / P-10	DETAIL OF TOILETS - 15 FIRST FLOOR (Sewerage)
	ZCL / QUEST-EED / A-11	DETAILS OF STAIR		ZCL / QUEST-EED / P-11	DETAIL OF TOILETS - 1 , 2 , 3 & 4 GROUND FLOOR (Water Supply)
	ZCL / QUEST-EED / A-12	FURNITURE LAYOUT (GROUND FLOOR PLAN)		ZCL / QUEST-EED / P-12	DETAIL OF TOILETS -5 , 6 & 7 GROUND FLOOR (Water Supply)
	ZCL / QUEST-EED / A-13	FURNITURE LAYOUT (FIRST FLOOR PLAN)		ZCL / QUEST-EED / P-13	DETAIL OF TOILETS - 8 , 9 ,10 & 11 FIRST FLOOR (Water Supply)
	ZCL / QUEST-EED / A-14	FLOOR PATTERN (GROUND FLOOR PLAN)		ZCL / QUEST-EED / P-14	DETAIL OF KITCHEN - 1 TOILETS - 12, 13 & 14 FIRST FLOOR (Water Supply)
	ZCL / QUEST-EED / A-15	FLOOR PATTERN (FIRST FLOOR PLAN)		ZCL / QUEST-EED / P-15	DETAIL OF TOILETS - 15 FIRST FLOOR (Water Supply)
	ZCL / QUEST-EED / A-16	FLOOR PATTERN (ROOF PLAN)		ZCL / QUEST-EED / P-16	DETAIL OF MANHOLE & CHAMBER
	ZCL / QUEST-EED / A-17	SHEDULE OF FINSHES			
STRUCTURAL DRAWINGS					
18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53.	DRAWING TITLE				
	ZCL / QUEST-EED / S-01	GENERAL TECHNICAL NOTES			
	ZCL / QUEST-EED / S-02	SCHEDULE OF FOOTINGS & COLUMNS			
	ZCL / QUEST-EED / S-03	COLUMN LAYOUT PLAN			
	ZCL / QUEST-EED / S-04	FOOTING PLAN			
	ZCL / QUEST-EED / S-05	DETAIL OF FOOTING (SHEET 01)			
	ZCL / QUEST-EED / S-06	DETAIL OF FOOTING (SHEET 02)			
	ZCL / QUEST-EED / S-07	DETAIL OF FOOTING (SHEET 03)			
	ZCL / QUEST-EED / S-08	DETAIL OF FOOTING (SHEET 04)			
	ZCL / QUEST-EED / S-09	TYPICAL COLUMN DETAILS			
	ZCL / QUEST-EED / S-10	DETAIL OF STAIR-1			
	ZCL / QUEST-EED / S-11	DETAIL OF STAIR-2			
	ZCL / QUEST-EED / S-12	DETAIL OF STAIR-3			
	ZCL / QUEST-EED / S-13	DETAIL OF LIFT			
	ZCL / QUEST-EED / S-14	FRAMING PLAN FOR FIRST FLOOR SLAB (GROUND FLOOR ROOF)			
	ZCL / QUEST-EED / S-15	REINFORCEMENT PLAN FOR FIRST FLOOR SLAB (GROUND FLOOR ROOF)			
	ZCL / QUEST-EED / S-16	FRAMING PLAN FOR ROOF SLAB (FIRST FLOOR ROOF)			
	ZCL / QUEST-EED / S-17	REINFORCEMENT PLAN FOR ROOF SLAB (FIRST FLOOR ROOF)			
	ZCL / QUEST-EED / S-18	FRAMING PLAN FOR MUMTY SLAB			
	ZCL / QUEST-EED / S-19	REINFORCEMENT PLAN FOR MUMTY SLAB			
	ZCL / QUEST-EED / S-20	SECTION A-A & B-B			
	ZCL / QUEST-EED / S-21	DETAIL OF PARAPETS			
	ZCL / QUEST-EED / S-22	01 DETAIL OF BEAMS (GROUND FLOOR)			
	ZCL / QUEST-EED / S-23	02 DETAIL OF BEAMS (GROUND FLOOR)			
	ZCL / QUEST-EED / S-24	03 DETAIL OF BEAMS (GROUND FLOOR)			
	ZCL / QUEST-EED / S-25	04 DETAIL OF BEAMS (GROUND FLOOR)			
	ZCL / QUEST-EED / S-26	04 DETAIL OF BEAMS (GROUND FLOOR)			
	ZCL / QUEST-EED / S-27	04 DETAIL OF BEAMS (GROUND FLOOR)			
	ZCL / QUEST-EED / S-28	01 DETAIL OF BEAMS (FIRST FLOOR)			
	ZCL / QUEST-EED / S-29	02 DETAIL OF BEAMS (FIRST FLOOR)			
	ZCL / QUEST-EED / S-30	03 DETAIL OF BEAMS (FIRST FLOOR)			
	ZCL / QUEST-EED / S-31	04 DETAIL OF BEAMS (FIRST FLOOR)			
	ZCL / QUEST-EED / S-32	05 DETAIL OF BEAMS (FIRST FLOOR)			
	ZCL / QUEST-EED / S-33	05 DETAIL OF BEAMS (FIRST FLOOR)			
	ZCL / QUEST-EED / S-34	DETAIL OF OVER HEAD WATER TANK			
	ZCL / QUEST-EED / S-35	BRIEF SPECIF., CON. PROCEDURE & TYP. STRUCTURAL DETAILS			
	ZCL / QUEST-EED / S-36	BRIEF SPECIF., CON. PROCEDURE & TYP. STRUCTURAL DETAILS			



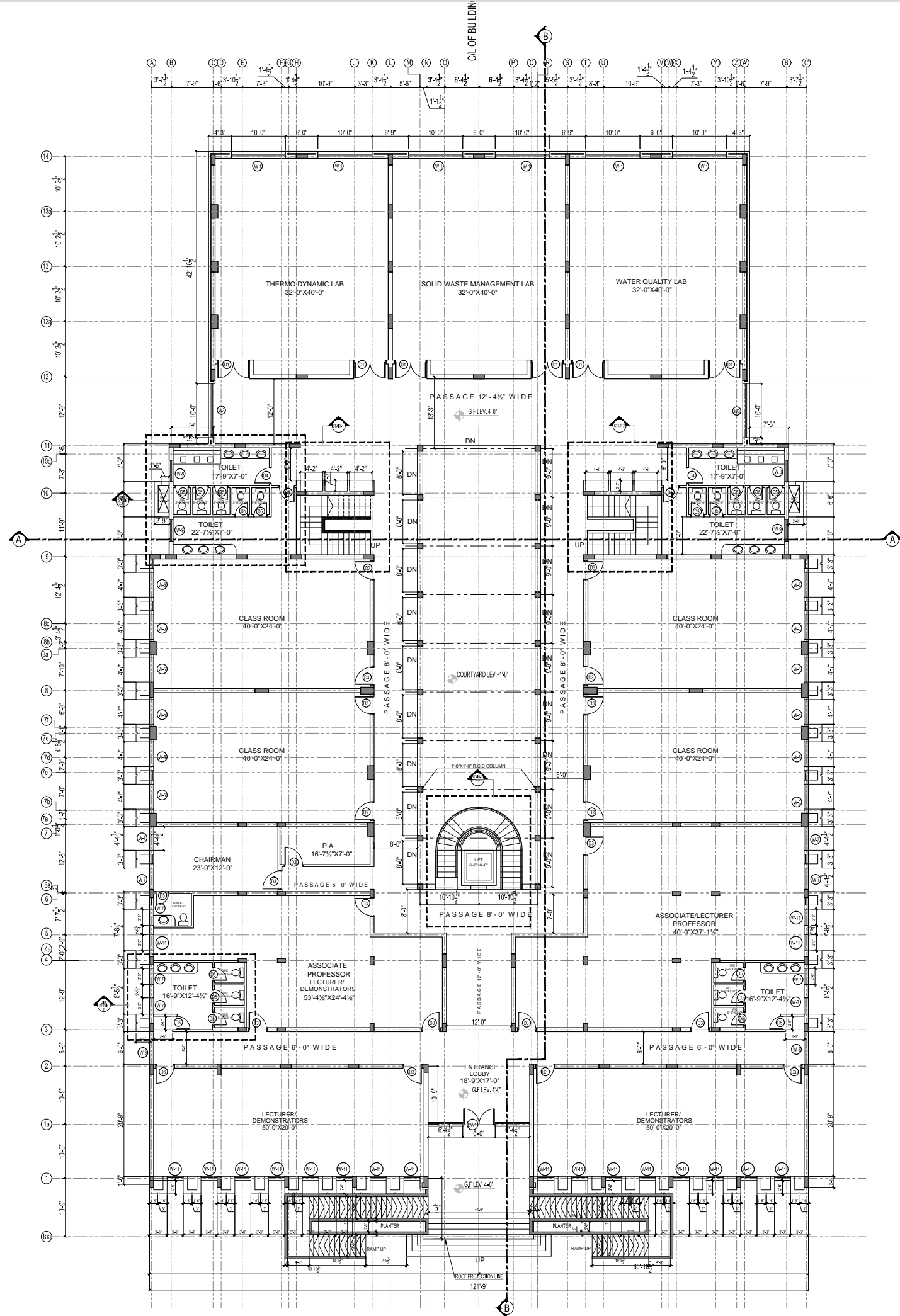
MASTER PLAN

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: MASTER PLAN	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / A 01	Job No. 885
Scale : A2 1/16"		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		




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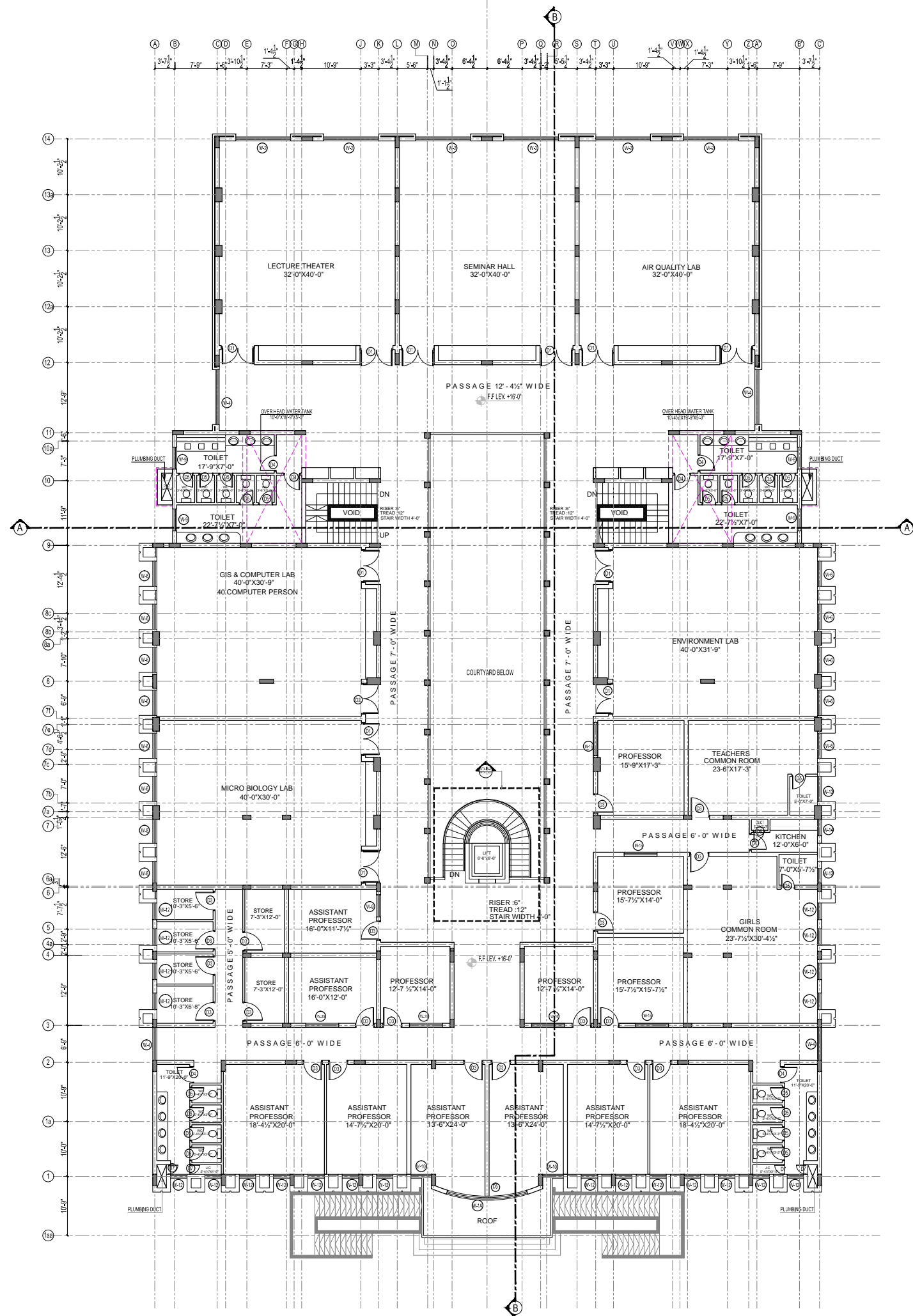
GROUND FLOOR PLAN

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: GROUND FLOOR PLAN	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / A 02	Scale: A2 1/16"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD.		
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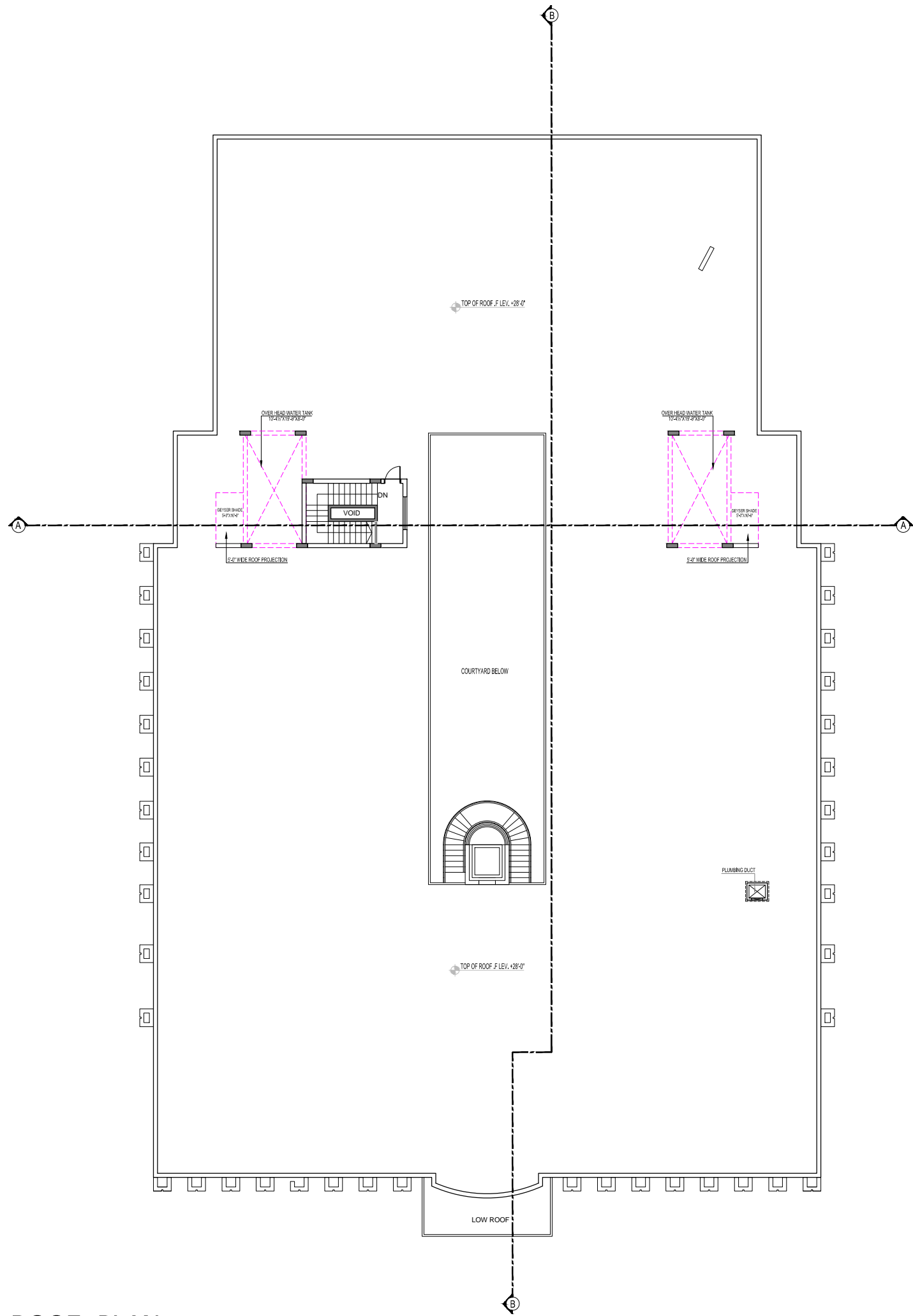
FIRST FLOOR PLAN

REV. NO.	DATE	DESCRIPTION
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ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: FIRST FLOOR PLAN	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / A 03	Scale: A2 1/16"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD.		
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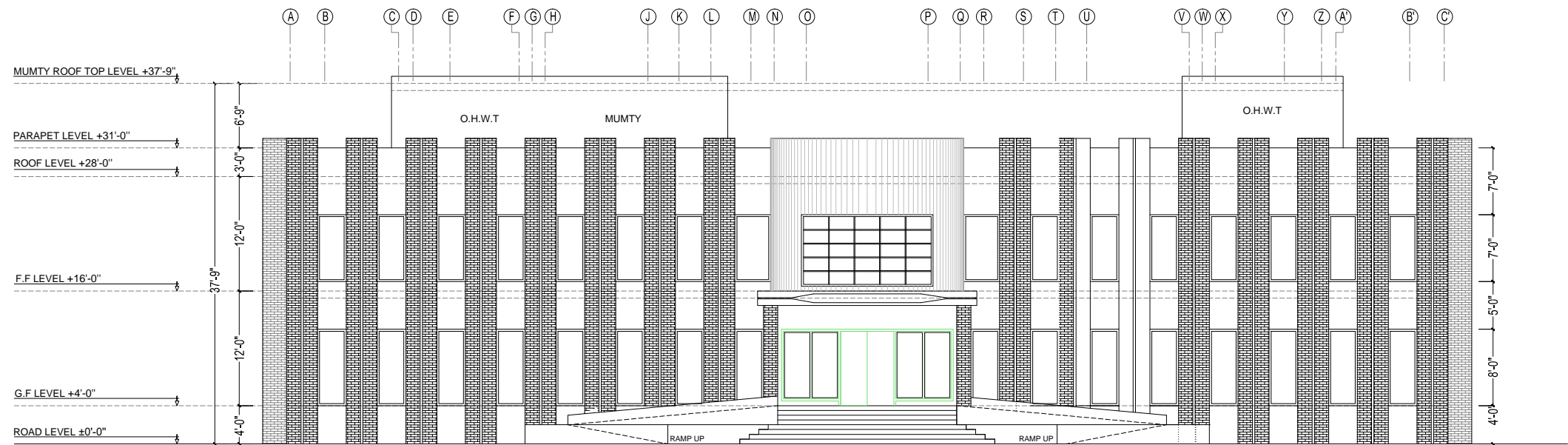
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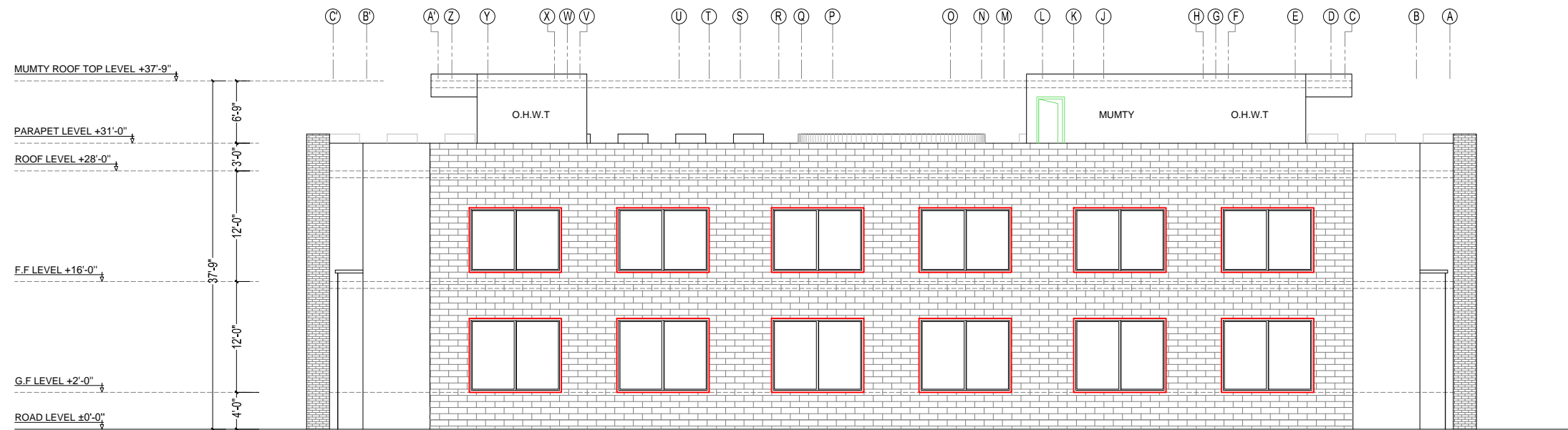


ROOF PLAN

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
 QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: ROOF FLOOR PLAN	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / A 04	Scale : A2 1/16"
Job No. 885		
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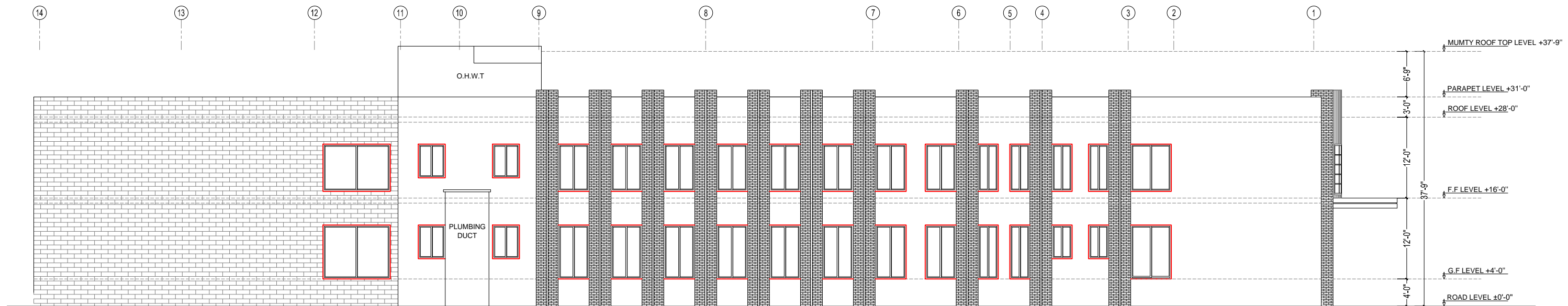


ELEVATION-1

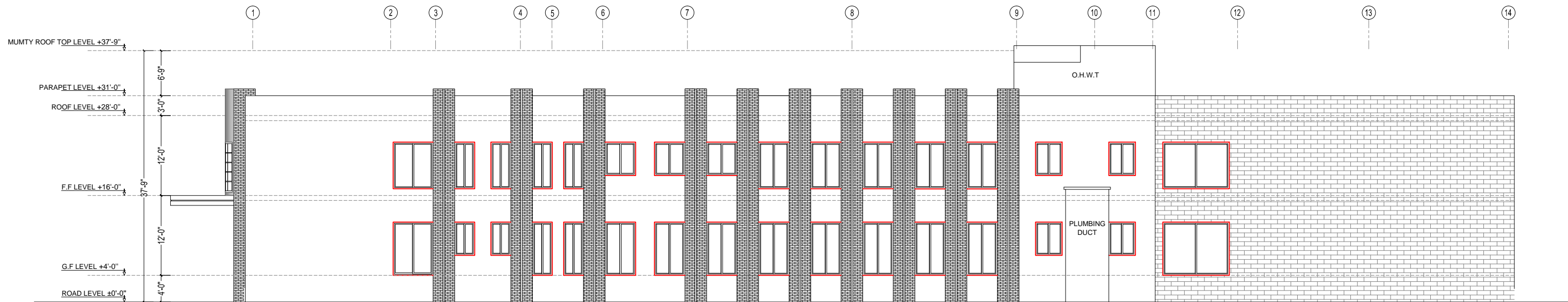


ELEVATION-2



REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: ELEVATION - 1 & 2	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / A 05	Scale: A2 1/16"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



ELEVATION-3



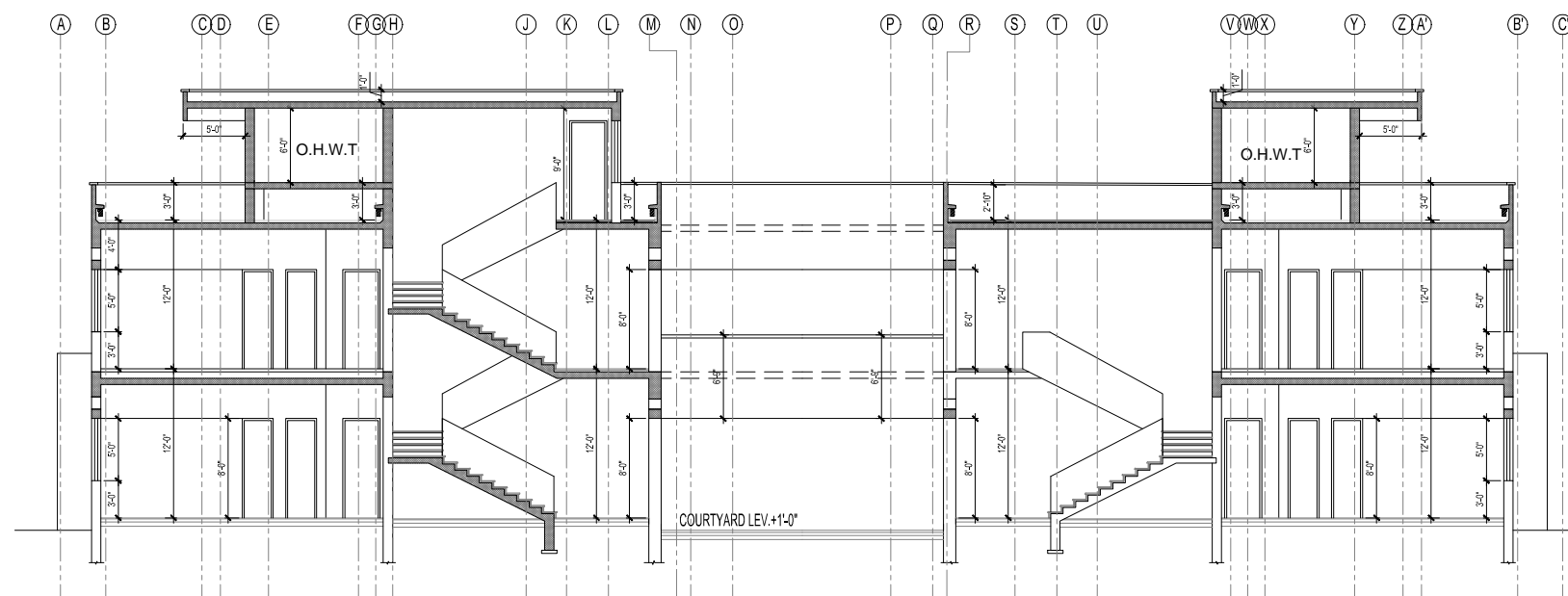
ELEVATION-4

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
 QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: ELEVATION - 3 & 4	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / A 06	Scale : A2 1/16"
885		
 ZAHEERUDDIN CONSULTANTS (PVT) LTD. ■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		

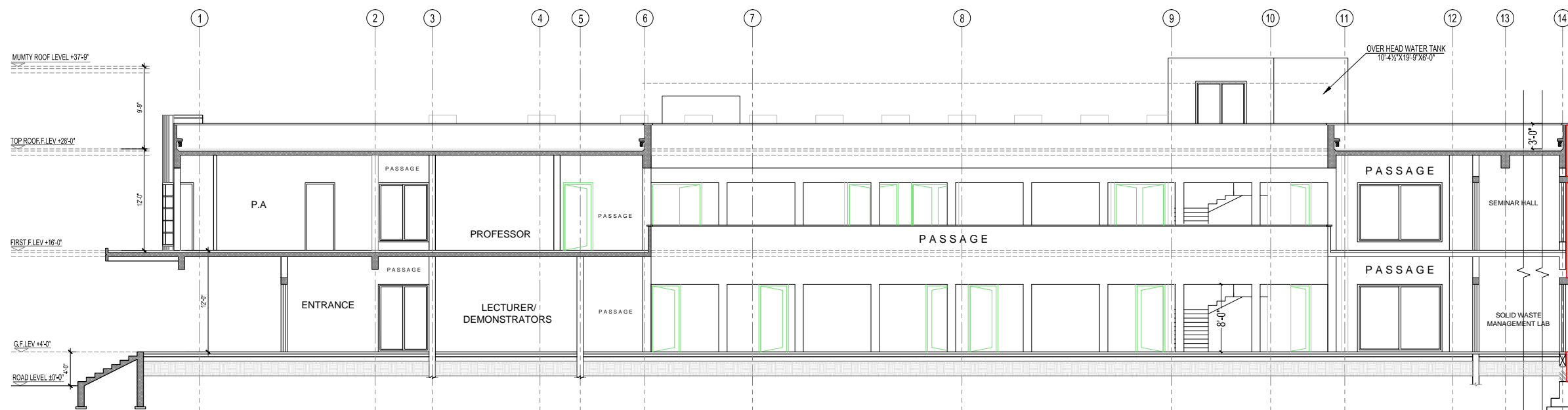


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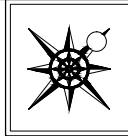


SECTION AA



SECTION - BB

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: SECTION A-A & B-B	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / A 07	Scale : A2 1/16"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		

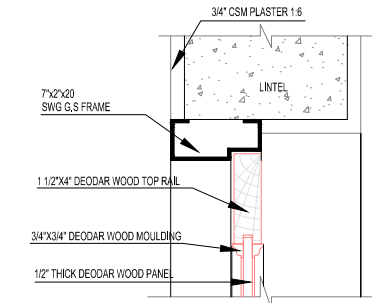


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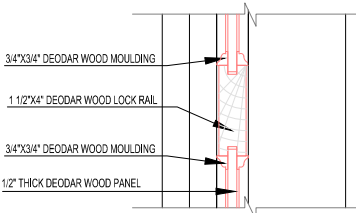
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NAME D1	NAME D2	NAME D3	NAME D4
SIZE 6'-0"X8'-0"	SIZE 5'-7 1/2"X8'-0"	SIZE 3'-6"X8'-0"	SIZE 3'-0"X8'-0"
TYPE DOUBLE LEAF HINGED	TYPE DOUBLE LEAF HINGED	TYPE DOUBLE LEAF HINGED	TYPE DOUBLE LEAF HINGED

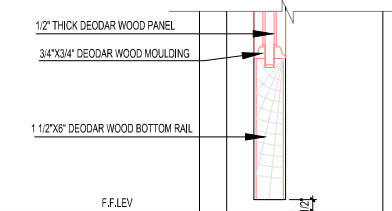
NAME D5	NAME D6	NAME D7	
SIZE 3'-0"X7'-0"	SIZE 2'-0" X 7'-0"	SIZE 1'-9" X 7'-0"	
TYPE SINGLE LEAF HINGED	TYPE SINGLE LEAF HINGED	TYPE SINGLE LEAF HINGED	



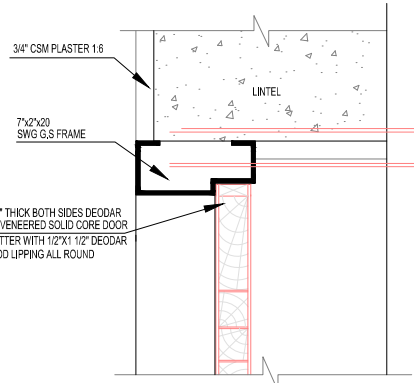
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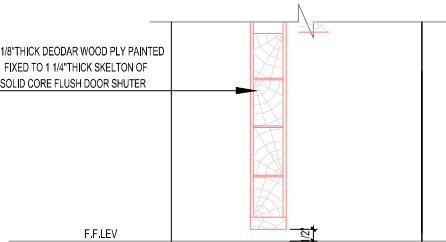
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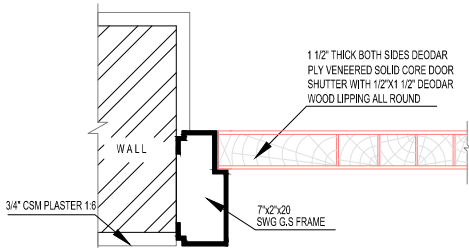
SECTION NO -3



SECTION NO -4



SECTION NO -5




SECTION NO -6

REV. NO.	DATE	DESCRIPTION
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TENDER DRAWING

ENVIRONMENTAL ENGINEERING DEPARTMENT




QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY
NAWABSHAH

Drawn: Shahzad	Drawing Title: DETAIL OF DOORS	Date : March 2024	Job No. 885
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / A 08	Scale : A2 NTS	

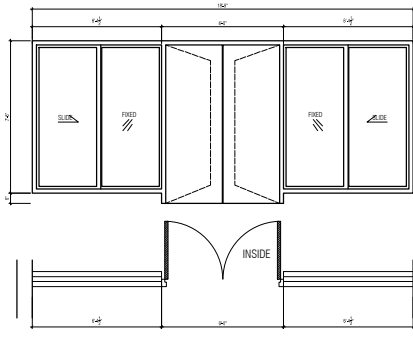


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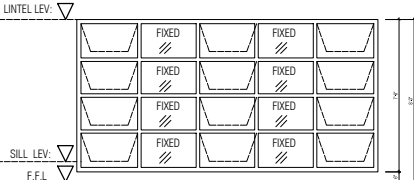
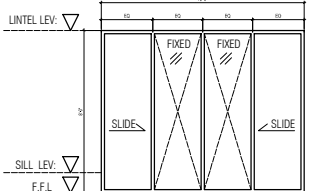
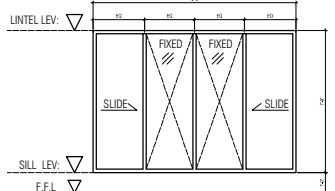
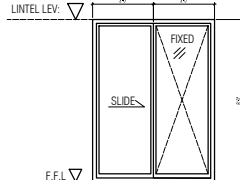
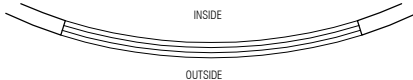
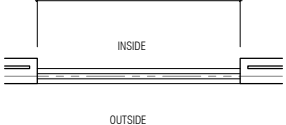
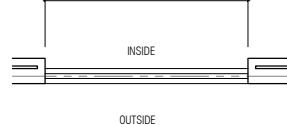
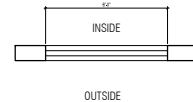
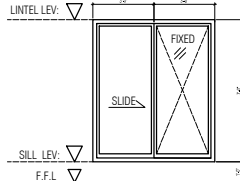
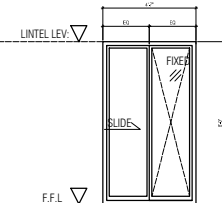
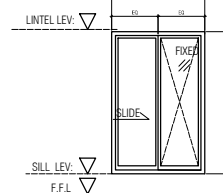
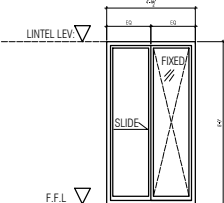
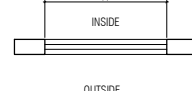

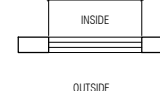
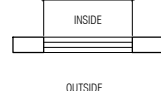
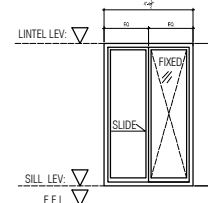
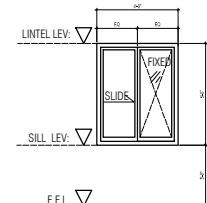
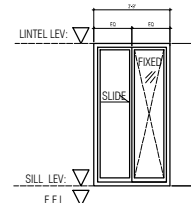
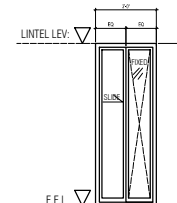
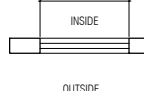
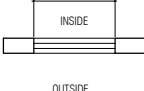
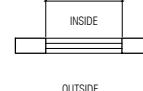

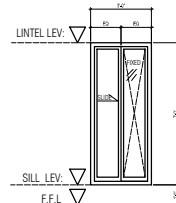
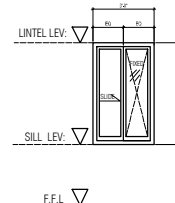
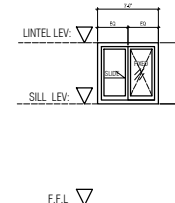
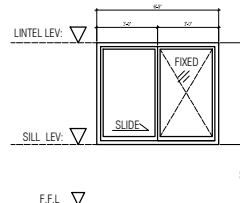
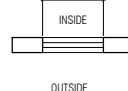
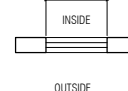
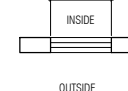
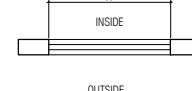
NAME



SIZE

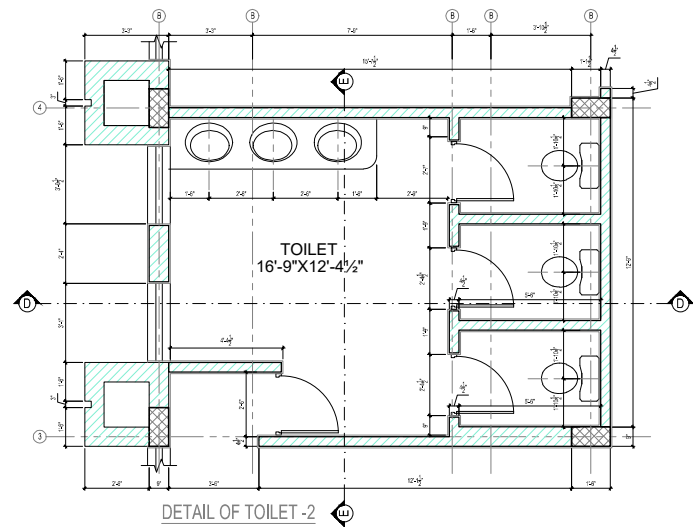
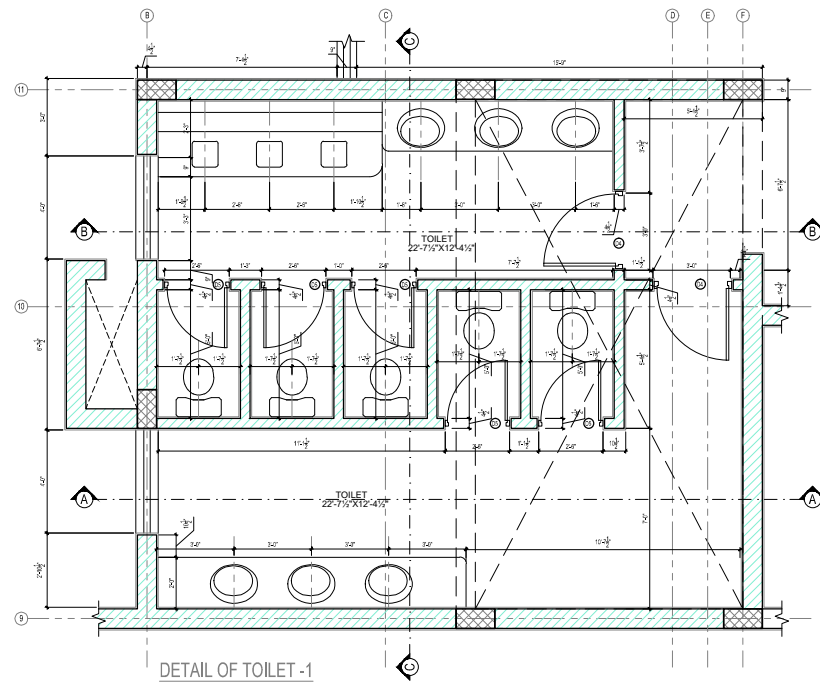
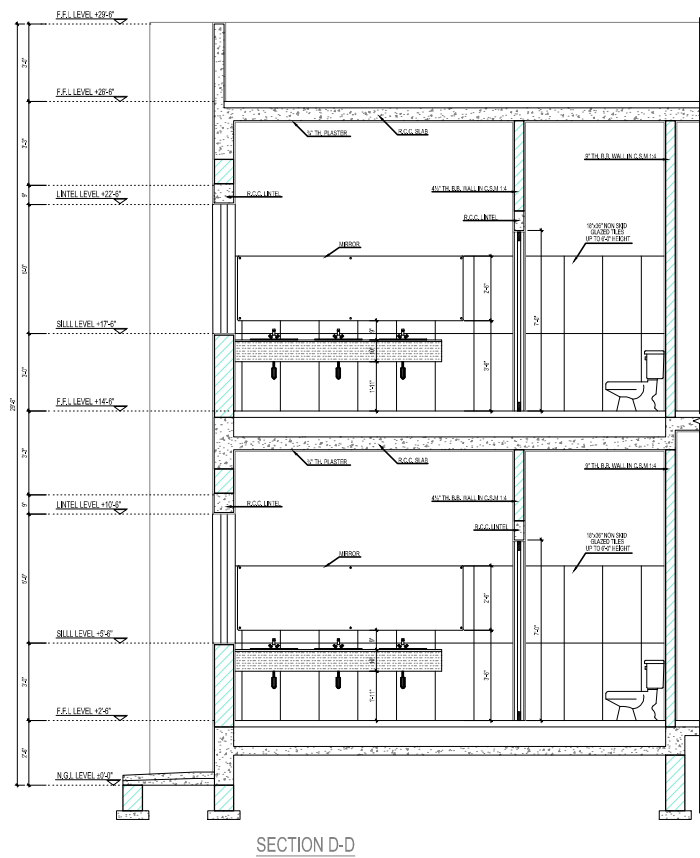
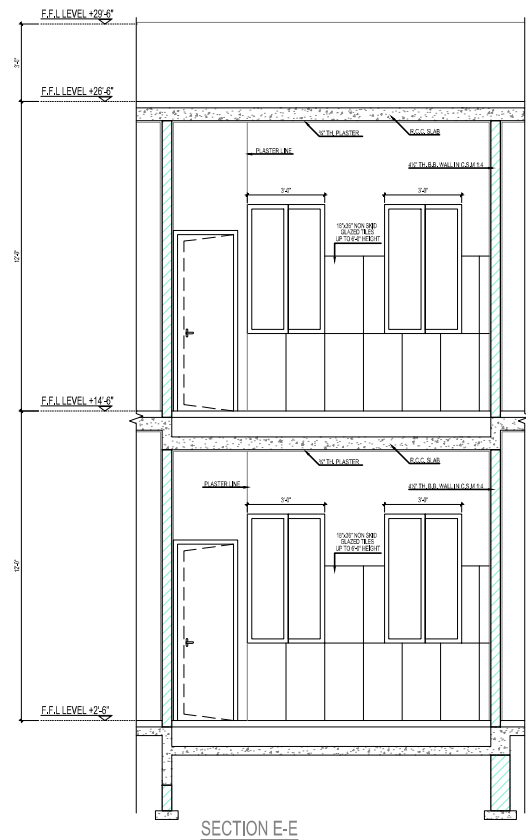
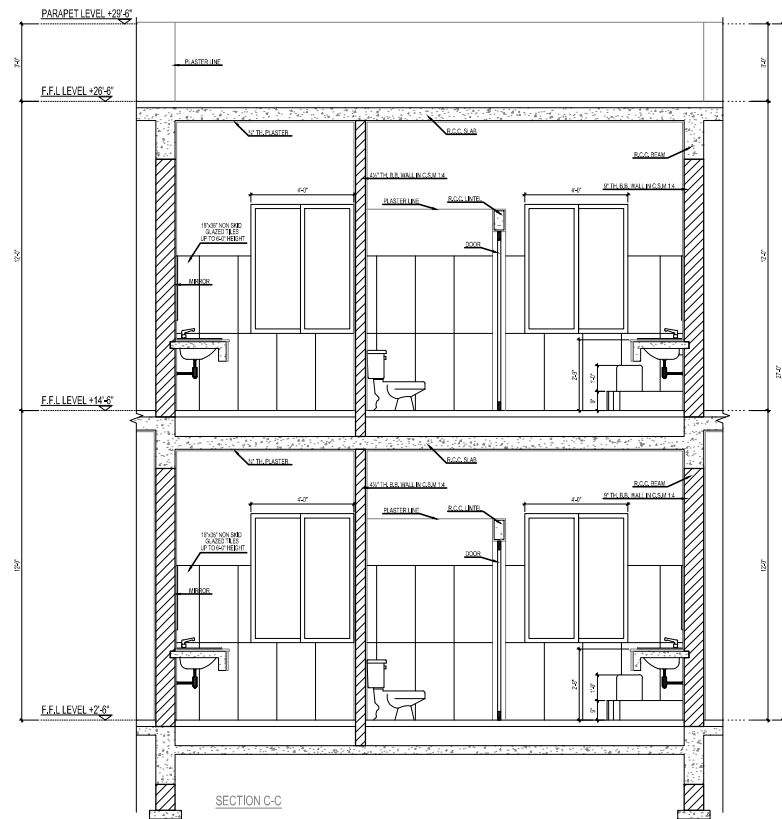
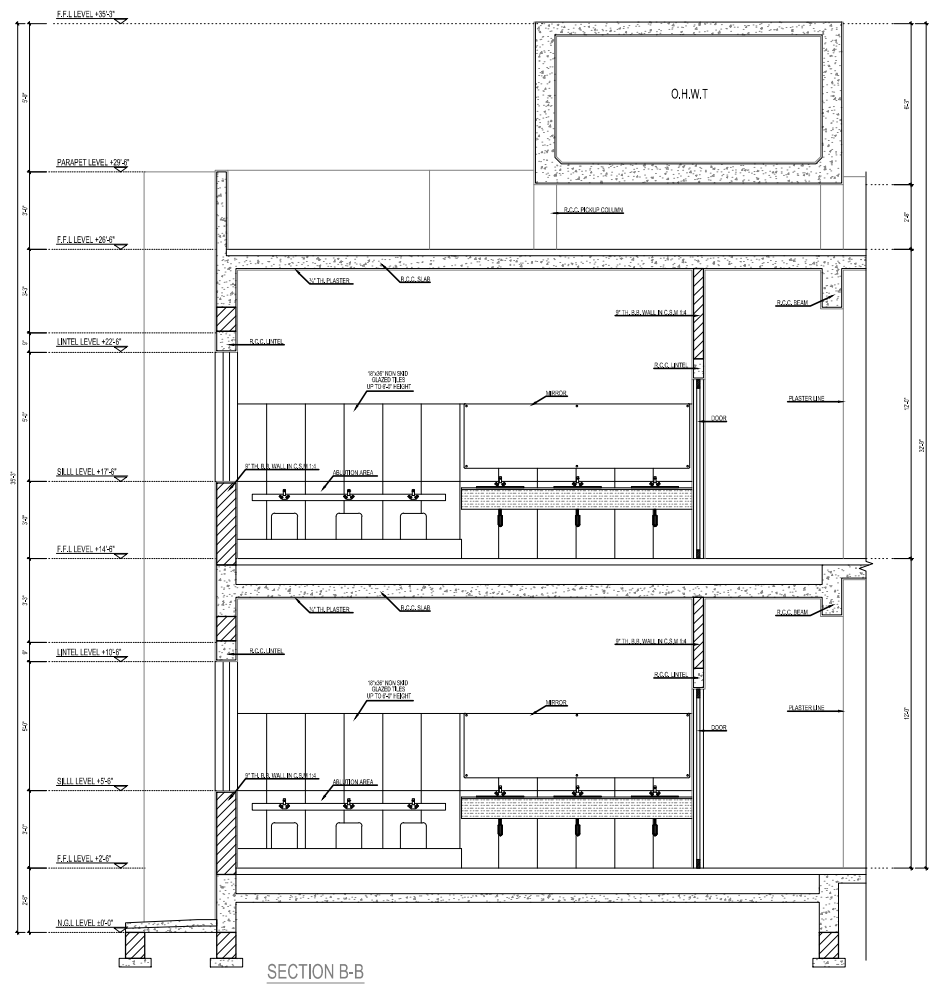
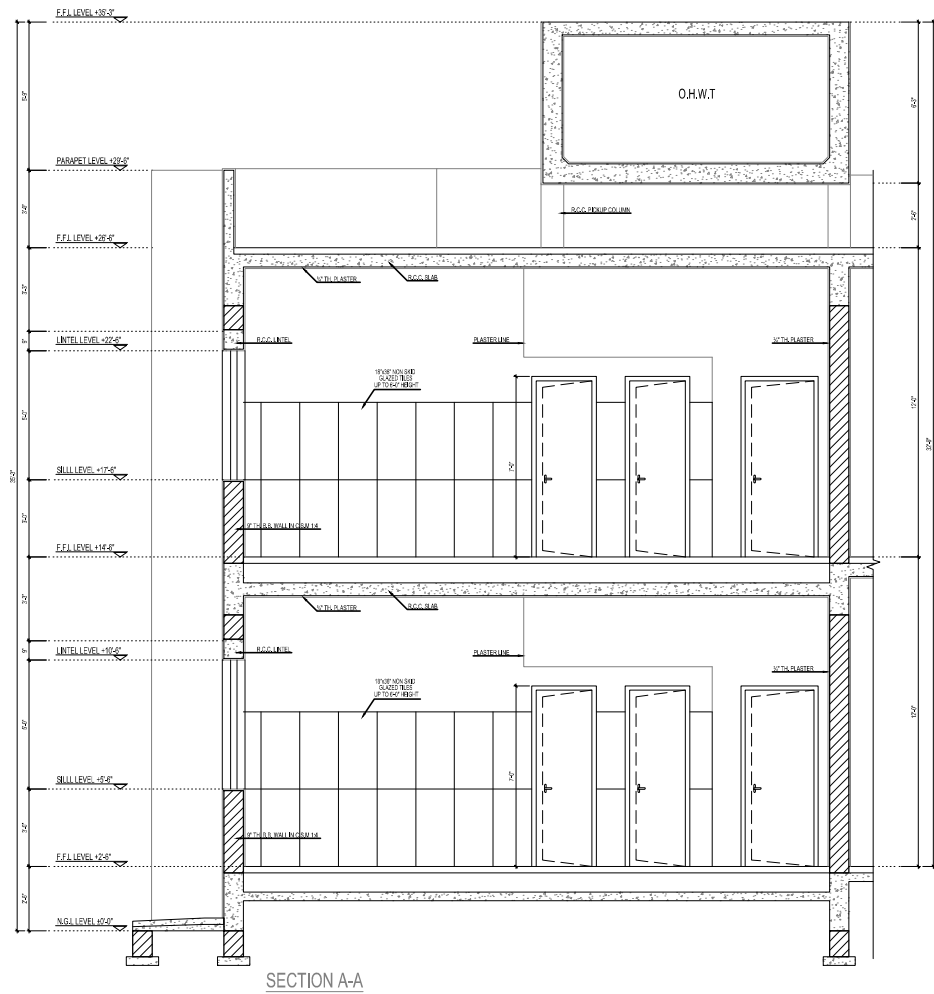
TYPE


DW1
18'-9"x8'-0"
SLIDING/FIXED

FRAME : ANODIZED BRONZE 1.6mm ALUMINUM.
FIXED / SLIDING WINDOW, 5mm PLAIN GLASS,
AND FLYPROOFING ARRANGEMENT.

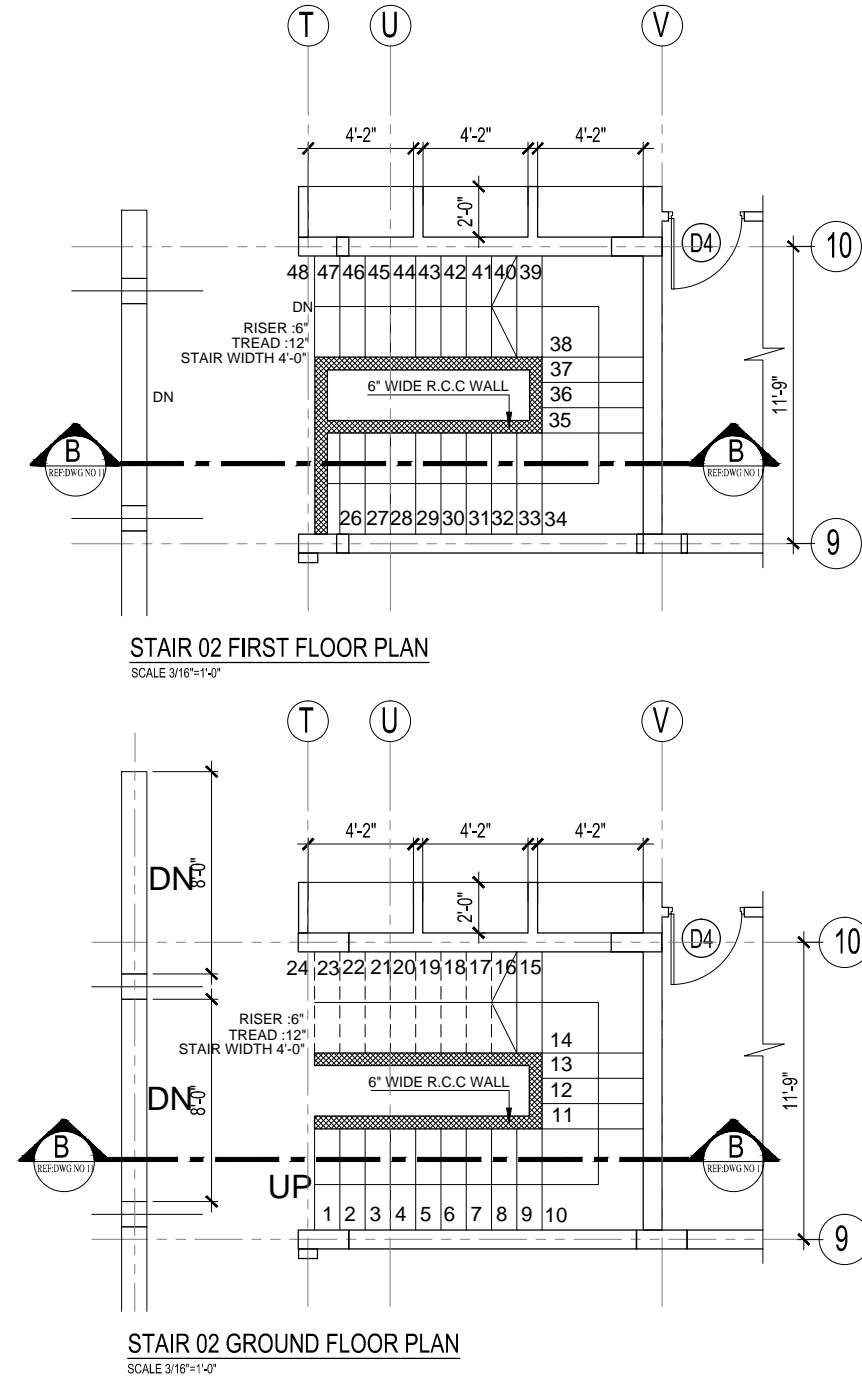
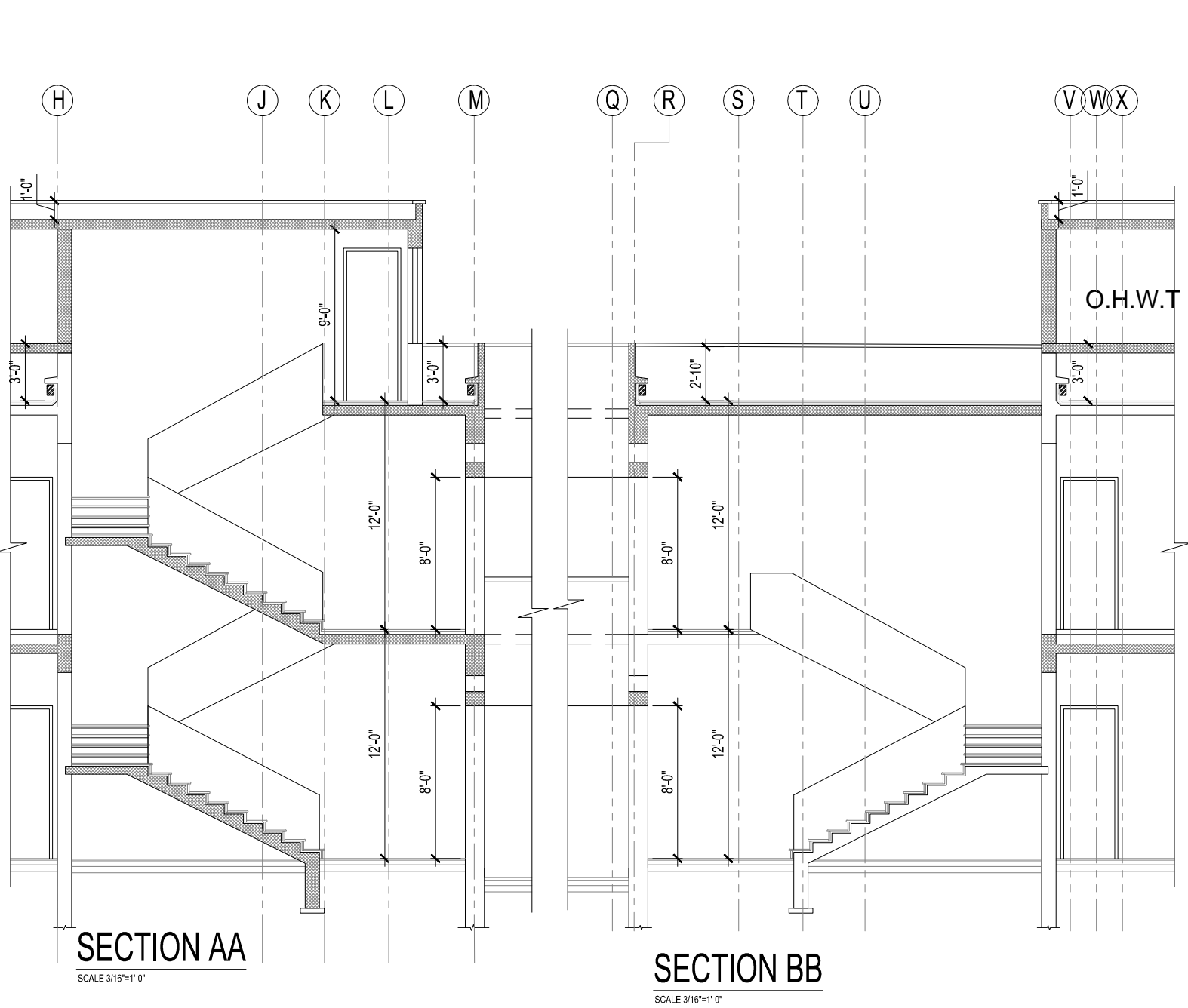
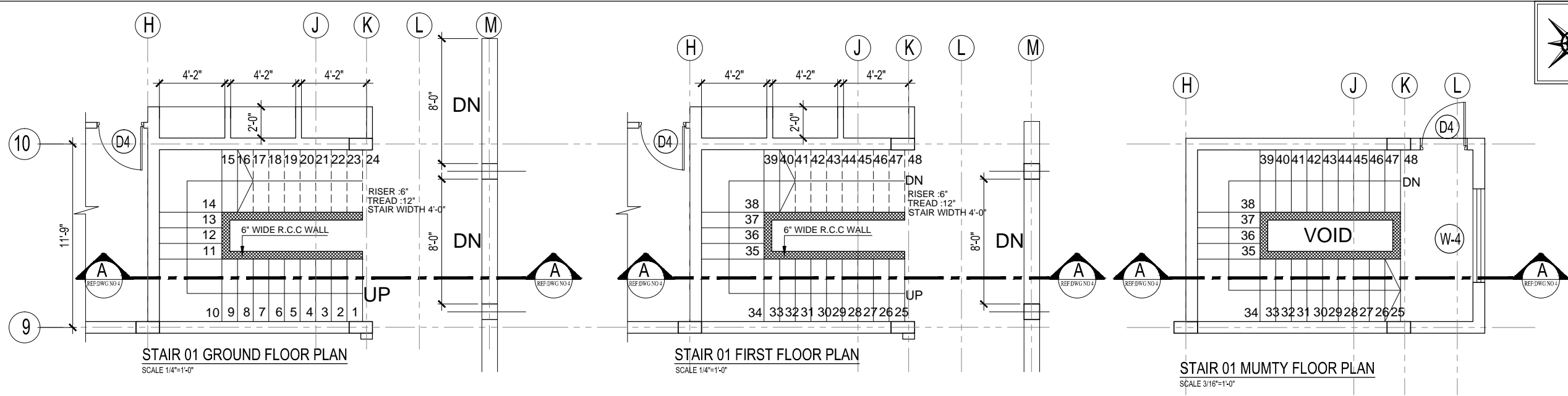
			
			
<div><div>NAME</div><div>SIZE</div><div>TYPE</div></div> <div>W1A 15'-0"x7'-0" OPENABLE/FIXED</div>	<div><div>NAME</div><div>SIZE</div><div>TYPE</div></div> <div>W1 10'-0"x8'-0" SLIDING/FIXED</div>	<div><div>NAME</div><div>SIZE</div><div>TYPE</div></div> <div>W2 10'-0"x7'-0" SLIDING/FIXED</div>	<div><div>NAME</div><div>SIZE</div><div>TYPE</div></div> <div>W3 6'-0"x8'-0" SLIDING/FIXED</div>
FRAME : ANODIZED BRONZE 1.6mm ALUMINUM. FIXED / SLIDING WINDOW, 5mm PLAIN GLASS, AND FLYPROOFING ARRANGEMENT.	FRAME : ANODIZED BRONZE 1.6mm ALUMINUM. FIXED / SLIDING WINDOW, 5mm PLAIN GLASS, AND FLYPROOFING ARRANGEMENT.	FRAME : ANODIZED BRONZE 1.6mm ALUMINUM. FIXED / SLIDING WINDOW, 5mm PLAIN GLASS, AND FLYPROOFING ARRANGEMENT.	FRAME : ANODIZED BRONZE 1.6mm ALUMINUM. FIXED / SLIDING WINDOW, 5mm PLAIN GLASS, AND FLYPROOFING ARRANGEMENT.
			
			
<div><div>NAME</div><div>SIZE</div><div>TYPE</div></div> <div>W4 6'-0"x7'-0" SLIDING/FIXED</div>	<div><div>NAME</div><div>SIZE</div><div>TYPE</div></div> <div>W5 4'-7"x8'-0" SLIDING/FIXED</div>	<div><div>NAME</div><div>SIZE</div><div>TYPE</div></div> <div>W6 4'-7"x7'-0" SLIDING/FIXED</div>	<div><div>NAME</div><div>SIZE</div><div>TYPE</div></div> <div>W7 4'-4 1/2"x8'-0" SLIDING/FIXED</div>
FRAME : ANODIZED BRONZE 1.6mm ALUMINUM. FIXED / SLIDING WINDOW, 5mm PLAIN GLASS, AND FLYPROOFING ARRANGEMENT.	FRAME : ANODIZED BRONZE 1.6mm ALUMINUM. FIXED / SLIDING WINDOW, 5mm PLAIN GLASS, AND FLYPROOFING ARRANGEMENT.	FRAME : ANODIZED BRONZE 1.6mm ALUMINUM. FIXED / SLIDING WINDOW, 5mm PLAIN GLASS, AND FLYPROOFING ARRANGEMENT.	FRAME : ANODIZED BRONZE 1.6mm ALUMINUM. FIXED / SLIDING WINDOW, 5mm PLAIN GLASS, AND FLYPROOFING ARRANGEMENT.
			
			
<div><div>NAME</div><div>SIZE</div><div>TYPE</div></div> <div>W8 4'-4 1/2"x7'-0" SLIDING/FIXED</div>	<div><div>NAME</div><div>SIZE</div><div>TYPE</div></div> <div>W9 4'-4 1/2"x7'-0" SLIDING/FIXED</div>	<div><div>NAME</div><div>SIZE</div><div>TYPE</div></div> <div>W10 3'-9"x7'-0" SLIDING/FIXED</div>	<div><div>NAME</div><div>SIZE</div><div>TYPE</div></div> <div>W11 3'-0"x8'-0" SLIDING/FIXED</div>
FRAME : ANODIZED BRONZE 1.6mm ALUMINUM. FIXED / SLIDING WINDOW, 5mm PLAIN GLASS, AND FLYPROOFING ARRANGEMENT.	FRAME : ANODIZED BRONZE 1.6mm ALUMINUM. FIXED / SLIDING WINDOW, 5mm PLAIN GLASS, AND FLYPROOFING ARRANGEMENT.	FRAME : ANODIZED BRONZE 1.6mm ALUMINUM. FIXED / SLIDING WINDOW, 5mm PLAIN GLASS, AND FLYPROOFING ARRANGEMENT.	FRAME : ANODIZED BRONZE 1.6mm ALUMINUM. FIXED / SLIDING WINDOW, 5mm PLAIN GLASS, AND FLYPROOFING ARRANGEMENT.
			
			
<div><div>NAME</div><div>SIZE</div><div>TYPE</div></div> <div>W12 3'-0"x7'-0" SLIDING/FIXED</div>	<div><div>NAME</div><div>SIZE</div><div>TYPE</div></div> <div>W13 3'-0"x5'-0" SLIDING/FIXED</div>	<div><div>NAME</div><div>SIZE</div><div>TYPE</div></div> <div>W14 3'-0"x5'-0" SLIDING/FIXED</div>	<div><div>NAME</div><div>SIZE</div><div>TYPE</div></div> <div>W15 6'-0"x5'-0" SLIDING/FIXED</div>
FRAME : ANODIZED BRONZE 1.6mm ALUMINUM. FIXED / SLIDING WINDOW, 5mm PLAIN GLASS, AND FLYPROOFING ARRANGEMENT.	FRAME : ANODIZED BRONZE 1.6mm ALUMINUM. FIXED / SLIDING WINDOW, 5mm PLAIN GLASS, AND FLYPROOFING ARRANGEMENT.	FRAME : ANODIZED BRONZE 1.6mm ALUMINUM. FIXED / SLIDING WINDOW, 5mm PLAIN GLASS, AND FLYPROOFING ARRANGEMENT.	FRAME : ANODIZED BRONZE 1.6mm ALUMINUM. FIXED / SLIDING WINDOW, 5mm PLAIN GLASS, AND FLYPROOFING ARRANGEMENT.

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
	QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH	
Drawn: Shahzad	Drawing Title: DETAIL OF WINDOWS	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / A 09	Scale : A2 NTS
885		
 ZAHEERUDDIN CONSULTANTS (PVT) LTD. ■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		






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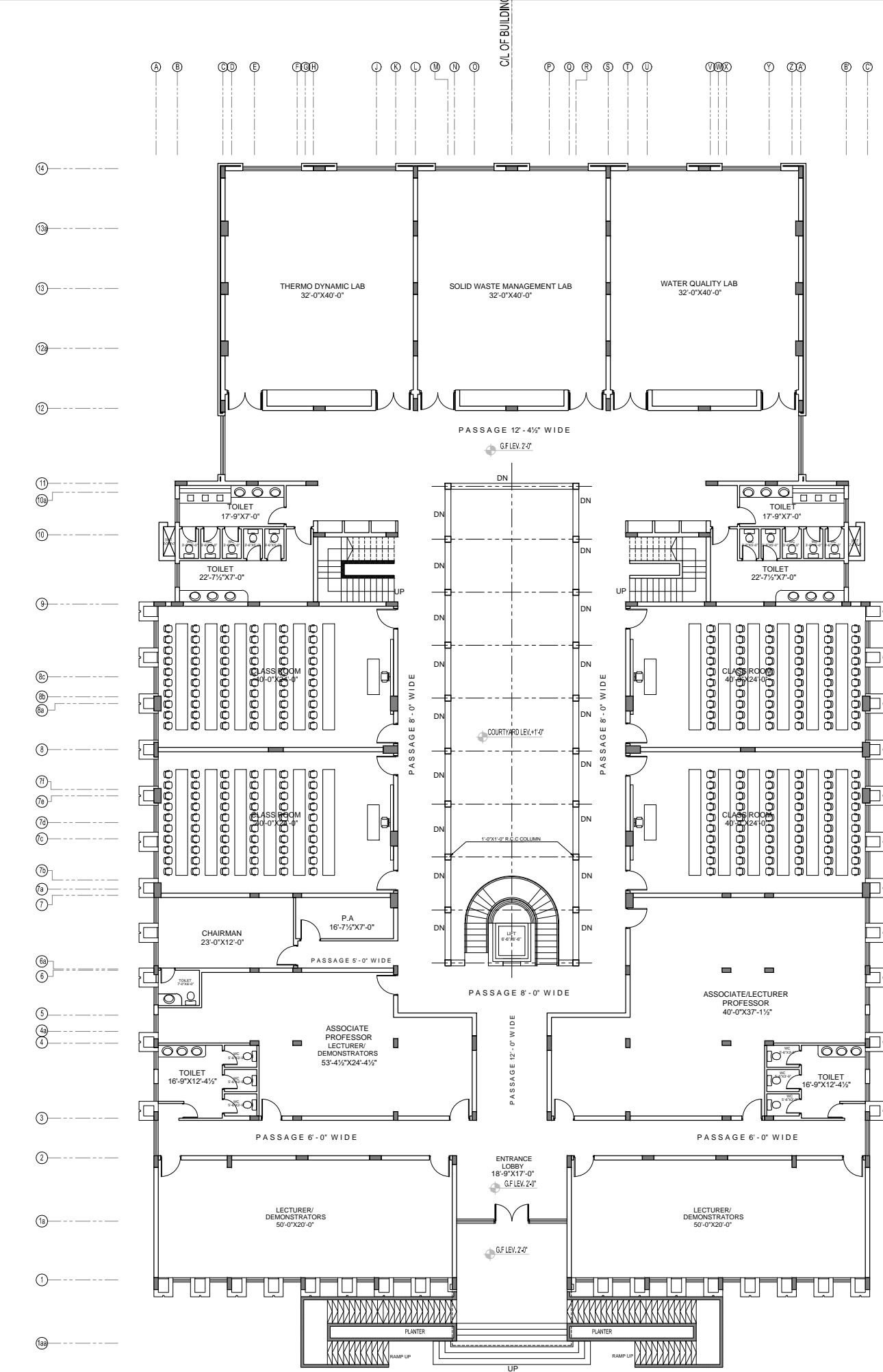


REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF STAIR	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / A 11	Scale: A2 NTS
		Job No. 885
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



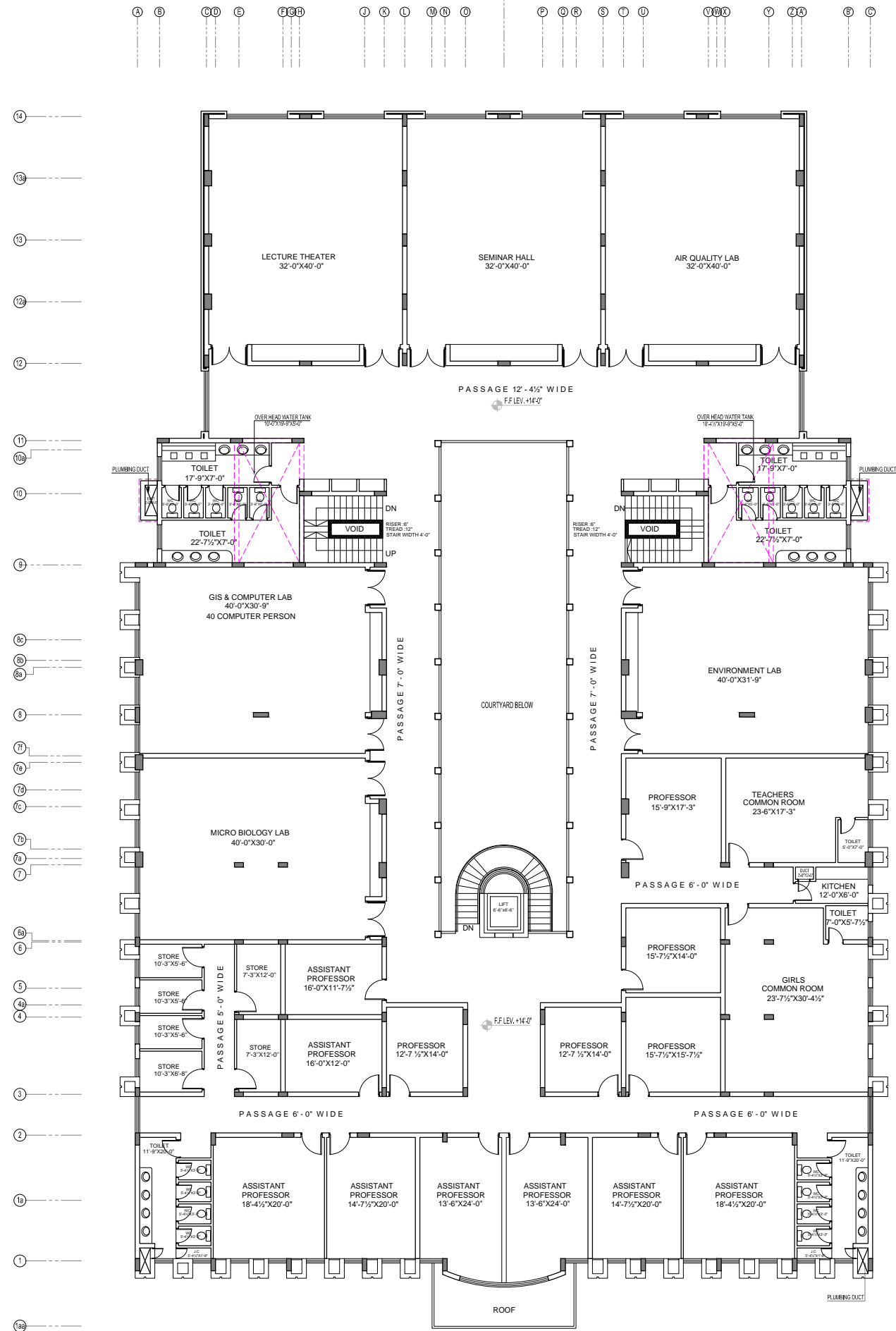
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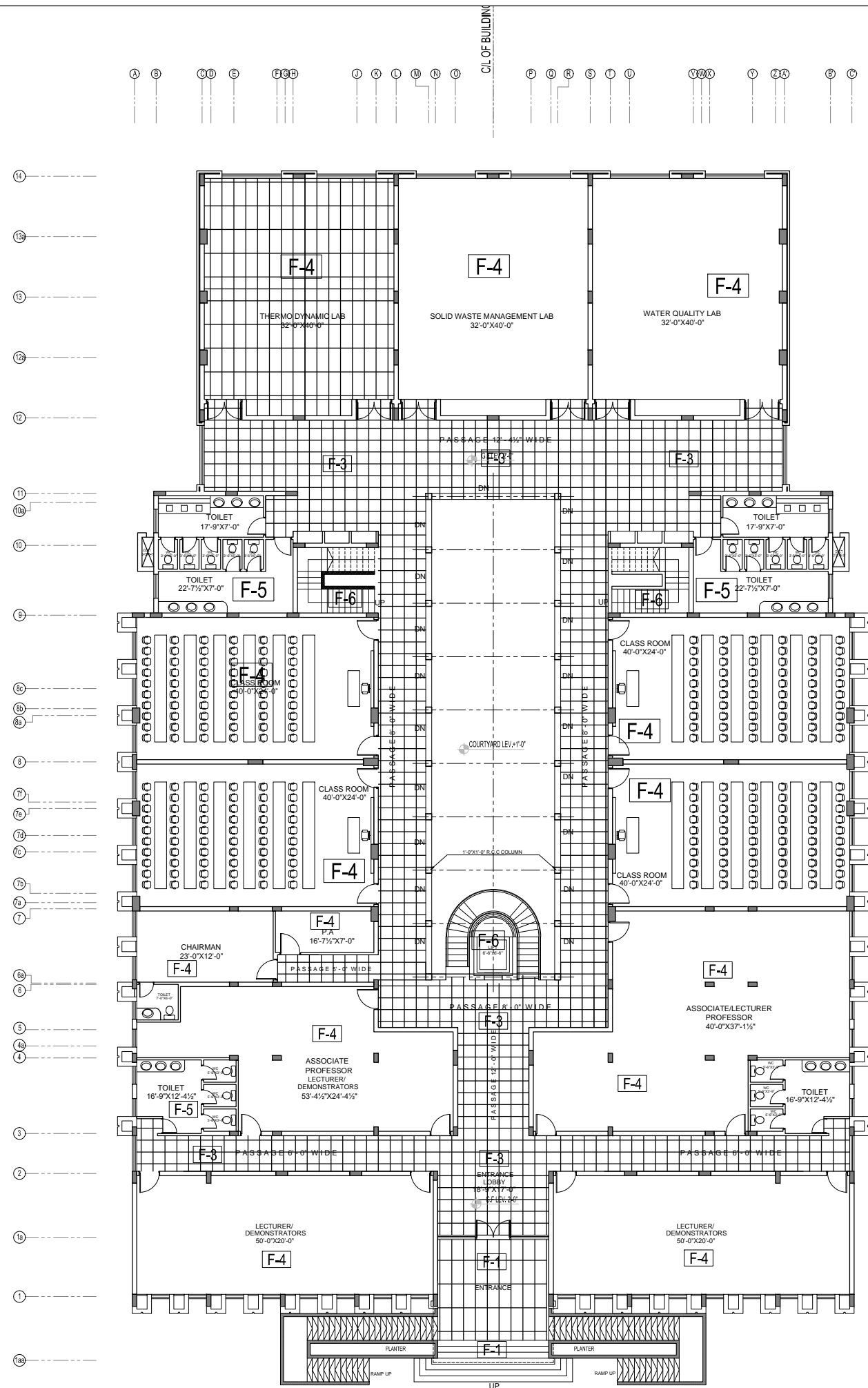
GROUND FLOOR PLAN
(FURNITURE LAYOUT)

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: GROUND FLOOR PLAN (FURNITURE LAYOUT)	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / A 12	Scale : A2 1/16"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		

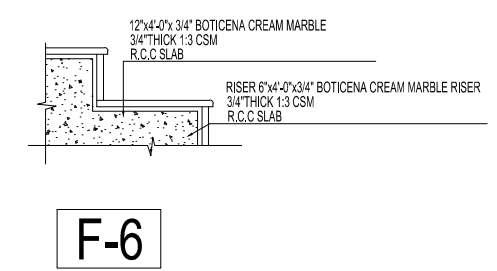
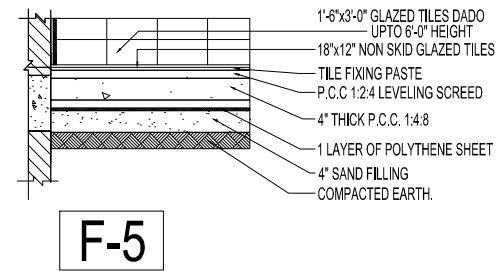
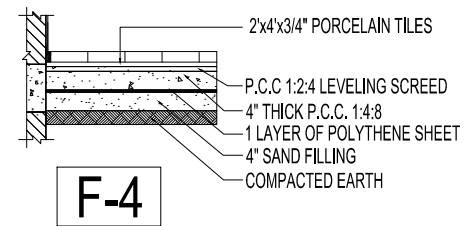
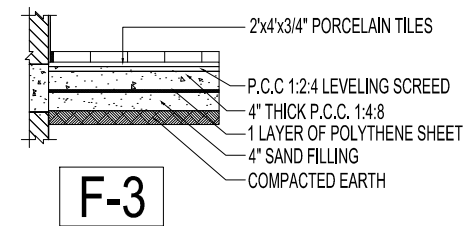
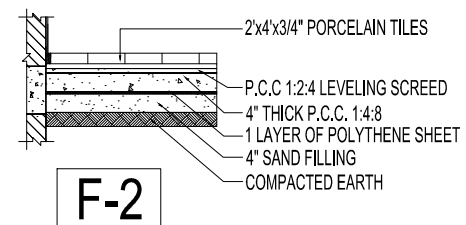
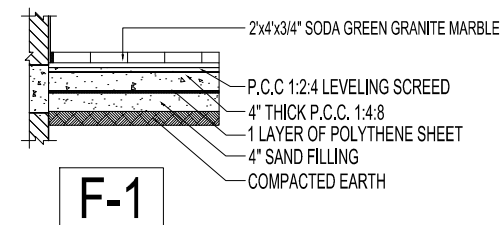


FIRST FLOOR PLAN
(FURNITURE LAYOUT)

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: FIRST FLOOR PLAN (FURNITURE LAYOUT)	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / A 13	Scale : A2 1/16"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		

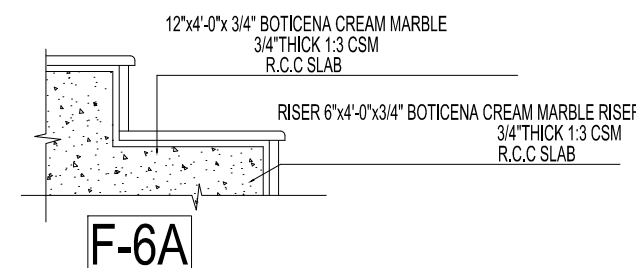
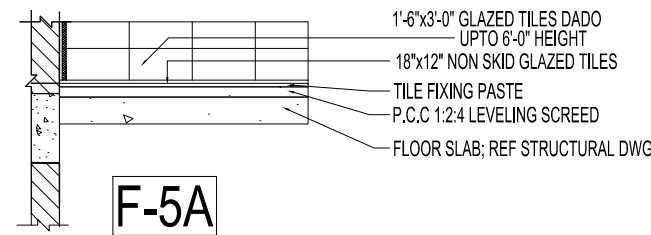
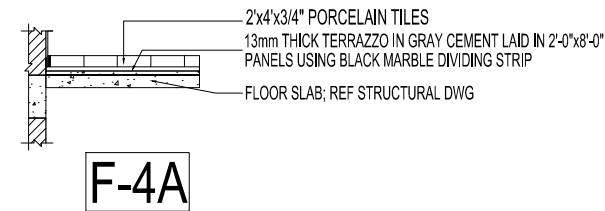
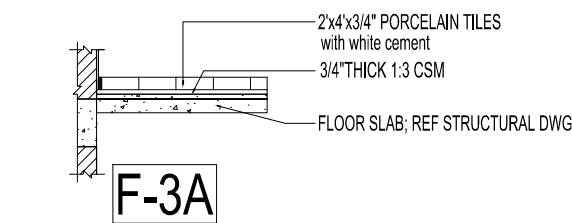
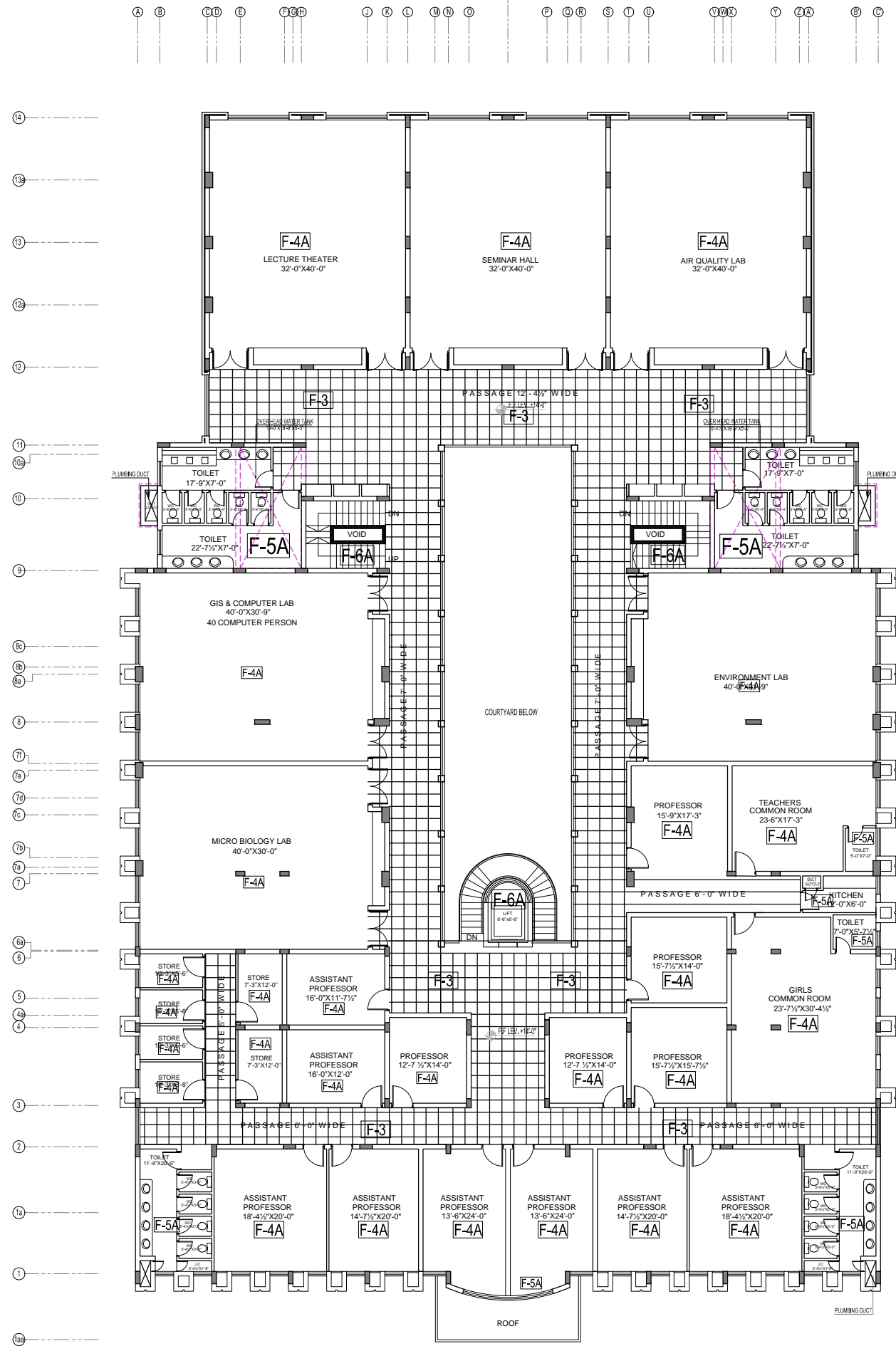


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**GROUND FLOOR PLAN
(FLOOR PATTERN)**

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: GROUND FLOOR PLAN (FLOOR FINISHES)	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / A 14	Scale: A2 1/16"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



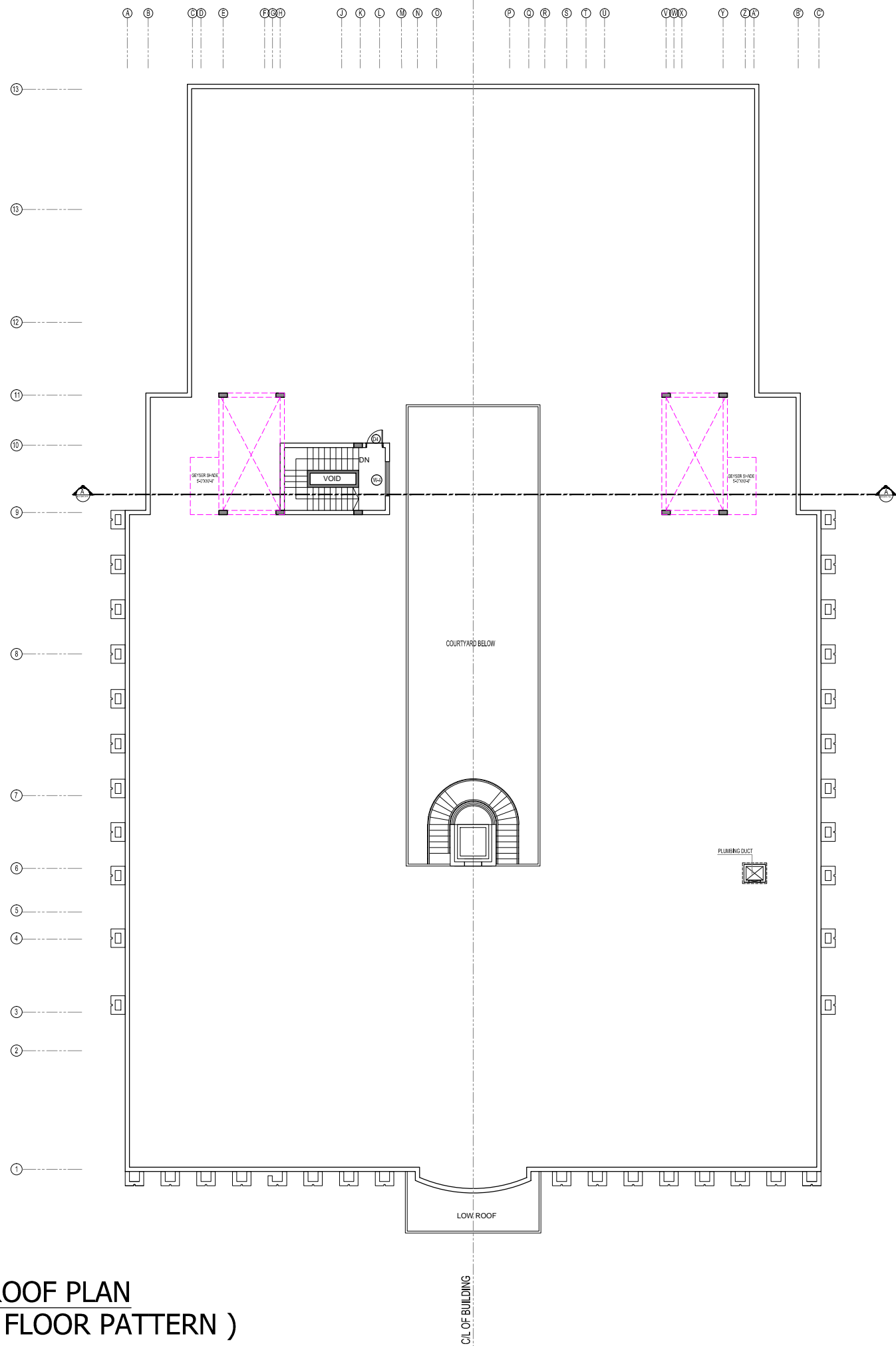
FIRST FLOOR PLAN
(FLOOR PATTERN)

REV. NO.	DATE	DESCRIPTION
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ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: FIRST FLOOR PLAN (FLOOR FINISHES)	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / A 15	Scale: A2 1/16"
885		
ZAHREUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		





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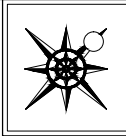


ROOF PLAN
(FLOOR PATTERN)

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
 QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: ROOF PLAN (FLOOR FINISHES)	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / A 16	Scale : A2 1/16"
Job No. 885		
 ZAHEERUDDIN CONSULTANTS (PVT) LTD. ■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		

GROUND FLOOR PLAN

DESCRIPTION	FLOOR	SKIRTING	DADO	FALSE CEILING	INTERNAL PAINT	EXTERNAL PAINT
ENTRANCE STEPS	2'x4'x3/4" SODA GREEN GRANITE MARBLE	————	————	————	WEATHER SHIELD	WEATHER SHIELD
ENTRANCE LOBBY	2'x4'x3/4" PORCELAIN TILES	4'x2'x 3/4" PORCELAIN TILES SKIRTING 1:3 CSM	————	————	WEATHER SHIELD	----DO----
PASSAGE	2'x4'x3/4" PORCELAIN TILES	---DO---	————	————	PLASTIC EMULSION	----DO----
LECTURER/ DEMONSTRATORS	2'x4'x3/4" PORCELAIN TILES	---DO---	————	————	PLASTIC EMULSION	----DO----
ASSOCIATE PROFESSOR	2'x4'x3/4" PORCELAIN TILES	---DO---	————	————	PLASTIC EMULSION	----DO----
CLASS ROOM	2'x4'x3/4" PORCELAIN TILES	---DO---	————	————	PLASTIC EMULSION	----DO----
WATER QUALITY LAB	2'x4'x3/4" PORCELAIN TILES	---DO---	————	————	PLASTIC EMULSION	----DO----
SOLID WASTE MANAGEMENT LAB	2'x4'x3/4" PORCELAIN TILES	---DO---		————	PLASTIC EMULSION	----DO----
THERMO DYNAMIC LAB	2'x4'x3/4" PORCELAIN TILES	---DO---	————	————	PLASTIC EMULSION	----DO----
STAIR	1'x4'x3/4" SODA GREEN GRANITE MARBLE	————	————	————	PLASTIC EMULSION	----DO----
TOILET	1'-0"x1'-6" NON SKID PORCELAIN TILES	————	1'x3' PORCELAIN TILES	————	ENAMEL	----DO----



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FIRST FLOOR PLAN

DESCRIPTION	FLOOR	SKIRTING	DADO	FALSE CEILING	INTERNAL PAINT	EXTERNAL PAINT
ASSISTANT PROFESSOR	2'x4'x3/4" PORCELAIN TILES	4'x2'x 3/4" PORCELAIN TILES SKIRTING 1:3 CSM	————	————	PLASTIC EMULSION	----DO----
CHAIRMAN	----DO----	---DO---	————	————	PLASTIC EMULSION	----DO----
P.A	----DO----	---DO---	————	————	PLASTIC EMULSION	----DO----
PROFESSOR	----DO----	---DO---	————	————	PLASTIC EMULSION	----DO----
STORE	----DO----	---DO---	————	————	PLASTIC EMULSION	----DO----
GIRLS COMMON ROOM	----DO----	---DO---	————	————	PLASTIC EMULSION	----DO----
TEACHERS COMMON ROOM	----DO----	---DO---	————	————	PLASTIC EMULSION	----DO----
ENVIRONMENT LAB	----DO----	---DO---	————	————	PLASTIC EMULSION	----DO----
GIS & COMPUTER LAB	----DO----	---DO---	————	————	PLASTIC EMULSION	----DO----
AIR QUALITY LAB	----DO----	---DO---	————	————	PLASTIC EMULSION	----DO----
SEMINAR HALL	----DO----	---DO---	————	————	PLASTIC EMULSION	----DO----
LECTURE THEATER	----DO----	---DO---	————	————	PLASTIC EMULSION	----DO----
STAIR	1'x4'x3/4" SODA GREEN GRANITE MARBLE	————	————	————	PLASTIC EMULSION	----DO----
TOILET	1'-0"x1'-6" NON SKID PORCELAIN TILES	————	————	————	ENAMEL PAINT	----DO----

REV. NO.	DATE	DESCRIPTION
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TENDER DRAWING

ENVIRONMENTAL ENGINEERING DEPARTMENT



QUAID-E-AWAM UNIVERSITY OF
ENGINEERING SCIENCES & TECHNOLOGY
NAWABSHAH

Drawn: Shahzad	Drawing Title: SCHEDULE OF FINISHES	Date : March 2024	Job No. 885
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / A 17	Scale : A2 1/16"	



ZAHEERUDDIN CONSULTANTS (PVT) LTD.
■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS
5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.

GENERAL TECHNICAL NOTES

1. FIGURED DIMENSIONS ARE TO BE FOLLOWED.
2. ALL STEEL SHOULD BE CHECKED FOR ITS QUALITY AND PLACEMENT DETAILS AS SHOWN IN DRAWINGS.
3. EXTRA CARE IS REQUIRED FOR PROPER PLACEMENT OF TOP REINFORCEMENT AT SUPPORT SECTIONS AND CANTILEVERS.
4. DOTTED BARS DESIGNATE TOP REINFORCEMENT.
5. PROVIDE L- SHAPED END HOOKS FOR ALL BARS AT DISCONTINUOUS ENDS IN FOOTINGS, WALLS , BEAMS AND SLABS AS SHOWN IN DRAWINGS.
6. LAP LENGTH (CLASS C SPLICE, SECTION 12.15.1 ACI 318-99).
- a) 3/8" DIA BARS = 24" d) 3/4" DIA BARS = 45"
- b) 1/2" DIA BARS = 30" e) 1" DIA BARS = 60"
- c) 5/8" DIA BARS = 36" f) 1¼" DIA BARS = 75"
7. PROVIDE 3/8" DIA AT 12" C/C AS DISTRIBUTION STEEL IF NOT SHOWN IN DRAWINGS.
8. MINIMUM CONCRETE COVER.
- a) FOOTINGS =2" e) WATER TANKS AND RETAINING WALLS
- b) SLABS =3/4" I- WATER/EARTH FACE = 2"
- c) BEAMS =1 1/2" II- EXPOSED TO WEATHER = 2"
- d) COLUMNS =1 1/2" III- OTHER FACES = 1"
9. NET BEARING CAPACITY OF SOIL IS 0.75 TON / SFT AS PROVIDED IN GEOTECH REPORT.
10. ALL FOOTINGS SHOULD BE TAKEN BELOW THE ORIGINAL GROUND LEVEL TO ACHIEVE THE MINIMUM DEPTH AS SHOWN IN DRAWINGS.
11. ALL DRAWINGS SHOULD BE READ IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS.
12. CONTRACTOR WILL CO-ORDINATE ALL DRAWINGS SUCH AS ARCHITECTURAL, STRUCTURAL, ELECTRICAL, MECHANICAL, WATER SUPPLY, DRAINAGE ETC: BEFORE EXECUTION OF WORK.
13. TESTING OF STEEL & CONCRETE
- CONTRACTOR WILL ARRANGE REGULAR TESTING OF MATERIALS SUCH AS STEEL & CONCRETE TO ACHIEVE THE SPECIFIED STRENGTHS AND MAINTAIN RECORD OF TEST REPORTS.

QUALITY OF CONCRETE

1. COLUMN & WALL FOOTINGS & TIE BEAMS.
- Minimum concrete compressive strength for 6"x12" cylinder to be 3000 psi at 28 days age. Concrete Nominal Mix 1:2:4 or more rich to provide specified strength (Equivalent 6"x6"x6" cube strength 3750 psi)
2. COLUMNS.
- Minimum concrete compressive strength for 6"x12" cylinder to be 4000 psi at 28 days age. Concrete Nominal Mix to be 1:1½:3 or more rich to provide specified strength (Equivalent 6"x6"x6" cube strength 4500 psi)
3. BEAMS, RIBS & SLABS.
- Minimum concrete compressive strength for 6"x12" cylinder to be 3000 psi at 28 days age. Concrete Nominal Mix to be 1:2:4 or more rich to provide specified strength (Equivalent 6"x6"x6" cube strength 3750 psi)
4. Use of suppler plasticizers and water reducing agents recommended to reduce the water cement ratio and to increase workability and density of concrete.
5. All concrete mixes to be used, should be got designed & approved before execution of work.
6. Quality, size and gradation of aggregates (fine & course) as used during the mix design, should be strictly adhered with.
7. CEMENT TYPE
- Use sulphate Resisting Cement type V for all concrete and brick work below Plinth level (G.Floor level) as detailed below Such as Footings, Columns, Plinth Beams, Grade Slab, D.P.C & Brick Work etc as required to resist chloride effect because of dampness.
- 8.BITUMEN COATING
- All Concrete work & Brick work below plinth level to be coated with two coats of approved type of bitumen as required to resist chloride effect because of dampness.

QUALITY OF STEEL REINFORCEMENT.

1. Use deform steel Grade-60 bars for size No:3 (3/8"dia) & No:4 (1/2" dia) for column ties, beam stirrups. ASTM specification A615. (Minimum yield strength 60,000 psi)
2. Use deform steel Grade-60 bars for size No:3 (3/8"dia) & No:4 (1/2" dia) for slab steel. ASTM specification A615. (Minimum yield strength 60,000 psi)
3. Use deform steel Grade-60 for size No:5 & larger for all columns, beams, walls, etc. ASTM specification A615. (Minimum yield strength 60,000 psi)

DESIGN LIVE LOADS.

The building is designed for following live loads in addition to its own dead weight, super imposed dead load.

Rooms = 50 PSF.

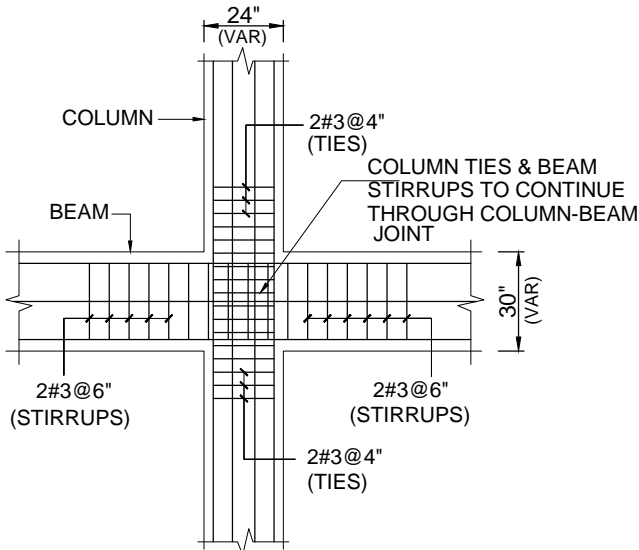
Corridor and Lobbies = 100 PSF.

NO OF STORIES.

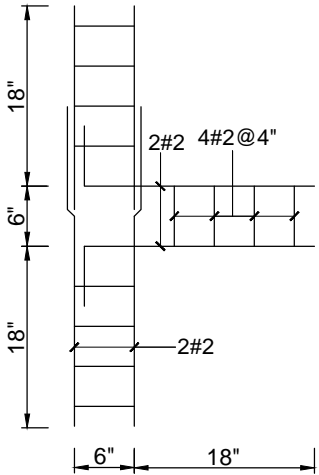
Ground Floor & First Floor (2 STORY)

EARTH QUAKE ZONE.

Building design conforms to minor damage zone 2B, U.B.C 1997.



TYPICAL COLUMN
BEAM JOINT

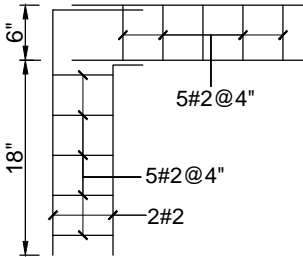


PLAN OF BRICK WALL TIE
FOR T- JOINT

SCHEDULE OF BEAMS & LINTELS (NOT SHOWN IN DRAWINGS)

S.NO	SPAN (FT)	S I Z E (B+D)	STEEL REINFORCEMENT		NO	REMARKS
			MAIN STEEL	STIRRUPS		
1	UP TO 4'	9" x 9"	2-3/8" DIA (TOP) 2-1/2" DIA (BOTTOM)	3/8" DIA @ 9" C/C		
2	5' TO 6'	9" x 9"	2-1/2" DIA (TOP) 3-1/2" DIA (BOTTOM)	3/8" DIA @ 9" C/C		
3	7' TO 9'	9" x 12"	2-1/2" DIA (TOP) (2-3/4") DIA (BOTTOM)	3/8" DIA @ 9"C/C		
4	10' TO12'	9" x 15"	2-1/2" DIA (TOP) (2+1)3/4" DIA (BOTTOM)	3/8" DIA @ 9"C/C		2-3/4" DIA FULL LENGTH +1 EXTRA AT MIDDLE 3/4 OF SPAN
5	13' TO 15'	9" x 18"	2-1/2" DIA (TOP) (2+2)3/4" DIA (BOTTOM)	3/8" DIA @ 9"C/C		2-3/4" DIA FULL LENGTH +2 EXTRA AT MIDDLE 3/4 OF SPAN

NOTE:- WIDTH OF LINTEL OR BEAM TO BE SAME AS WIDTH OF WALL .



PLAN OF BRICK WALL TIE
FOR CORNER JOINT

NOTATIONS USED

C	COLUMNS
W	WALLS
SW	SHEAR WALLS
WC	WALL COLUMN
PC	PICKUP COLUMN
WF	WALL FOOTING
RW	RETAINING WALLS
F	COLUMN FOOTING
TB	TIE BEAM
GSP	G.F SLAB PANELS
ISP	F.F SLAB PANEL
RSP	ROOF SLAB PANELS
MSP	MUMTY SLAB PANELS
GSB	G.F BEAMS
ISB	F.F BEAMS
RSB	ROOF BEAMS
MSB	MUMTY SLAB BEAMS
C.B	CONCEALED BEAMS
WB	WALL BEAMS
PB	PERGOLA BEAMS
NB	NOT BEARING WALL



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NOTE:







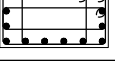



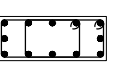



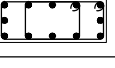

- 1- ALL LAYOUT DIMENSIONS AND LEVELS TO BE AS PER ARCH DRAWINGS.
- 2- PROVIDE #2 DOUBLE-LEG TIE BARS AT 300 CENTRES AT COMMON JOINT BETWEEN WALLS AND COLUMNS. THESE BARS SHOULD PASS THROUGH COLUMNS AND EXTEND UPTO 18" INTO WALLS ON EACH SIDE OF COLUMNS.

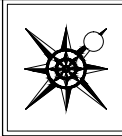
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QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: GENERAL TECHNICAL NOTES	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 01	Scale : A2 1/16"
885		
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SCHEDULE OF FOOTINGS

S.NO	DESIGNATION	S I Z E	DEPTH		STEEL REINFORCEMENT		REMARKS
			t END THICKNESS	T MID THICKNESS	LONG SIDE	SHORT SIDE	
1	F1	3'-0" x 3'-0"	12"	12"	3#4 (TOP) 5#4 (BOT)	3#4 (TOP) 5#4 (BOT)	R.C.C COLUMN FOOTING
2	F2	3'-6" x 3'-6"	12"	12"	4#4 (TOP) 6#4 (BOT)	4#4 (TOP) 6#4 (BOT)	//
3	F3	4'-0" x 4'-0"	12"	12"	4#4 (TOP) 7#4 (BOT)	4#4 (TOP) 7#4 (BOT)	//
4	F4	4'-6" x 4'-6"	12"	12"	5#4 (TOP) 8#4 (BOT)	5#4 (TOP) 8#4 (BOT)	//
5	F5	5'-0" x 5'-0"	12"	12"	5#4 (TOP) 9#4 (BOT)	5#4 (TOP) 9#4 (BOT)	//
6	F6	5'-6" x 5'-6"	12"	15"	6#4 (TOP) 10#4 (BOT)	6#4 (TOP) 10#4 (BOT)	//
7	F7	6'-0" x 6'-0"	12"	15"	7#4 (TOP) 12#4 (BOT)	7#4 (TOP) 12#4 (BOT)	//
8	F8	6'-6" x 6'-6"	12"	15"	7#4 (TOP) 13#4 (BOT)	7#4 (TOP) 13#4 (BOT)	//
9	F9	7'-0" x 7'-0"	12"	15"	8#4 (TOP) 14#4 (BOT)	8#4 (TOP) 14#4 (BOT)	//
10	F10	7'-6" x 7'-6"	12"	15"	8#4 (TOP) 15#4 (BOT)	8#4 (TOP) 15#4 (BOT)	//
11	F11	16'-10" x 9'-0"	12"	18"	10#4 (TOP) 10#6 (BOT)	18#4 (TOP) 18#6 (BOT)	COMBINE FOOTING
12	F12	8'-6" x 8'-6"	12"	18"	10#4 (TOP) 10#6 (BOT)	10#4 (TOP) 10#6 (BOT)	//
13	F13	9'-0" x 9'-0"	12"	18"	11#4 (TOP) 11#6 (BOT)	11#4 (TOP) 11#6 (BOT)	//
14	F14	47'-9" x 8'-0"	12"	18"	9#4 (TOP) 9#6 (BOT)	54#4 (TOP) 54#6 (BOT)	COMBINE FOOTING
15	F15	49'-4" x 9'-6"	12"	21"	13#4 (TOP) 13#6 (BOT)	66#4 (TOP) 66#6 (BOT)	//
16	F16	L x 11'-11"	15"	15"	12#4 (TOP) 12#6 (BOT)	12#4 (TOP) 12#6 (BOT)	R.C.C LIFT FOOTING
17	WF1	L x 2'-0"	—	9"	3#4 BOT	#4 @9"	R.C.C WALL FOOTING
18	WF1a	L x 2'-0"	—	9"	3#4 BOT	#4 @9"	//
19	WF2	L x 1'-6"	—	6"	//	//	P.C.C WALL FOOTING
20	WF3	L x 2'-0"	—	9"	3#4 BOT	#4 @9"	R.C.C WALL FOOTING
21	WF4	L x 1'-6"	—	6"	—	—	P.C.C WALL FOOTING
22	WF5	L x 3'-0"	—	9"	5#4	#4 @9"	R.C.C SHEAR WALL FOOTING
23	STAIR	L x 2'-6"	—	9"	4#3 TOP 4#4 BOT	#4 @9"	STAIR FOOTING
24	TB-1	9" x 24"		8#4	#3 @6"		R.C.C TIE BEAM

SCHEDULE OF COLUMNS

S.NO	DESIGNATION	S I Z E	SHAPE	STEEL REINFORCEMENT			REMARKS
				LONG	TIES	DISTANCES	
1	C1,C2,C3, C6,C7,C8	9" x 24"		4#6 (COR) +6#4 (MID)	2#3 @4" 2#3 @8"	UPTO 24" AT TOP & BOTTOM ENDS MID PORTION	R.C.C WALL COLUMN
2	C4	15" x 30"		16#6	3#3 @6" 3#3 @12"	UPTO 30" AT TOP & BOTTOM ENDS MID PORTION	R.C.C WALL COLUMN
3	C5	9" x 30"		12#8	2#3 @4" 2#3 @8"	UPTO 30" AT TOP & BOTTOM ENDS MID PORTION	R.C.C WALL COLUMN
4	C9,C10,C10a, C11,C12,C13, C14,C15,C16	9" x 24"		4#6 (COR) +6#4 (MID)	2#3 @4" 2#3 @8"	UPTO 24" AT TOP & BOTTOM ENDS MID PORTION	R.C.C WALL COLUMN
5	C17,C18, C21,C22	15" x 30"		16#6	3#3 @6" 3#3 @12"	UPTO 30" AT TOP & BOTTOM ENDS MID PORTION	R.C.C WALL COLUMN
6	C19	15" x 30"		16#6	3#3 @6" 3#3 @12"	UPTO 30" AT TOP & BOTTOM ENDS MID PORTION	R.C.C WALL COLUMN
7	C20	15" x 30"		16#6	3#3 @6" 3#3 @12"	UPTO 30" AT TOP & BOTTOM ENDS MID PORTION	R.C.C WALL COLUMN
8	C23,C23a C29,C30	9" x 18"		8#4	2#3 @4" 2#3 @8"	UPTO 24" AT TOP & BOTTOM ENDS MID PORTION	R.C.C WALL COLUMN
9	C24	9" x 24"		4#6 (COR) +6#4 (MID)	2#3 @4" 2#3 @8"	UPTO 24" AT TOP & BOTTOM ENDS MID PORTION	R.C.C WALL COLUMN
10	C25,C26 C27,C28	9" x 18"		8#4	2#3 @4" 2#3 @8"	UPTO 24" AT TOP & BOTTOM ENDS MID PORTION	R.C.C WALL COLUMN
11	C31	9" x 30"		12#8	2#3 @4" 2#3 @8"	UPTO 24" AT TOP & BOTTOM ENDS MID PORTION	R.C.C WALL COLUMN
12	C32,C33,C34 C35,C36,C37 C38,C39	9" x 24"		4#6 (COR) +6#4 (MID)	2#3 @4" 2#3 @8"	UPTO 24" AT TOP & BOTTOM ENDS MID PORTION	R.C.C WALL COLUMN
13	C40	9" DIA		8#4	3#3 @4" 3#3 @8"	UPTO 24" AT TOP & BOTTOM ENDS MID PORTION	LIFT COLUMN
14	C41,C42	12" x 12"		8#4	3#3 @6" 3#3 @12"	UPTO 30" AT TOP & BOTTOM ENDS MID PORTION	R.C.C WALL COLUMN
15	C43	9" x 30"		12#8	2#3 @4" 2#3 @8"	UPTO 24" AT TOP & BOTTOM ENDS MID PORTION	
16	PC-1	9" x 30"		12#8	—	—	R.C.C WALL COLUMN
17	SW-1	—	—	SEE	DRAWING	—	SHARE WALL
18	W1	—	—	SEE	DRAWING	—	R.C.C LIFT WALL



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DESCRIPTION

TENDER DRAWING

ENVIRONMENTAL ENGINEERING DEPARTMENT



QUAID-E-AWAM UNIVERSITY OF
ENGINEERING SCIENCES & TECHNOLOGY
NAWABSHAH

Drawn:
Shahzad

Drawing Title:
SCHEDULE OF
FOOTINGS & COLUMNS


Date :
March 2024

Job No.
885

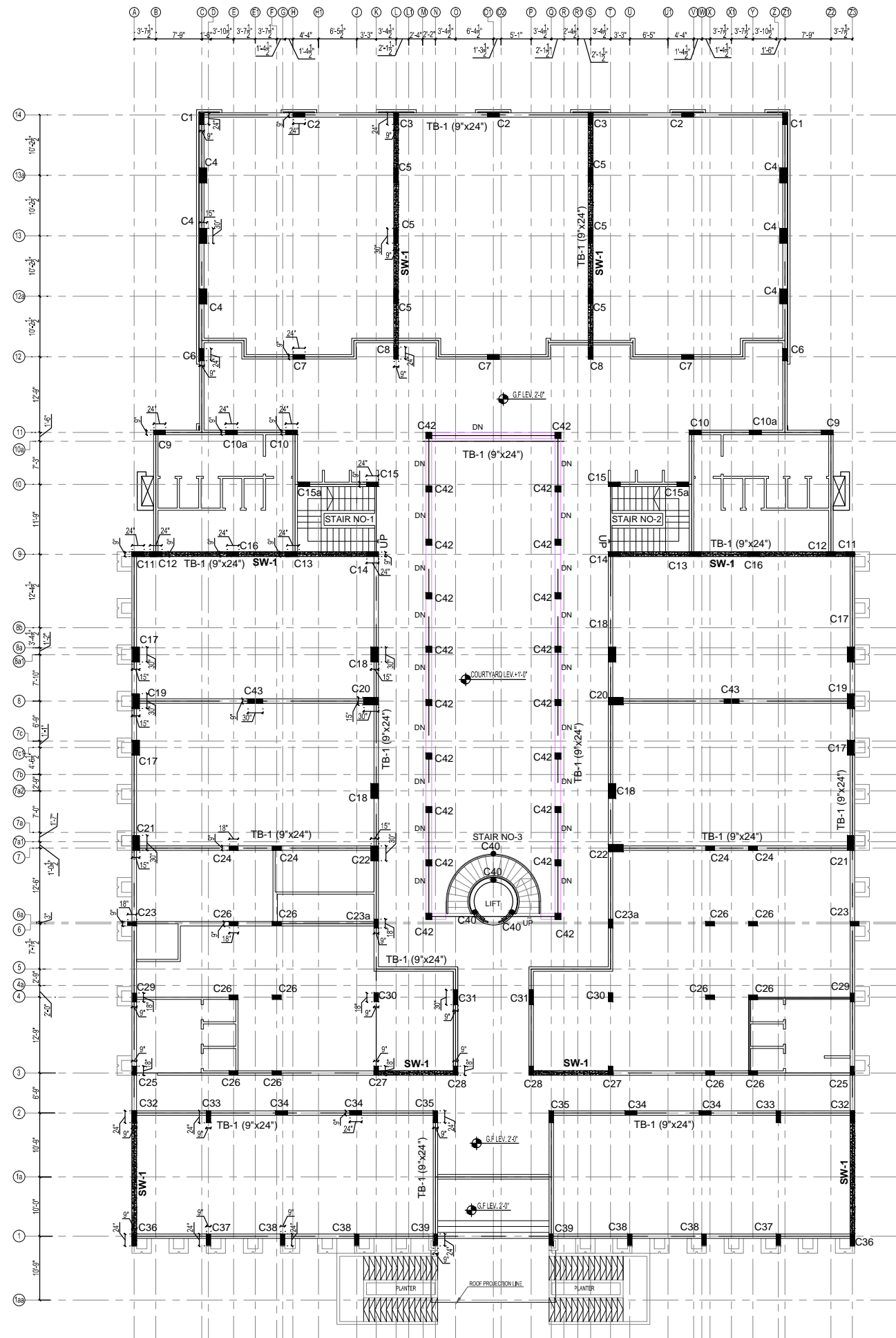
Check by:
Zarrar

Dwg. No.
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A2 1/16"

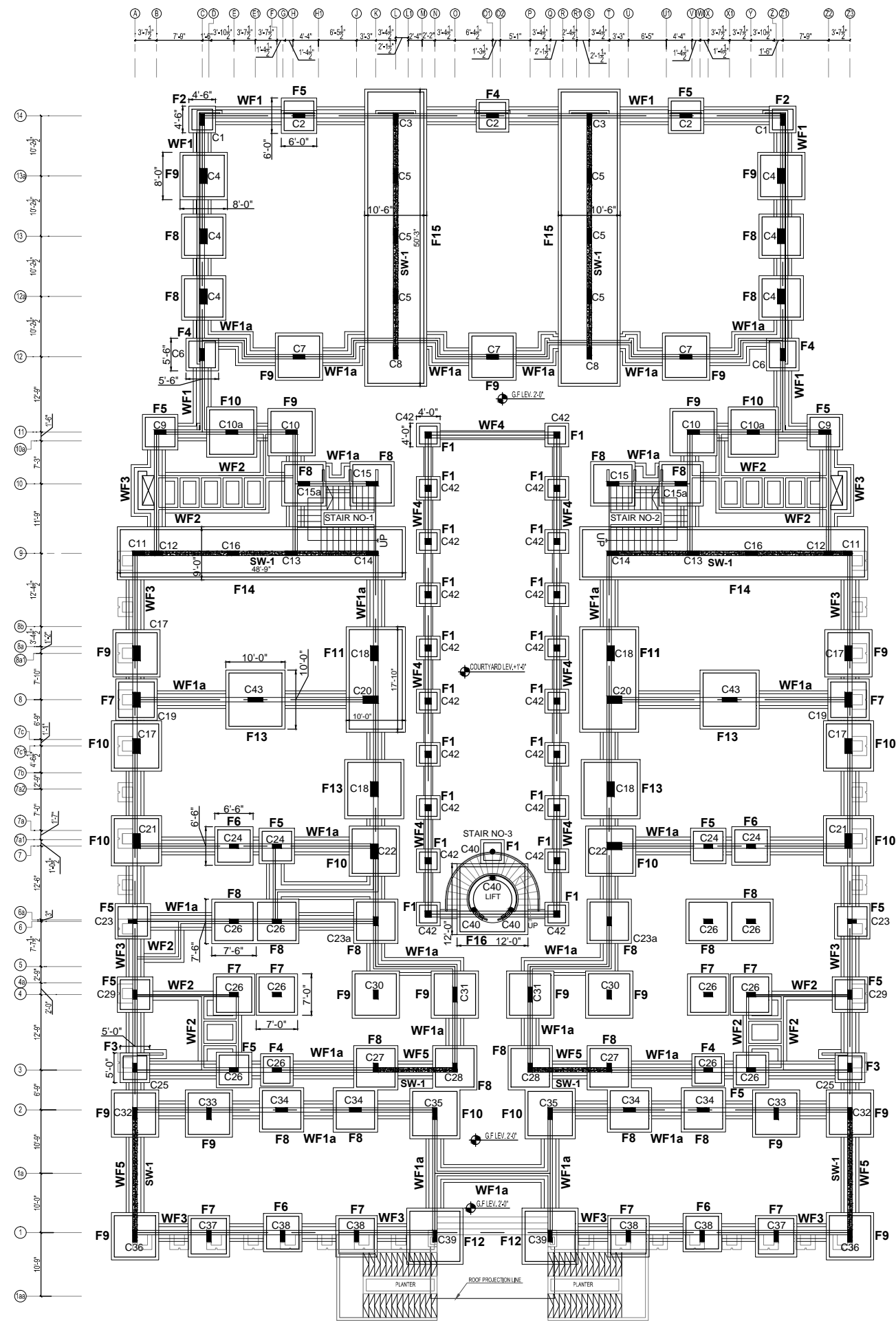


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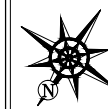
COLUMN LAYOUT PLAN

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ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: COLUMN LAYOUT PLAN	Date: March 2024
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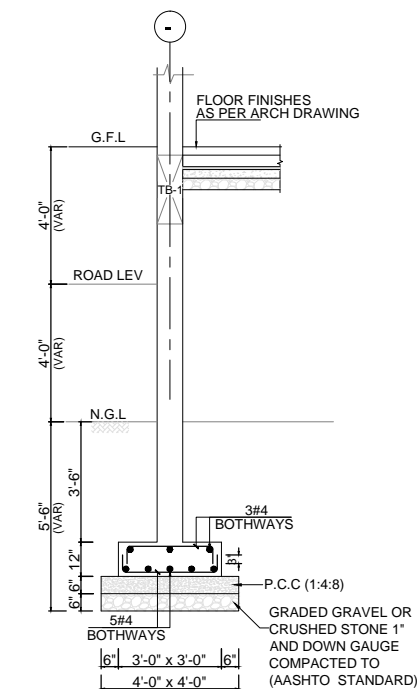


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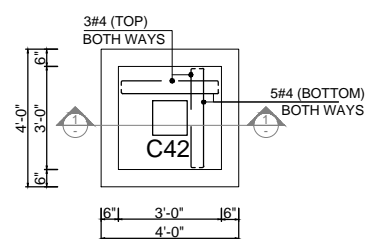
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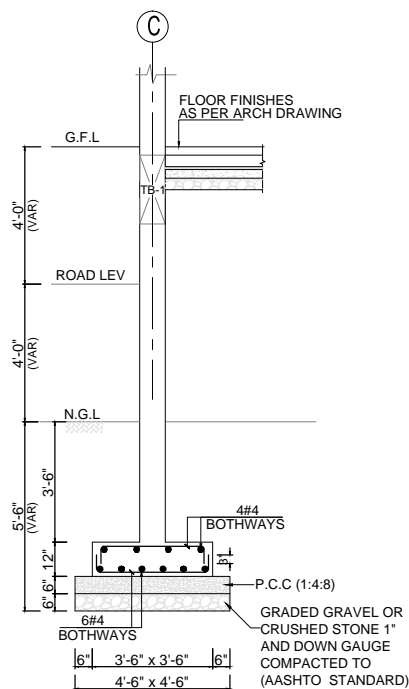
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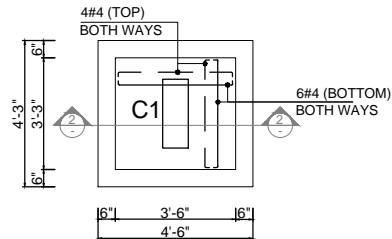
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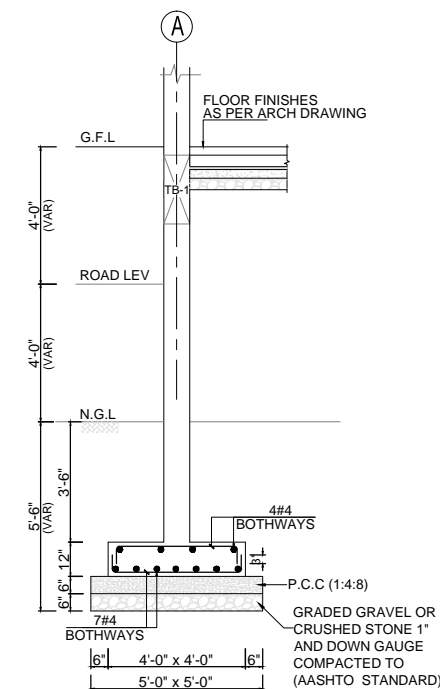
PLAN OF FOOTING F1



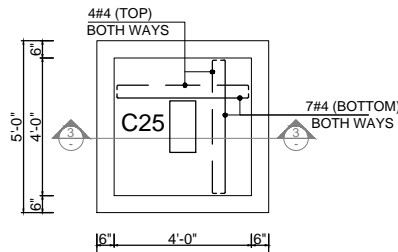
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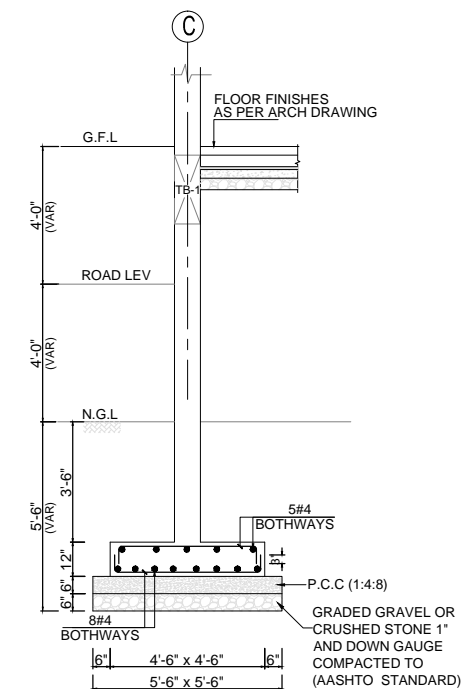
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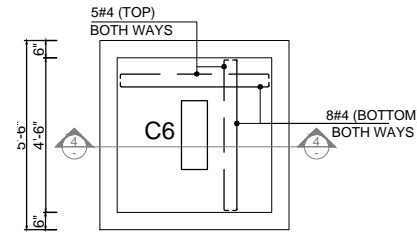
TYPICAL SECTION 3-3 FOR
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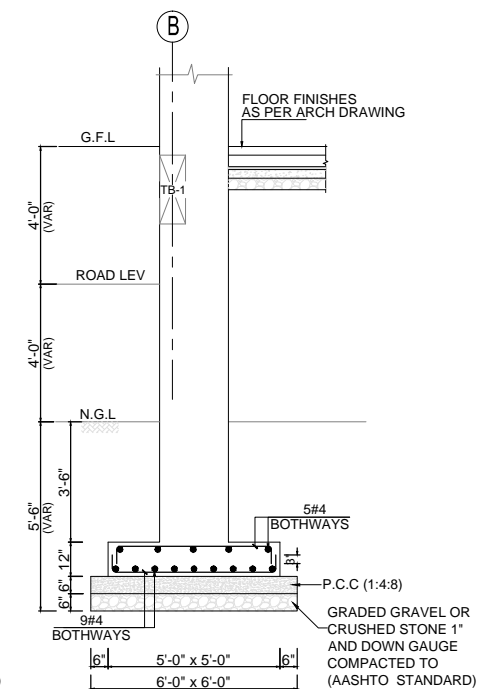
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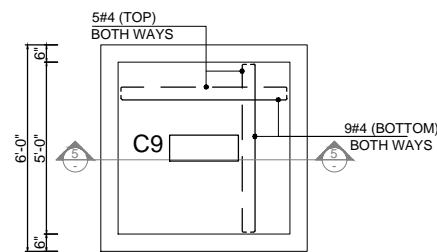
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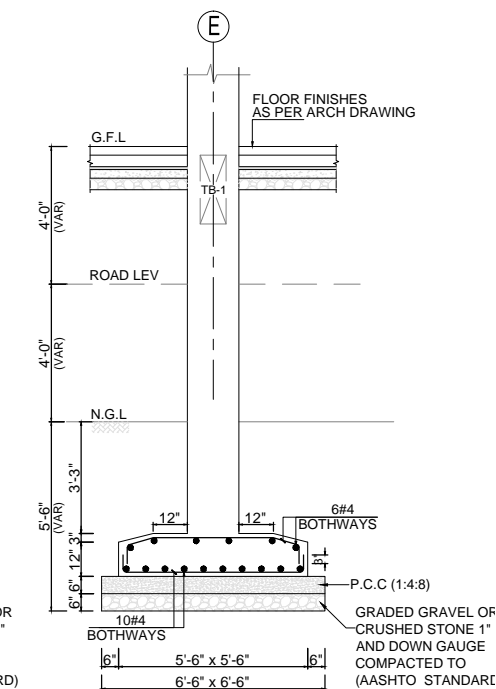
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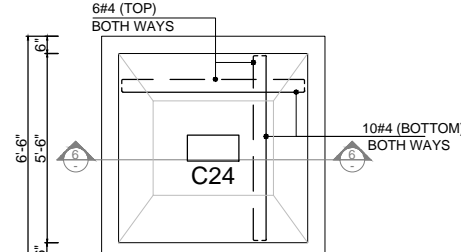
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PLAN OF FOOTING F5

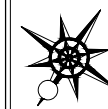


TYPICAL SECTION 6-6 FOR
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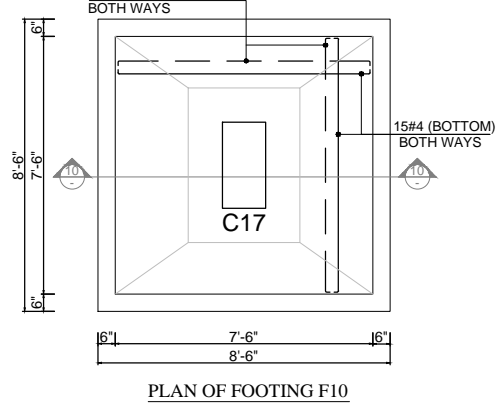
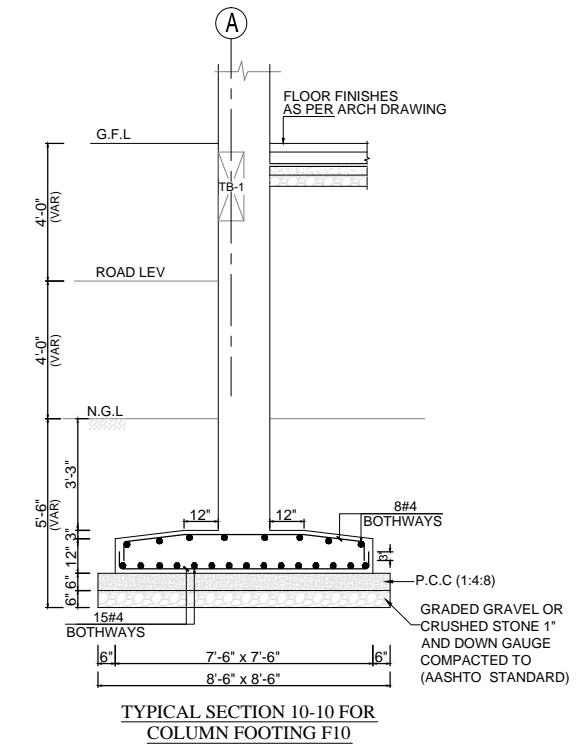
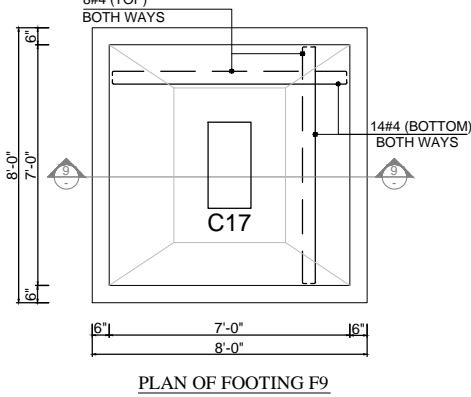
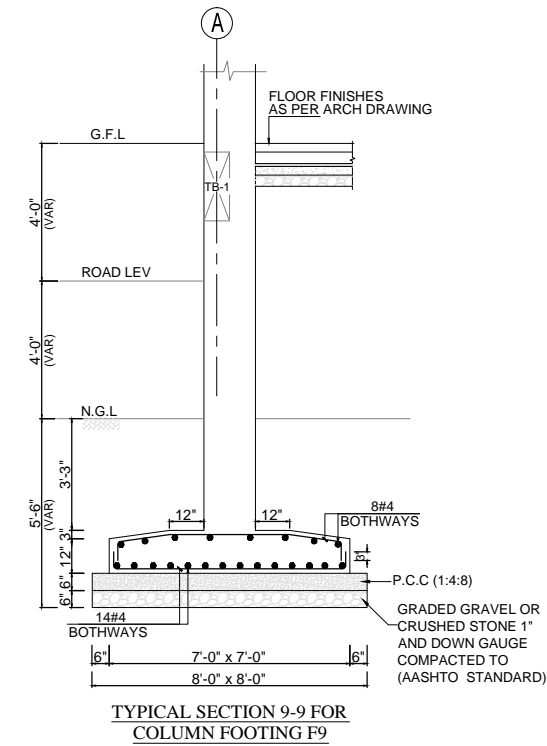
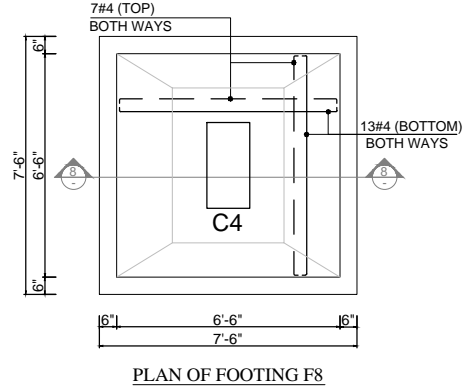
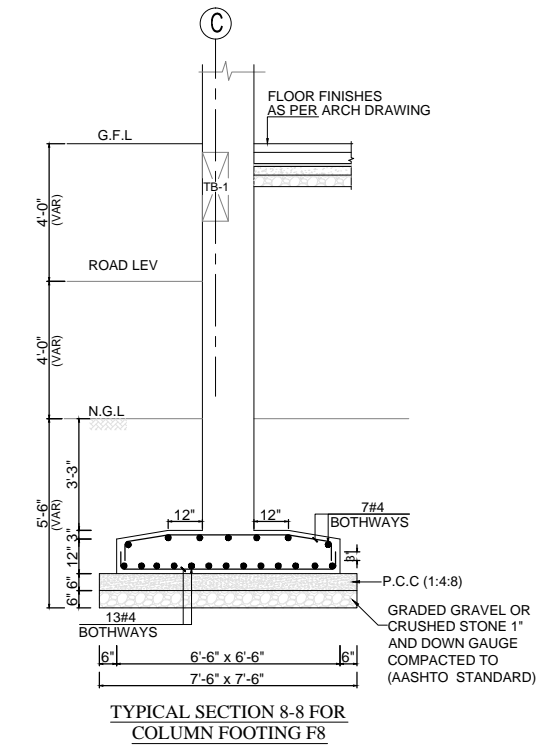
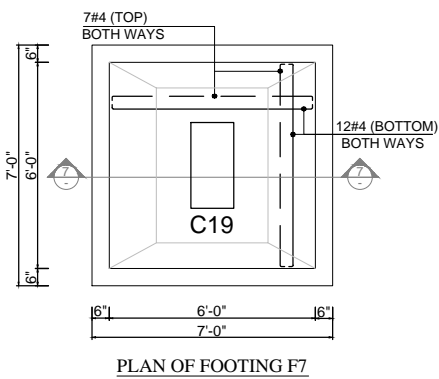
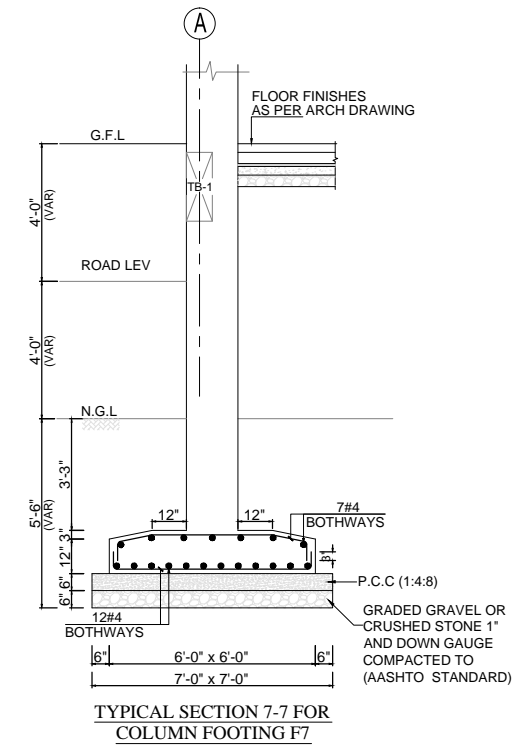


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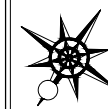
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QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF FOOTING	Date: March 2024
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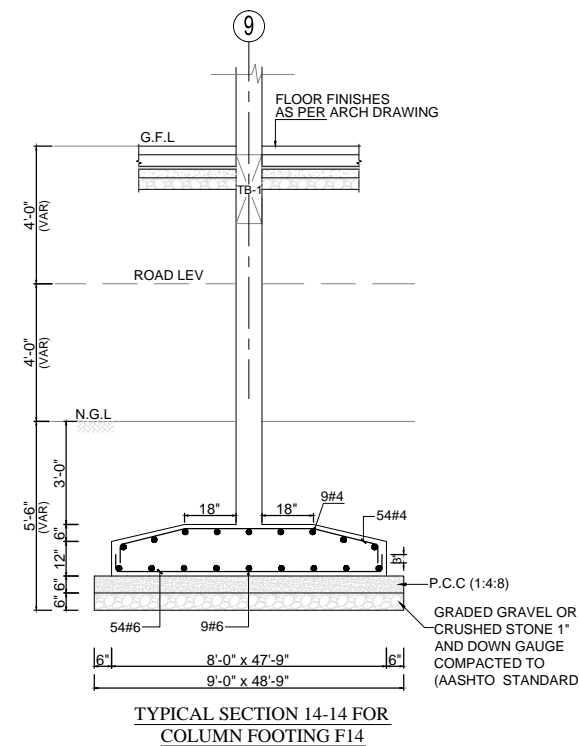
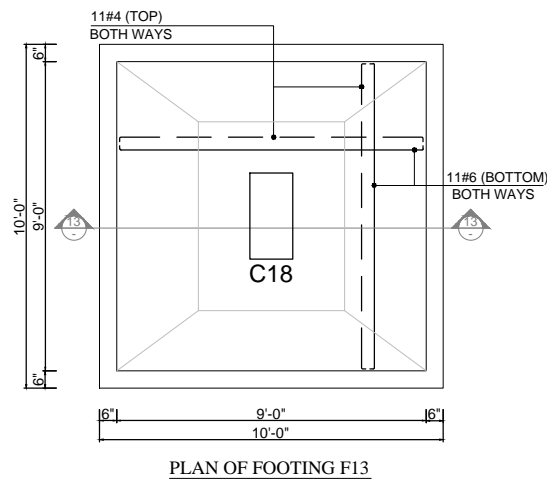
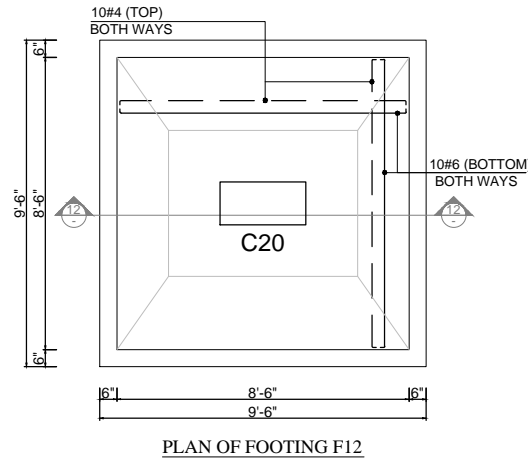
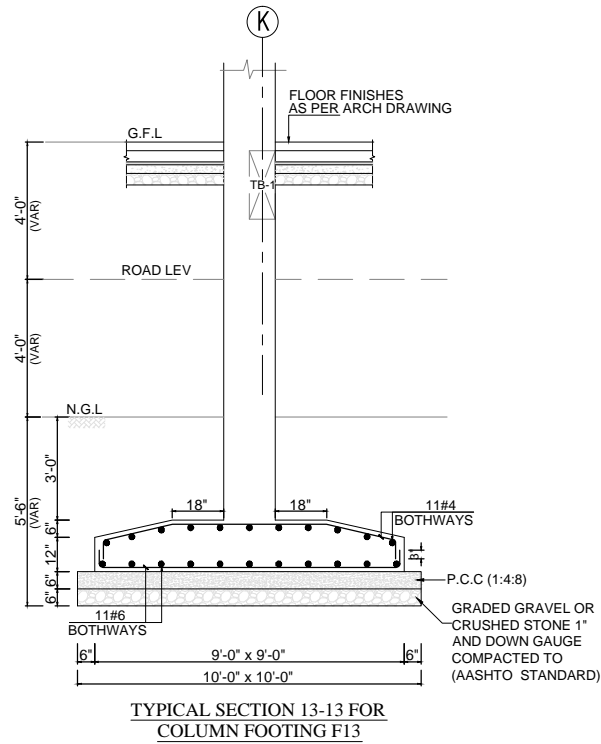
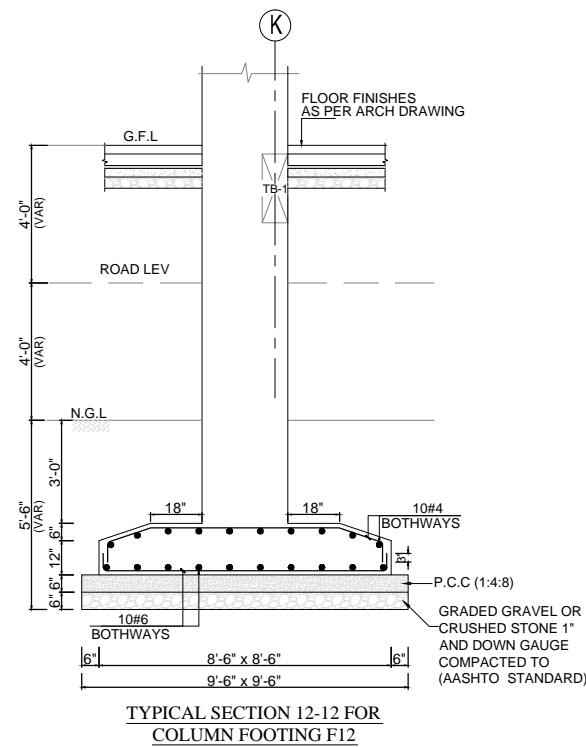
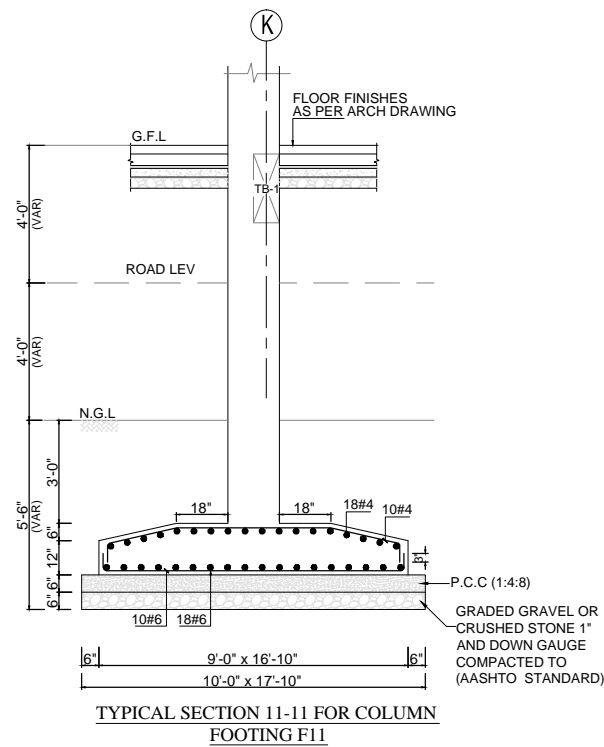
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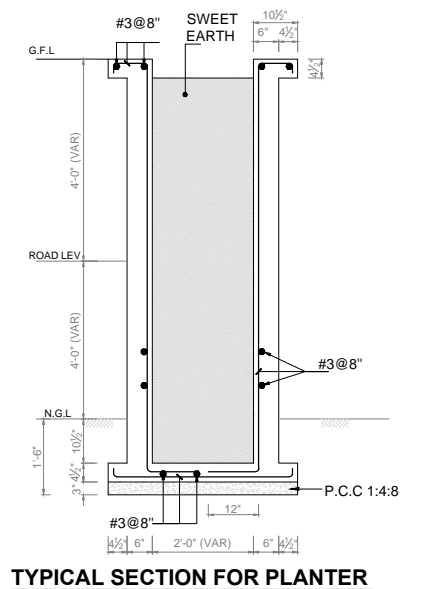
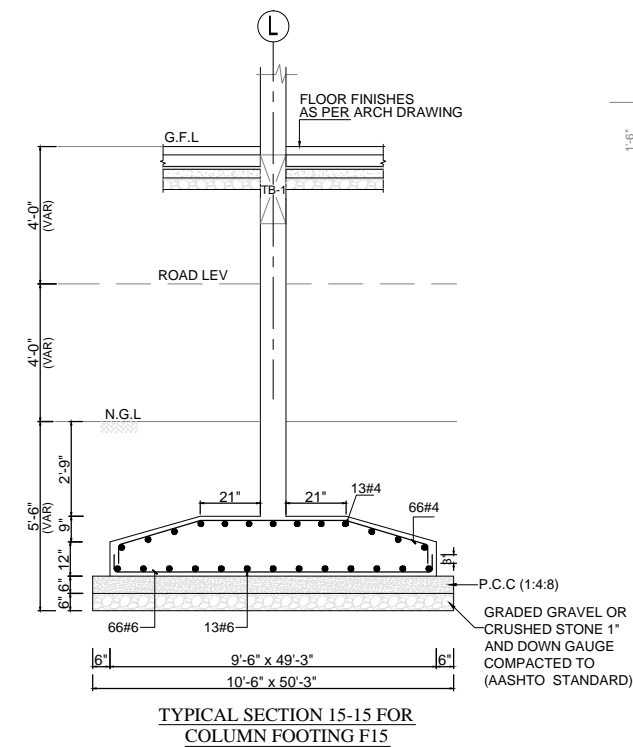
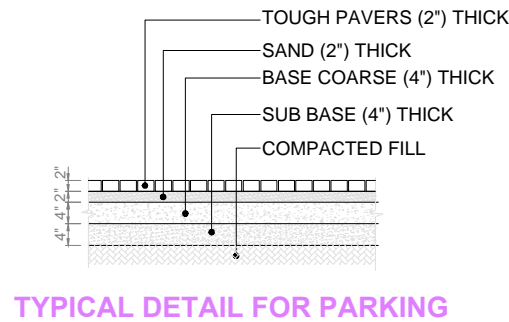
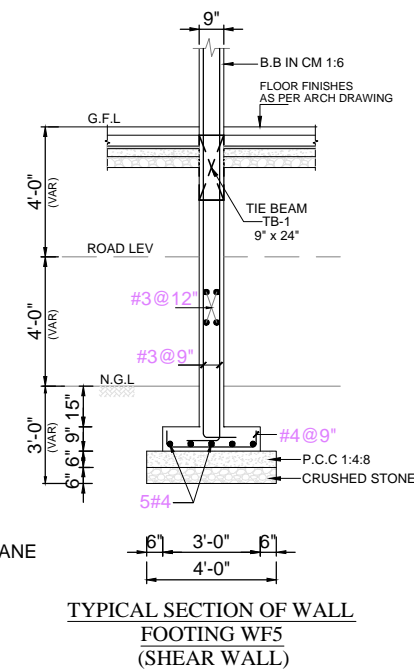
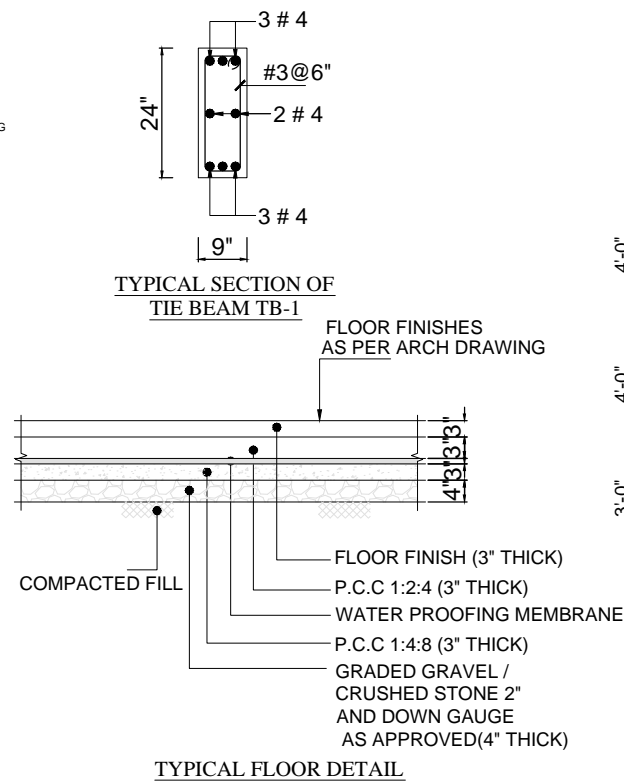
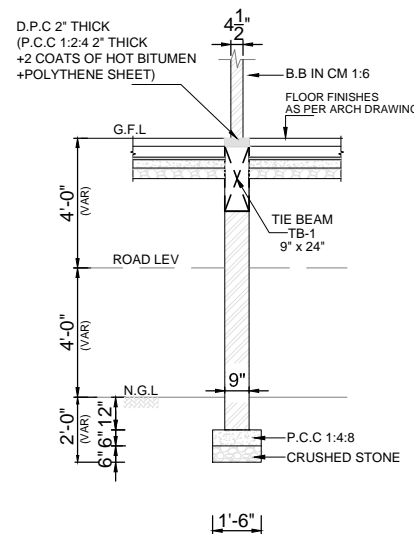
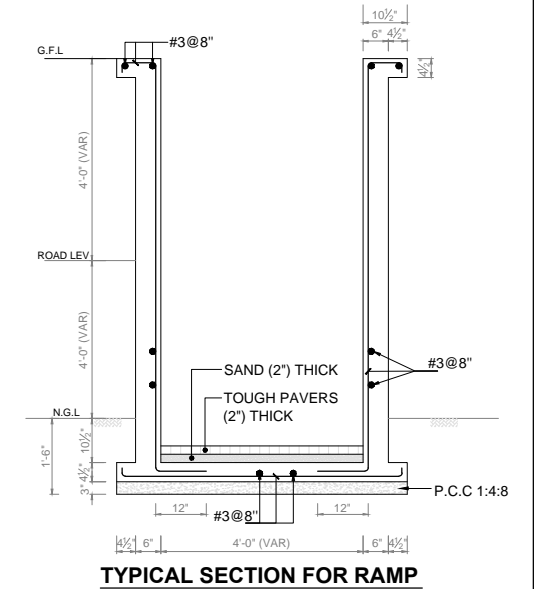
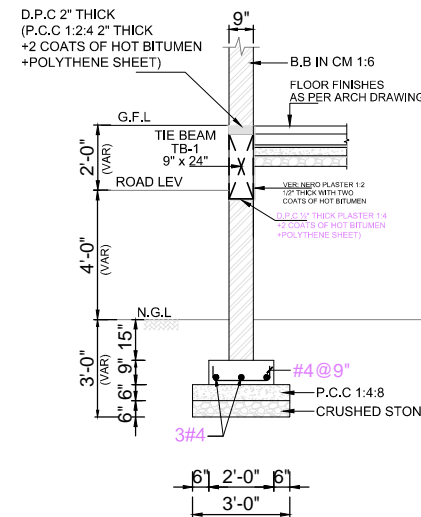
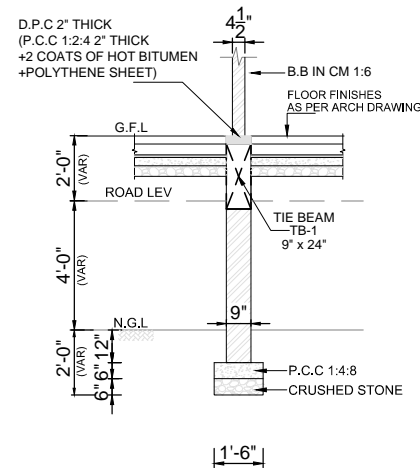
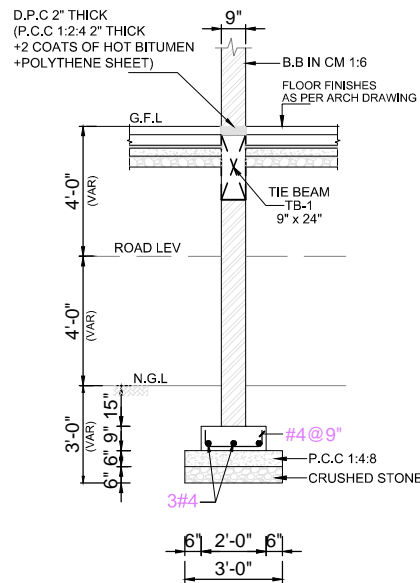
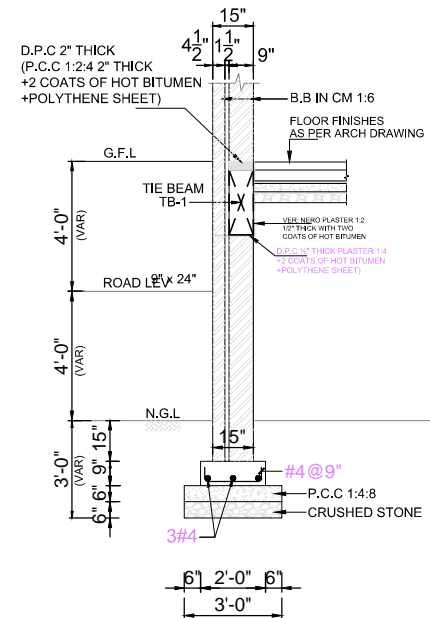
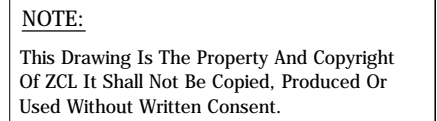
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QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF FOOTING	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 06	Scale : (A2) 1/16"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		





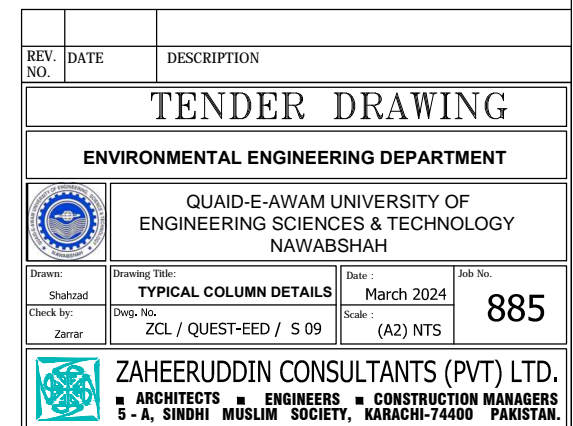
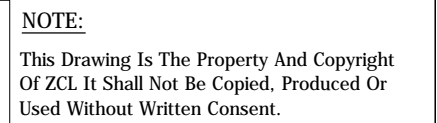
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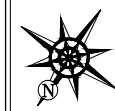
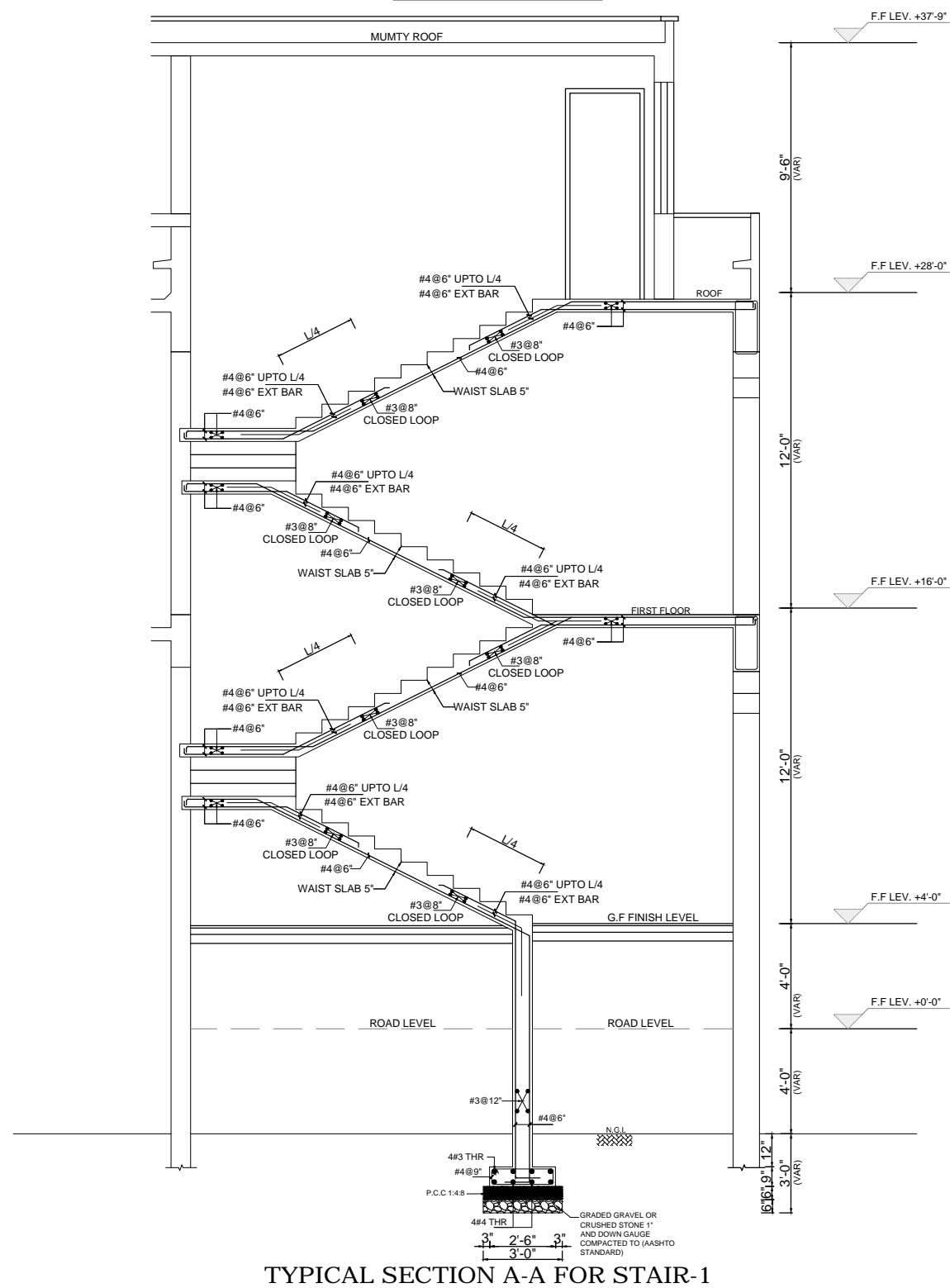
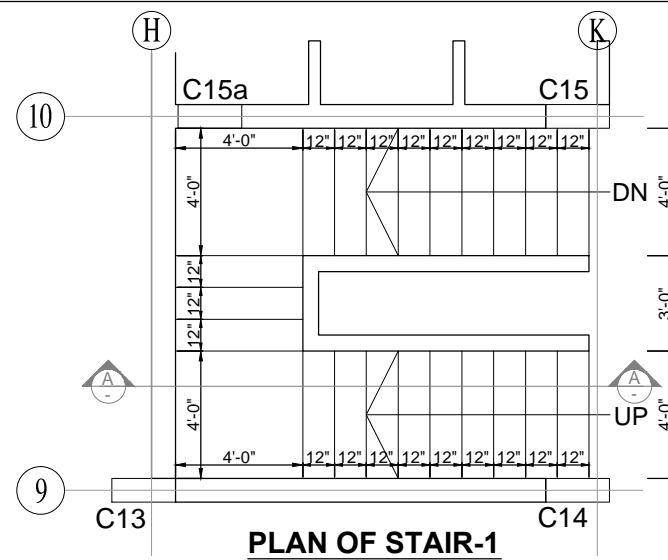


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QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF FOOTING	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 07	Scale : (A2) 1/16"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		





REV. NO.	DATE	DESCRIPTION
<h1>TENDER DRAWING</h1>		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
	QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH	
Drawn: Shahzad	Drawing Title: DETAIL OF FOOTING	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 08	Scale : (A2) NTS
885		
 ZAHEERUDDIN CONSULTANTS (PVT) LTD. ■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS ■ A. SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		

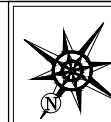




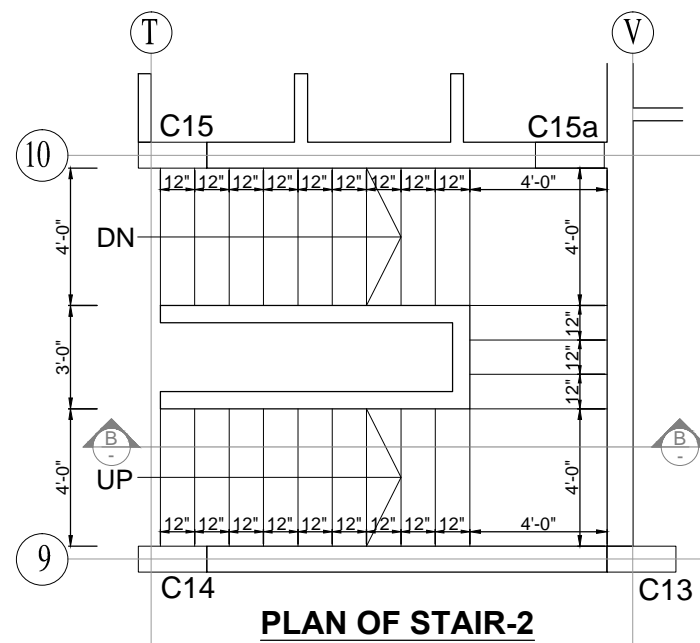
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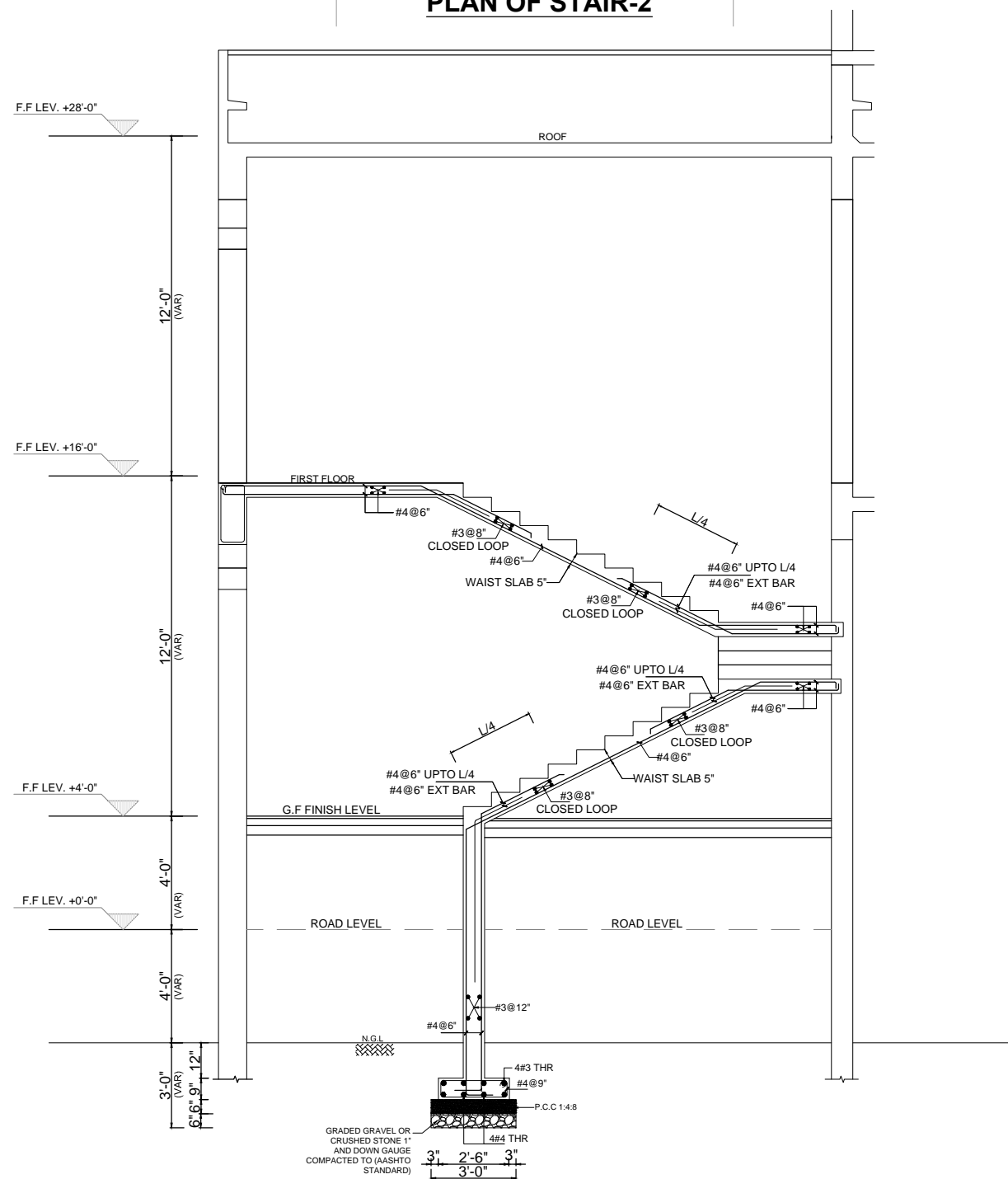
REV. NO.	DATE	DESCRIPTION
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ENVIRONMENTAL ENGINEERING DEPARTMENT		
	QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH	
	Drawn: Shahzad Check by: Zarzar	Drawing Title: DETAIL OF STAIR-1 Dwg. No. ZCL / QUEST-EED / S 10
Job No. 885		
	ZAHEERUDDIN CONSULTANTS (PVT) LTD. ■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS ■ A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.	



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PLAN OF STAIR-2



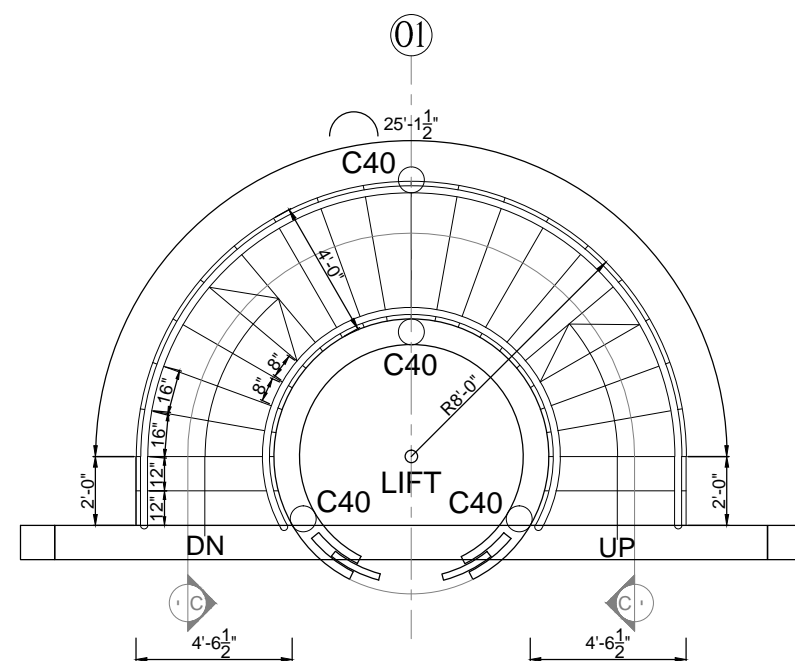
TYPICAL SECTION B-B FOR STAIR-2

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF STAIR-2	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 11	Scale : (A2) NTS
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		

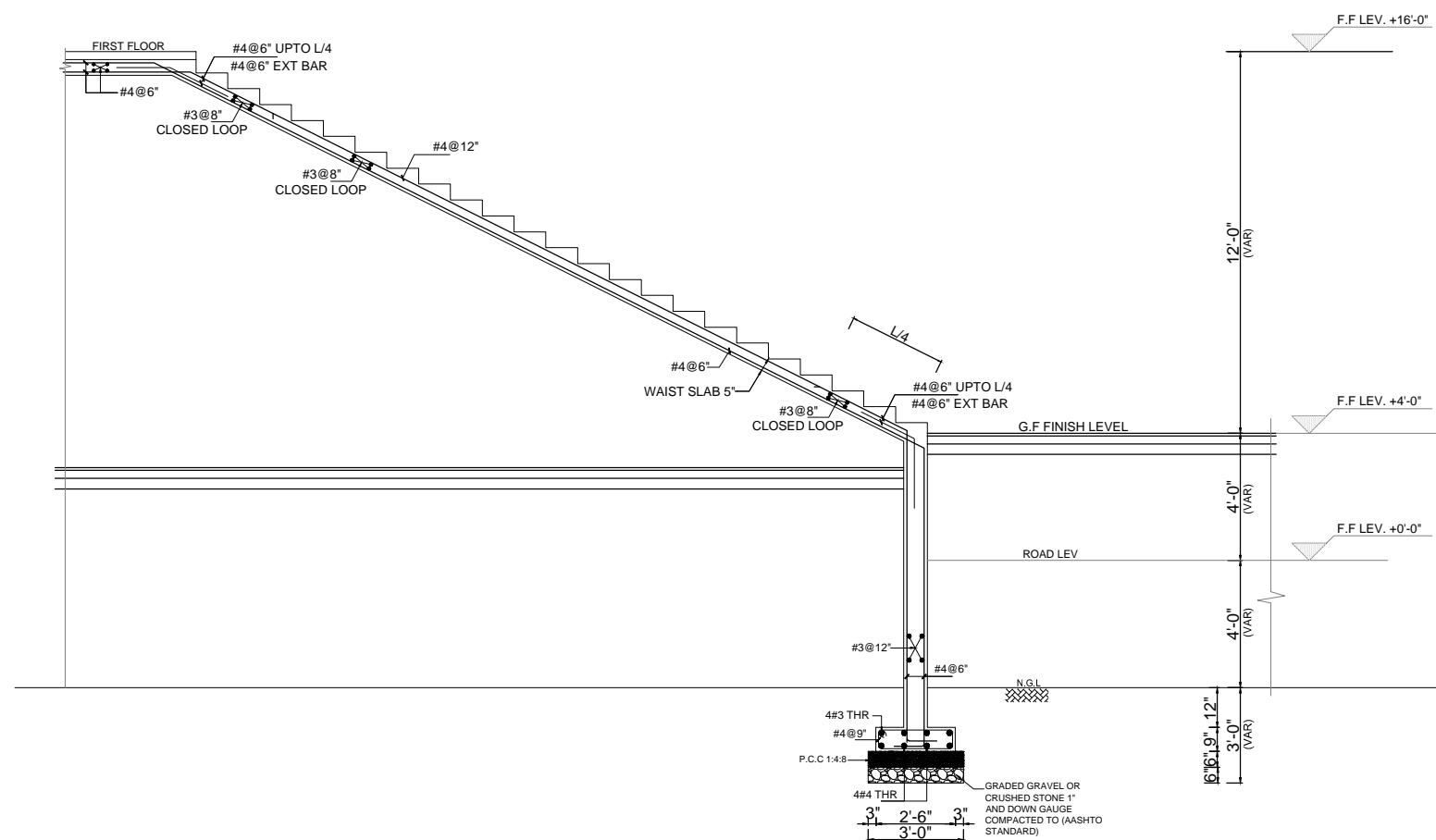


NOTE:

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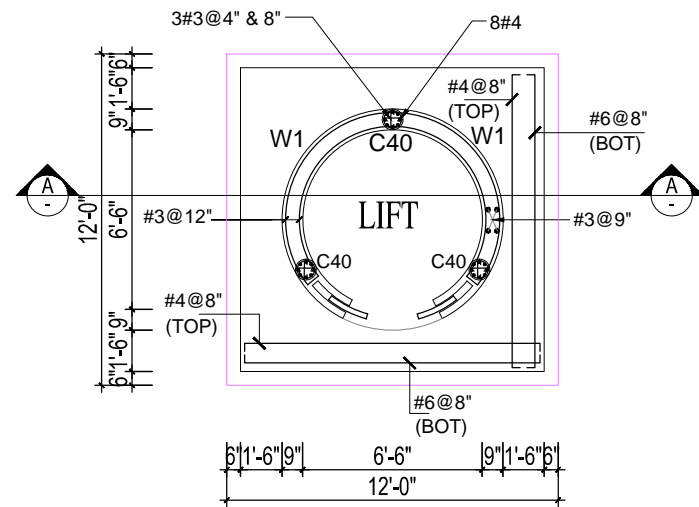


PLAN OF STAIR-3

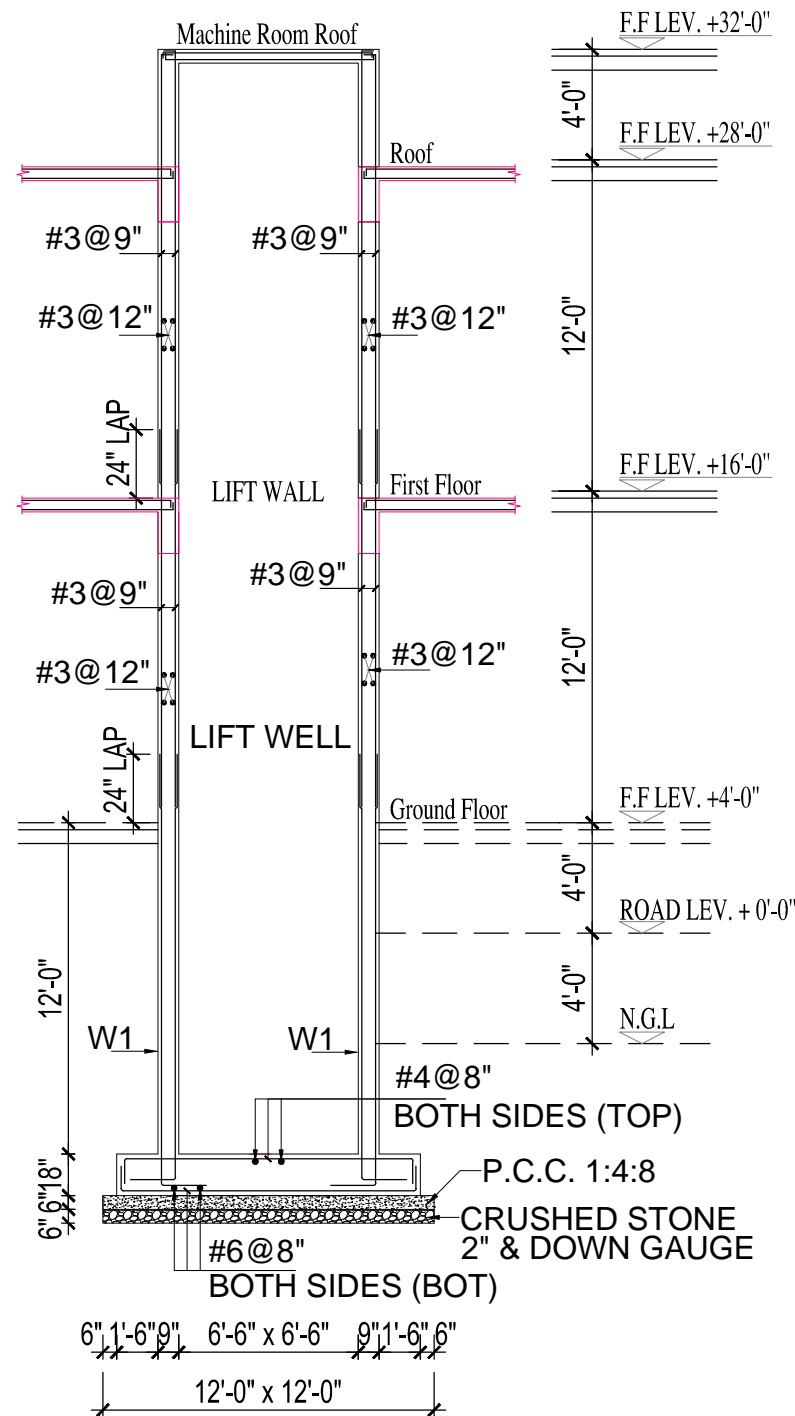


TYPICAL SECTION C-C FOR STAIR-3

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF STAIR-3	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 12	Scale: (A2) NTS
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		

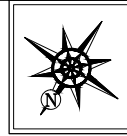


PLAN FOR LIFT WELL

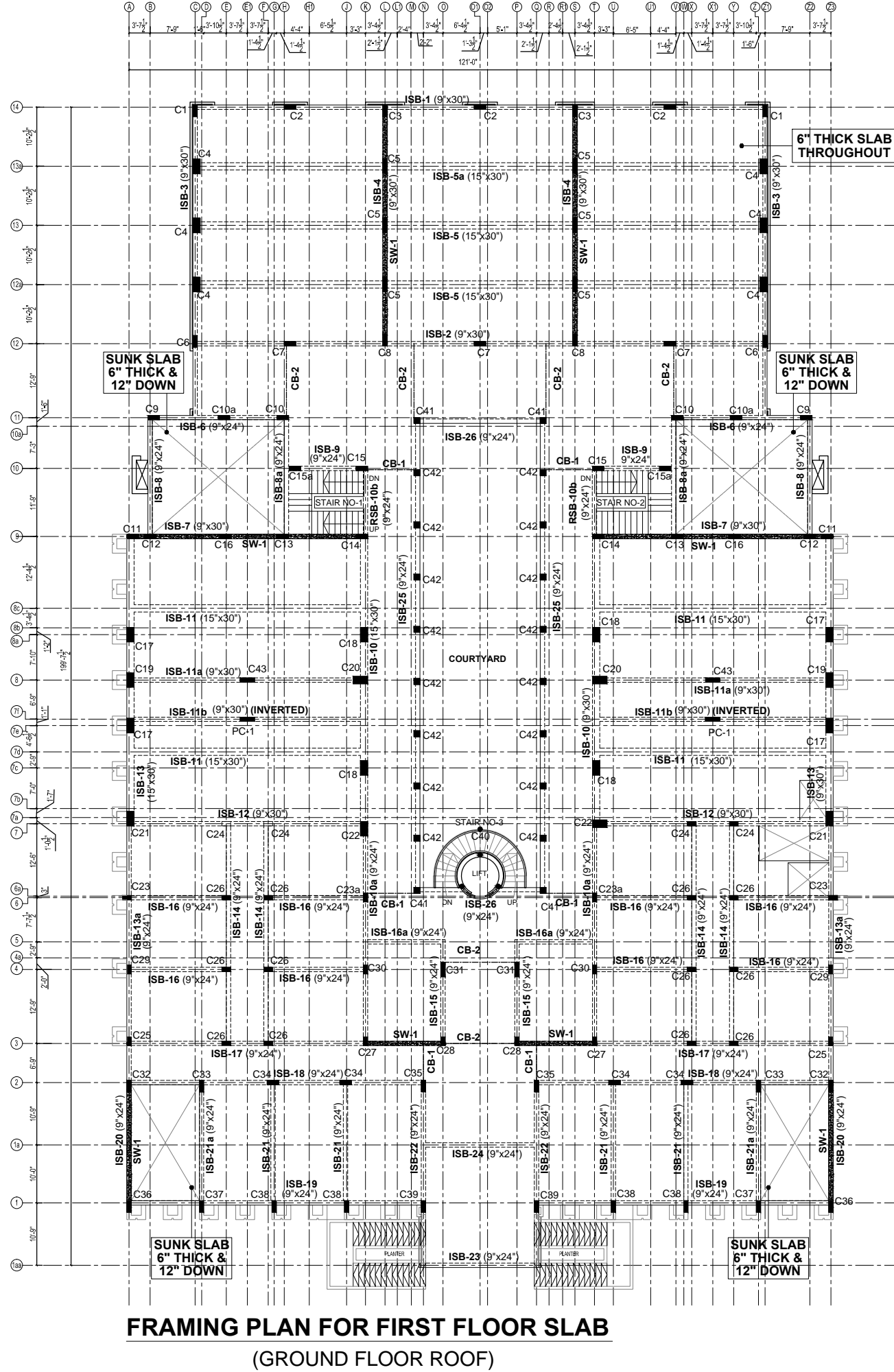


SECTION A-A FOR LIFT WELL


REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF LIFT	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 13	Scale: (A2) NTS
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



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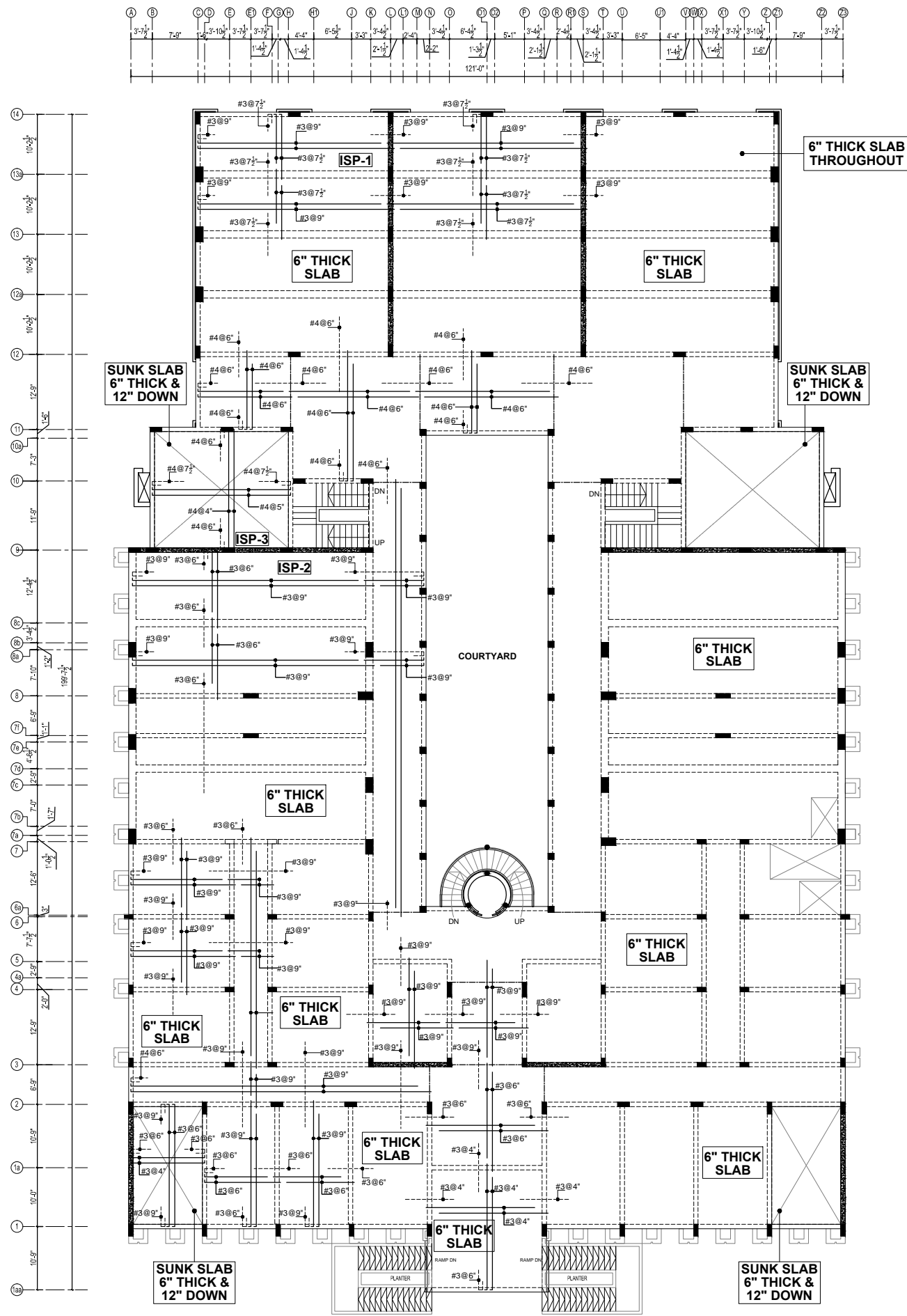


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QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: FRAMING PLAN FOR FIRST FLOOR SLAB	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 14	Scale : (A2) 1/16"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



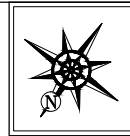
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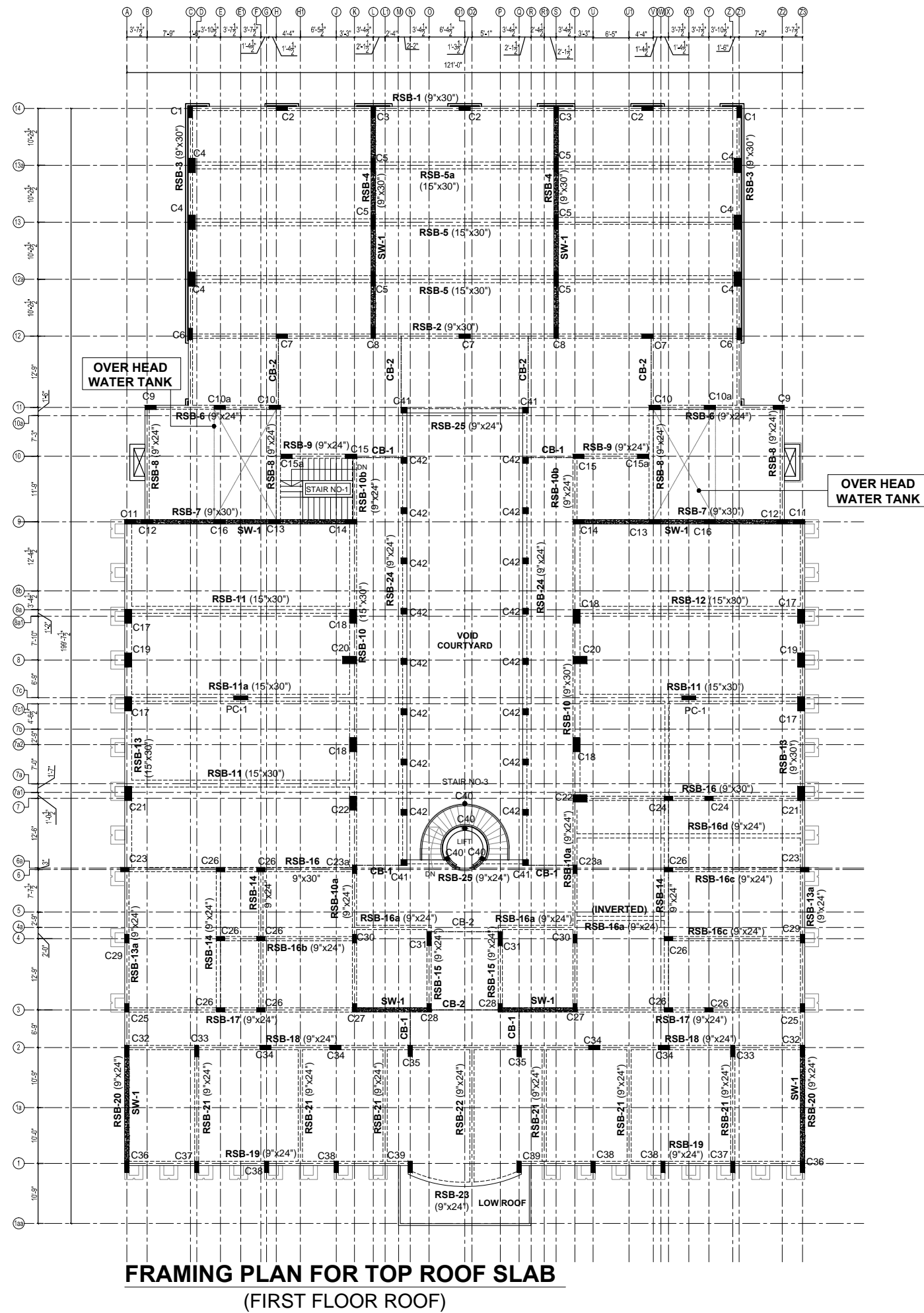
FRAMING AND REINFORCEMENT PLAN
FOR FIRST FLOOR SLAB
(GROUND FLOOR ROOF)

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: FRAMING AND REINFORCEMENT PLAN FOR FIRST FLOOR SLAB	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 15	Job No. 885
Scale : (A2) 1/16"		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		

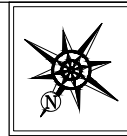


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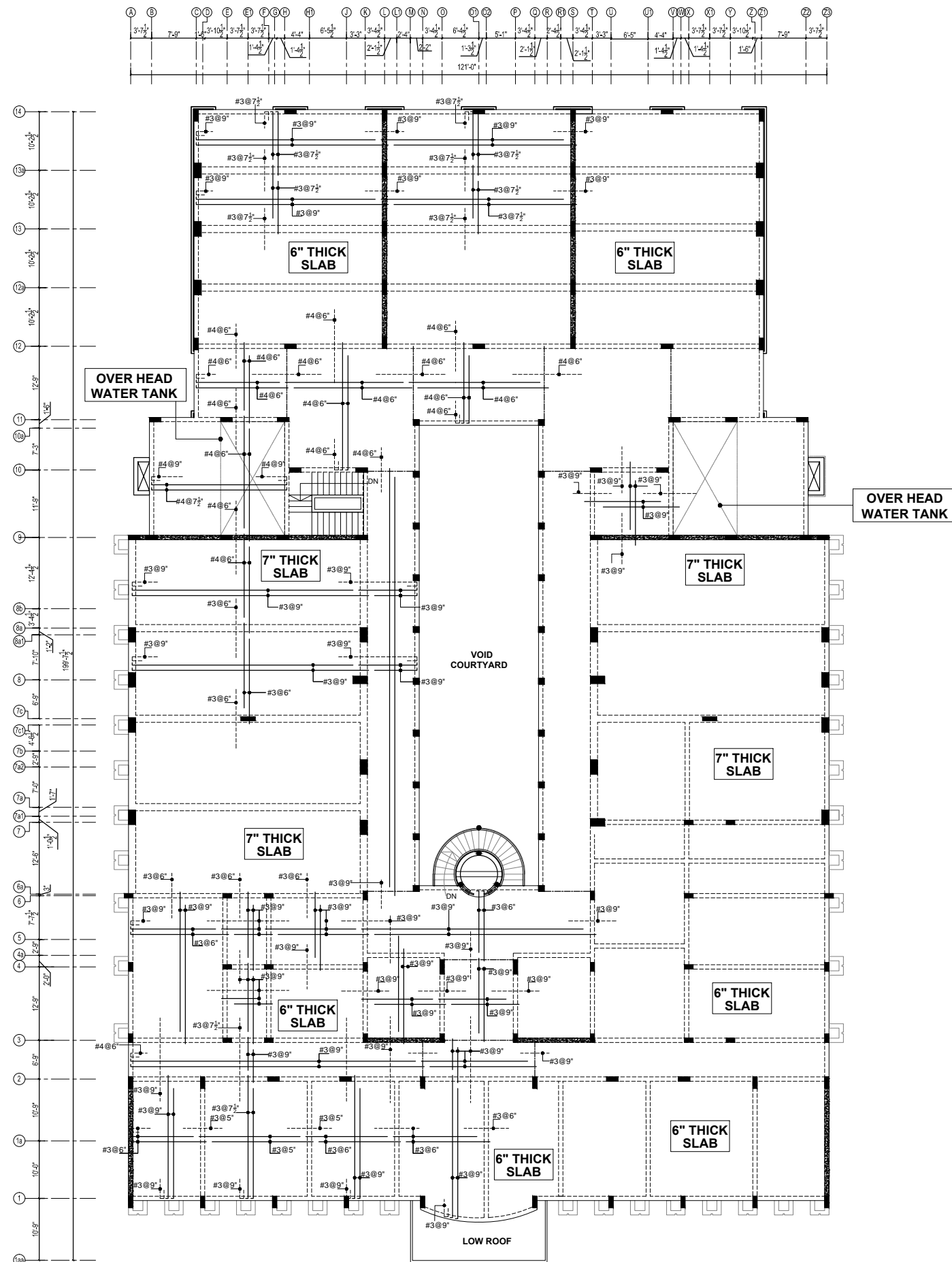
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REV. NO.	DATE	DESCRIPTION
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ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Dwg. No. ZCL / QUEST-EED / S 16	Date : March 2024
Check by: Zarrar		Scale : (A2) 1/16"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD.		
ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS		
5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		




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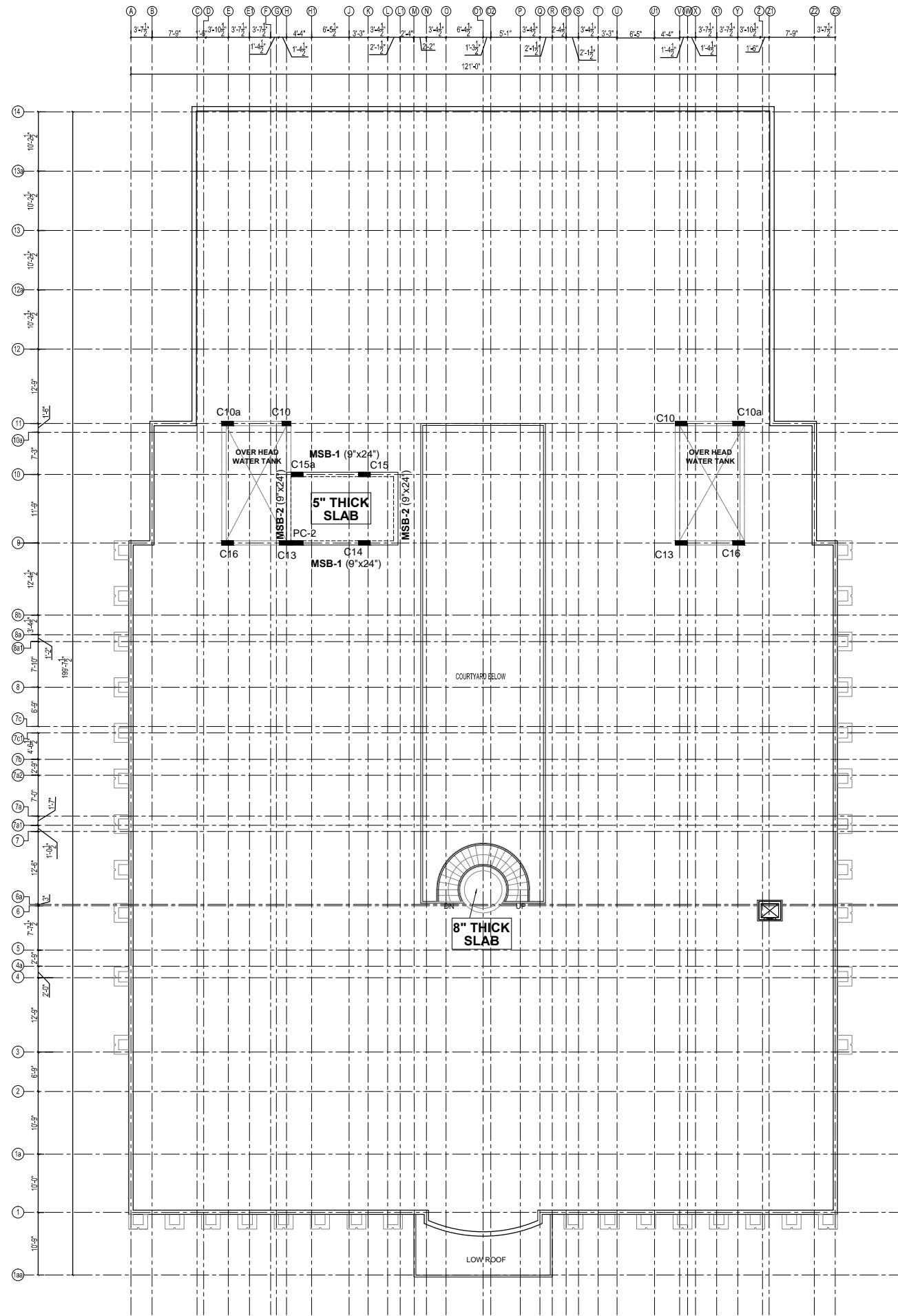
**FRAMING AND REINFORCEMENT PLAN
FOR TOP ROOF SLAB
(FIRST FLOOR ROOF)**

REV. NO.		DATE	DESCRIPTION	
TENDER DRAWING				
ENVIRONMENTAL ENGINEERING DEPARTMENT				
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH				
Drawn: Shahzad		Drawing Title: FRAMING AND REINFORCEMENT PLAN FOR TOP ROOF SLAB		Date : March 2024
Check by: Zarrar		Dwg. No. ZCL / QUEST-EED / S 17		Job No. 885
Scale : (A2) 1/16"				
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.				




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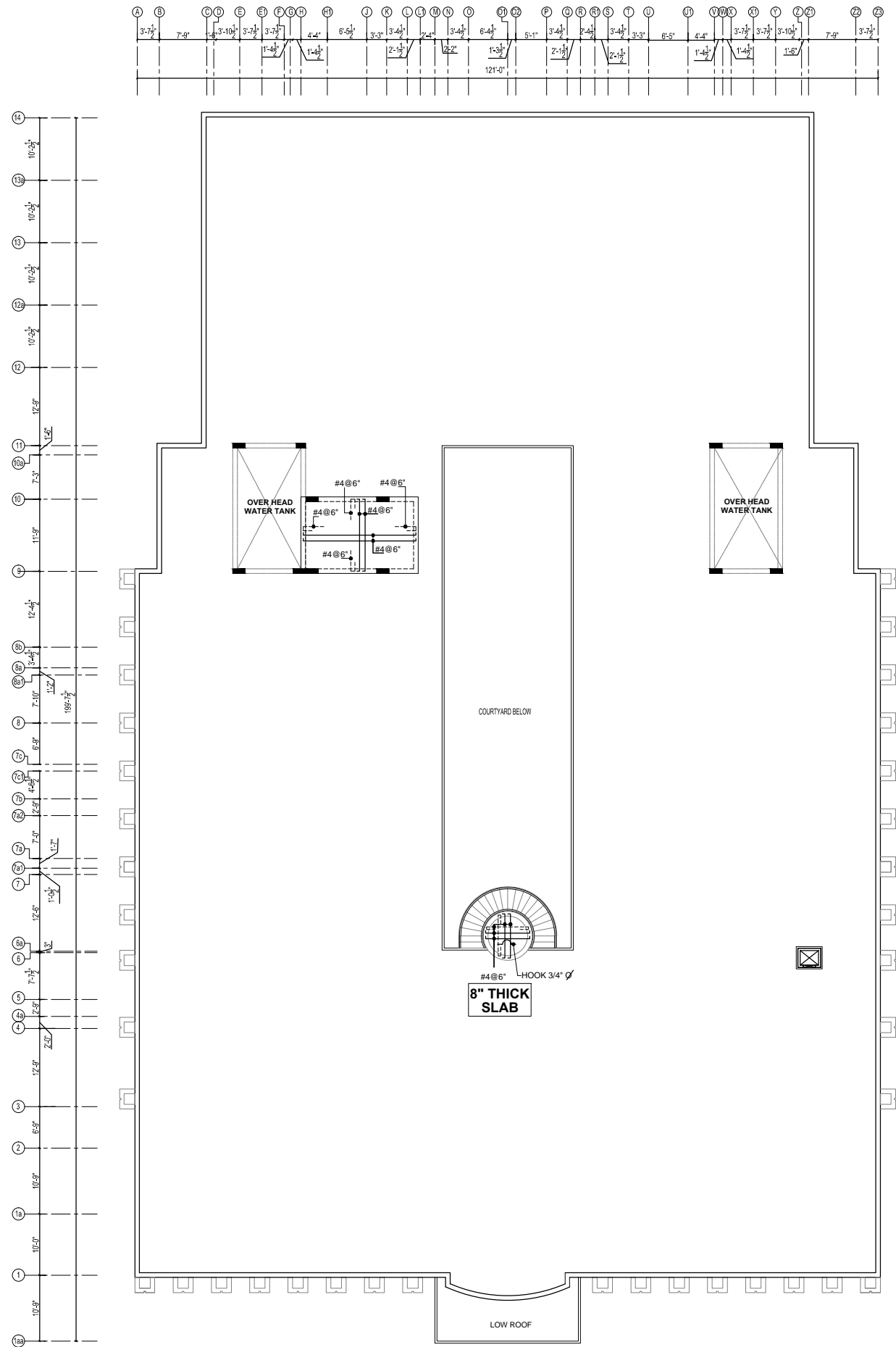
FRAMING PLAN FOR MUMTY SLAB

REV. NO.	DATE	DESCRIPTION	
TENDER DRAWING			
ENVIRONMENTAL ENGINEERING DEPARTMENT			
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH			
Drawn: Shahzad	Drawing Title: FRAMING PLAN FOR MUMTY SLAB	Date : March 2024	Job No. 885
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 18	Scale : (A2) 1/16"	
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.			





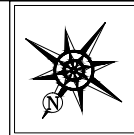
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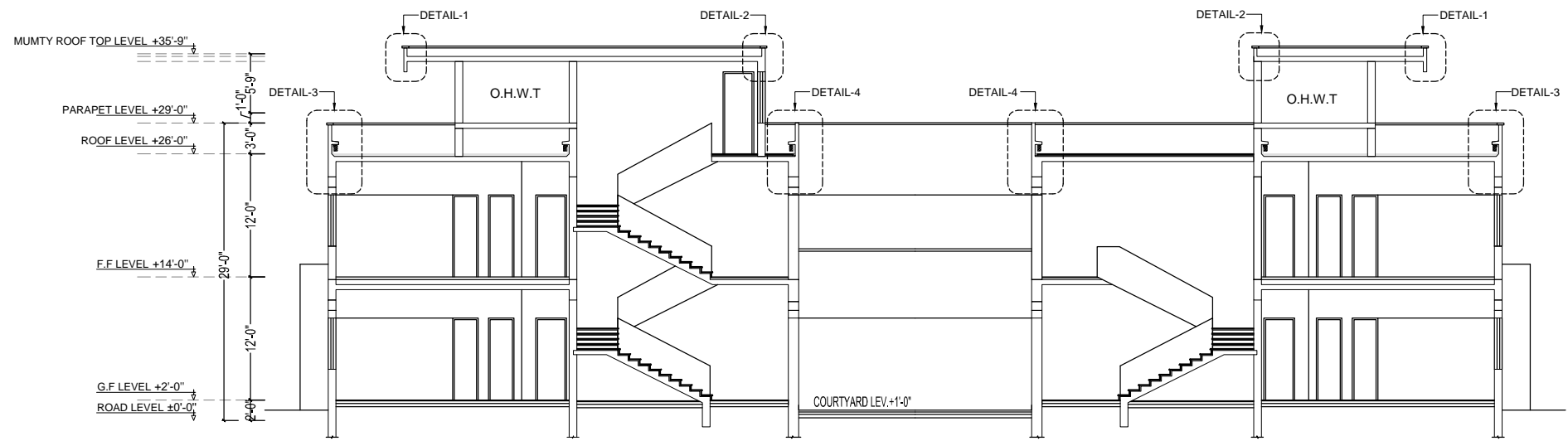


**FRAMING AND REINFORCEMENT PLAN
FOR MUMTY SLAB**

REV. NO.	DATE	DESCRIPTION	
TENDER DRAWING			
ENVIRONMENTAL ENGINEERING DEPARTMENT			
	QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Dwg. No. ZCL / QUEST-EED / S 19	Date : March 2024	Job No. 885
Check by: Zarrar	Scale : (A2) 1/16"		
 ZAHEERUDDIN CONSULTANTS (PVT) LTD. ■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.			



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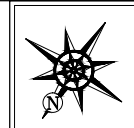


SECTION A-A

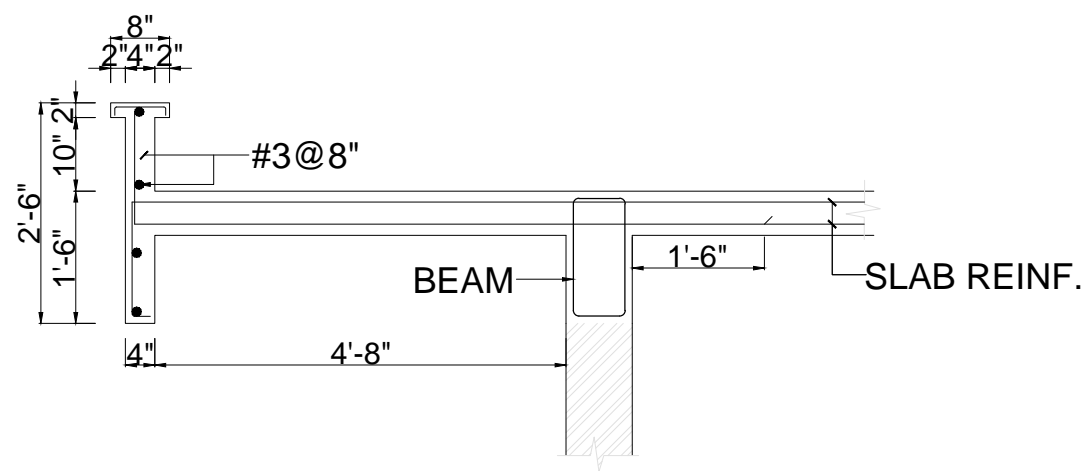


SECTION B-B

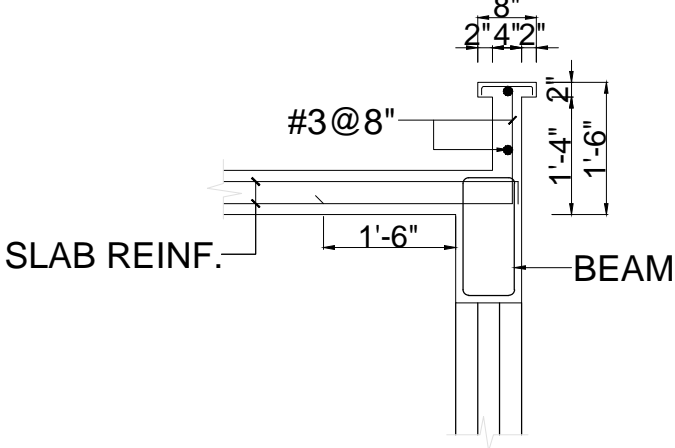
REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: SECTION A-A & B-B	Date : June 2023
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 20	Scale : (A2) NTS
880		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



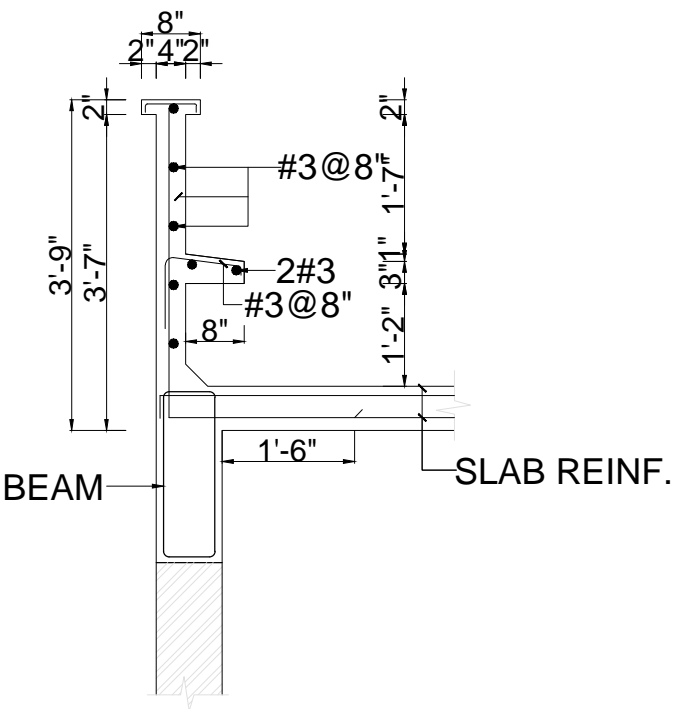
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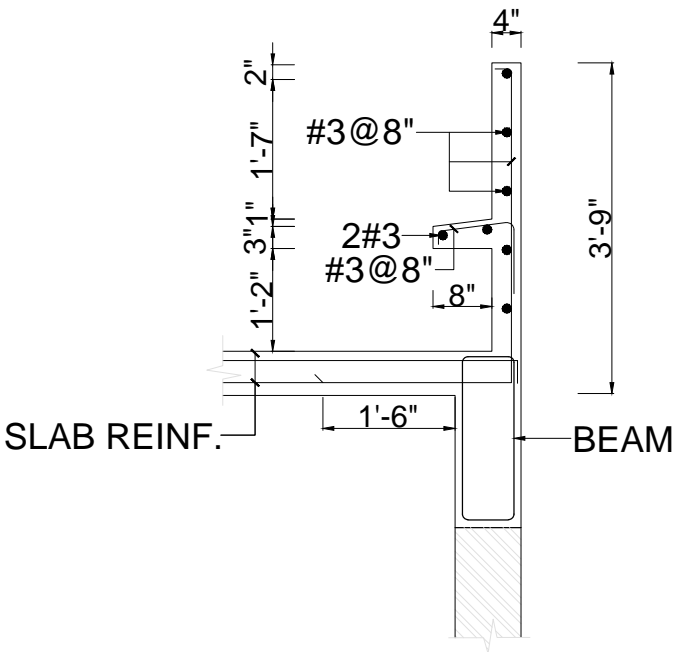
TYPICAL DETAIL-1



TYPICAL DETAIL-2

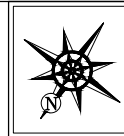


TYPICAL DETAIL-3

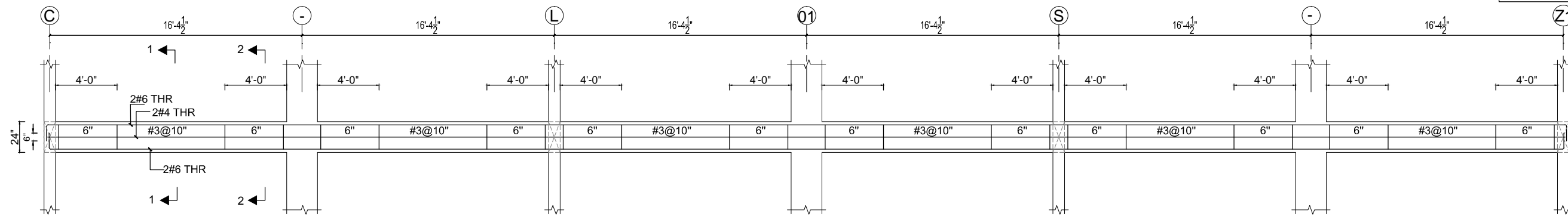


TYPICAL DETAIL-4

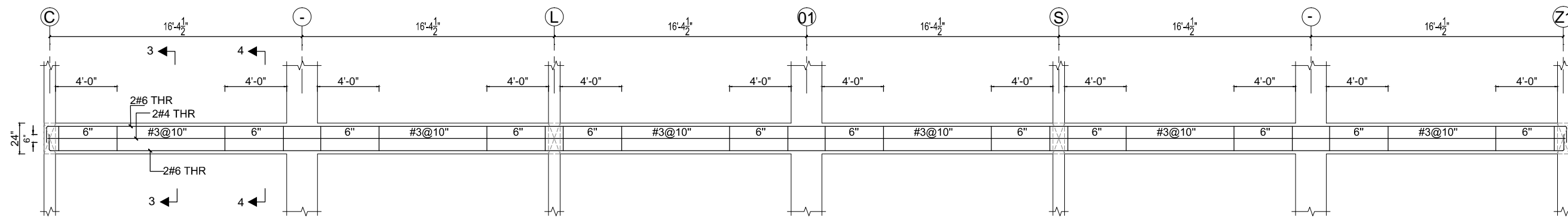
REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETIL OF PERAPETS	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 21	Scale : (A2) NTS
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



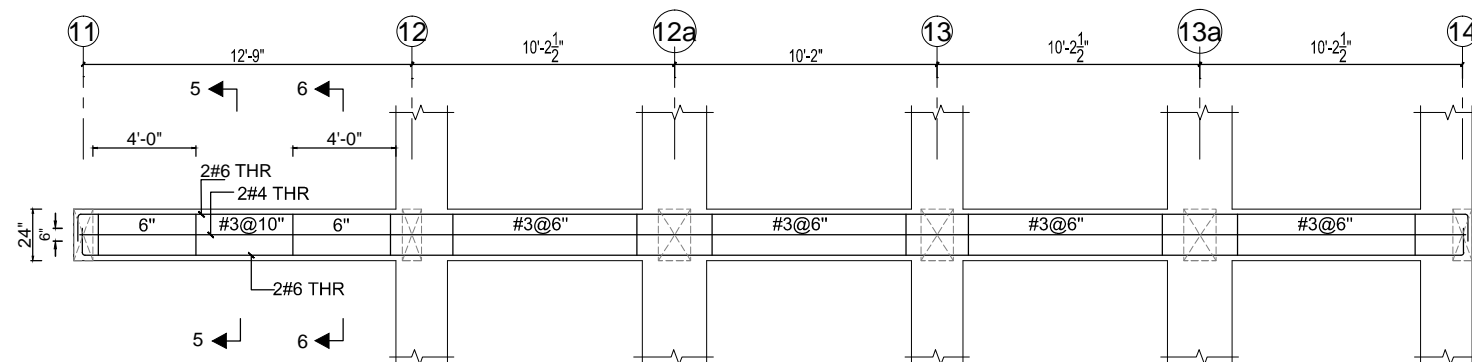
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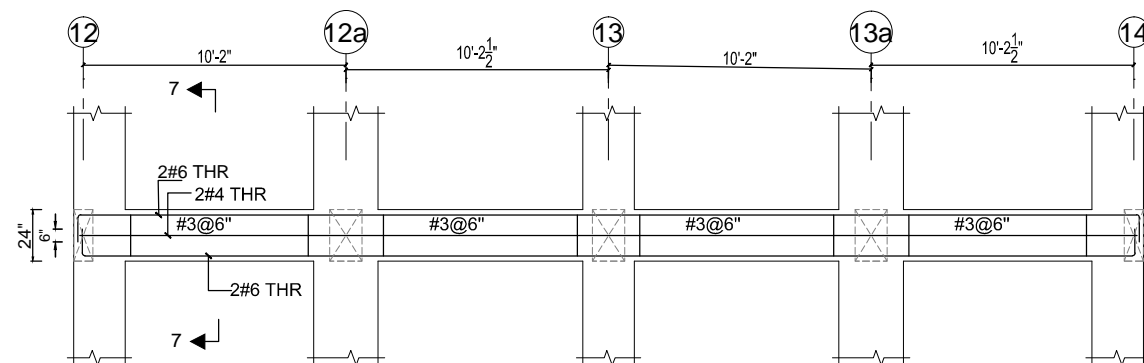
L-SECTION OF BEAM ISB-1
(9" x 24")



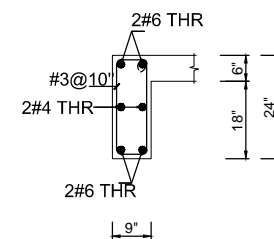
L-SECTION OF BEAM ISB-2
(9" x 24")



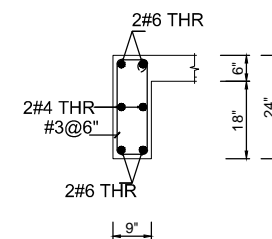
L-SECTION OF BEAM ISB-3
(9" x 24")



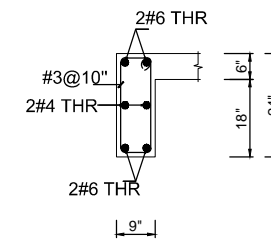
L-SECTION OF BEAM ISB-4
(9" x 24")



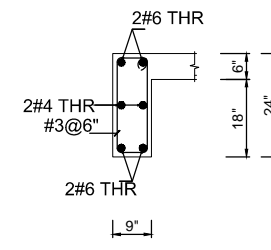
SECTION 05-05



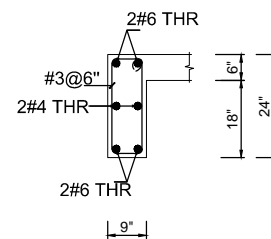
SECTION 06-06



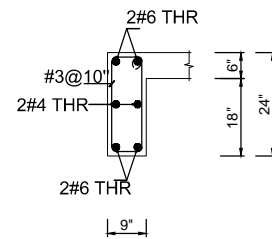
SECTION 01-01



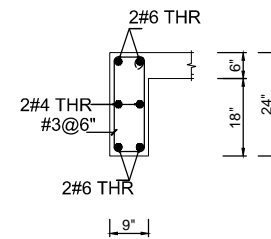
SECTION 02-02



SECTION 07-07

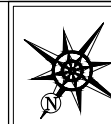


SECTION 03-03

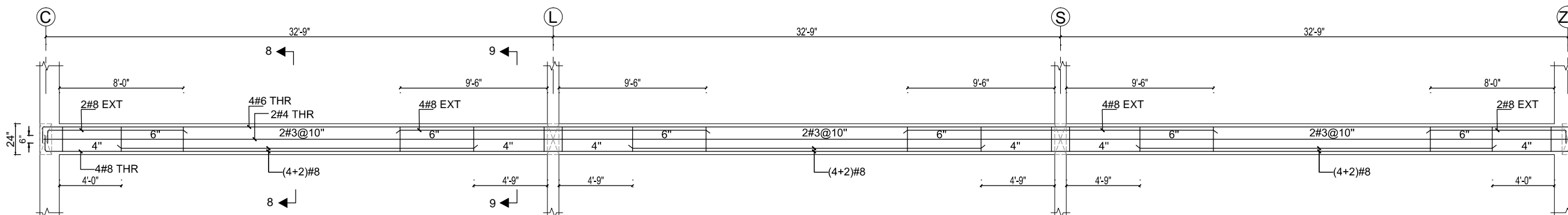


SECTION 04-04

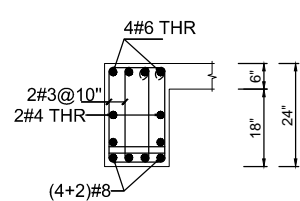
REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF BEAMS (GROUND FLOOR)	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 22	Scale: (A2) NTS
885		
ZAHREUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



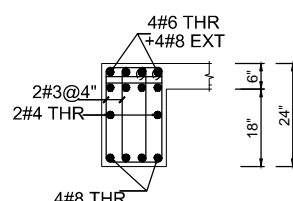
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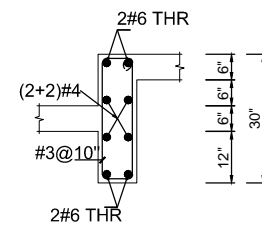
L-SECTION OF BEAM ISB-5
(15' x 24')



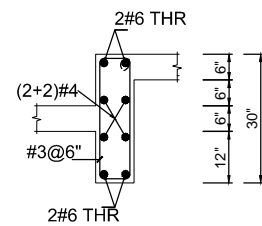
SECTION 08-08



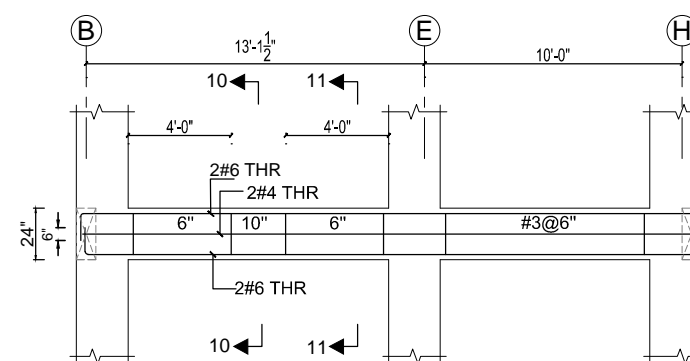
SECTION 09-09



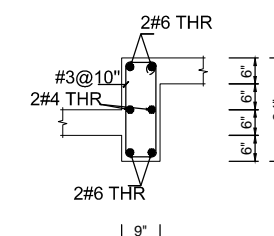
SECTION 12-12



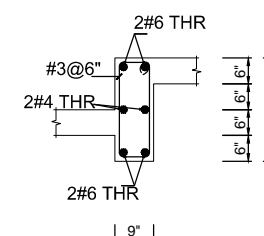
SECTION 13-13



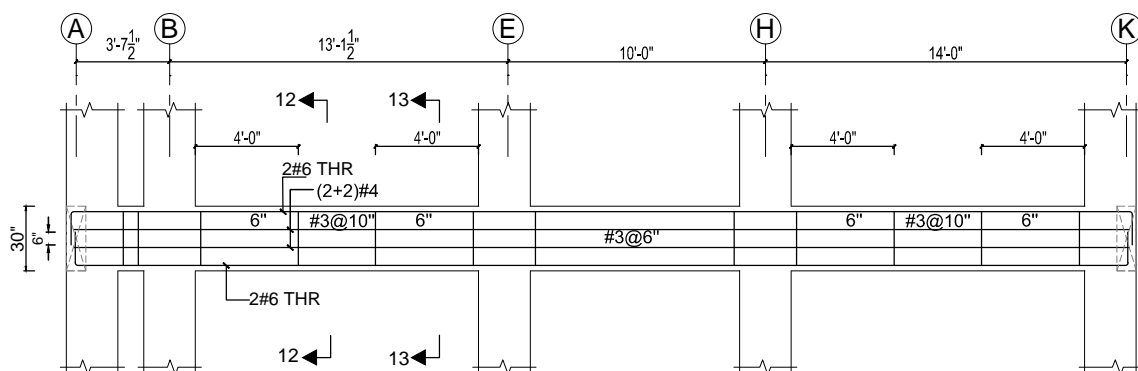
L-SECTION OF BEAM ISB-6
(9' x 24')



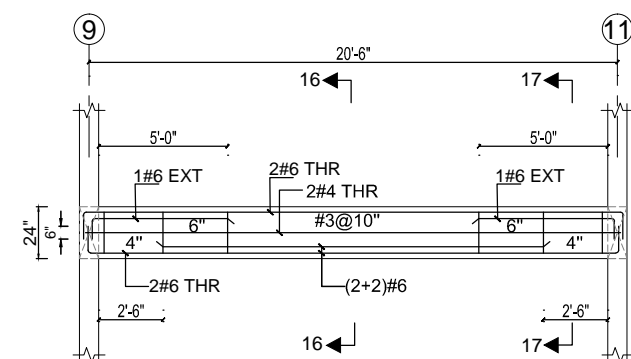
SECTION 10-10



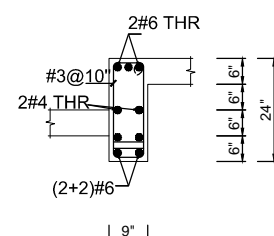
SECTION 11-11



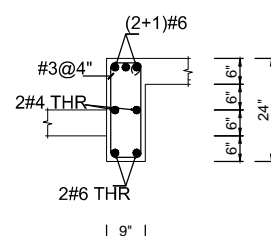
L-SECTION OF BEAM ISB-7
(9' x 30')



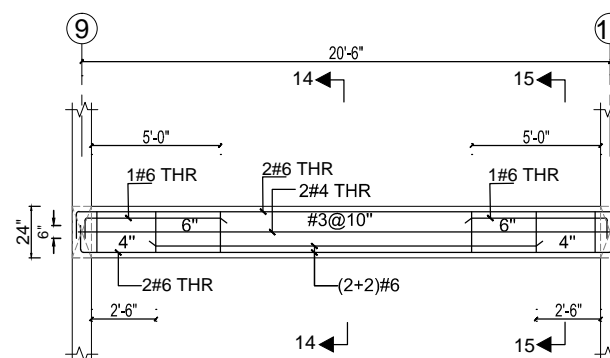
L-SECTION OF BEAM ISB-8a
(9' x 24')



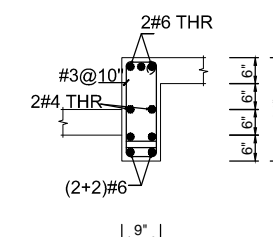
SECTION 16-16



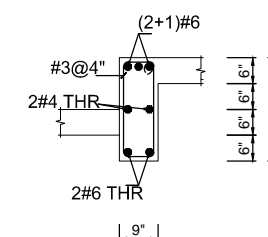
SECTION 17-17



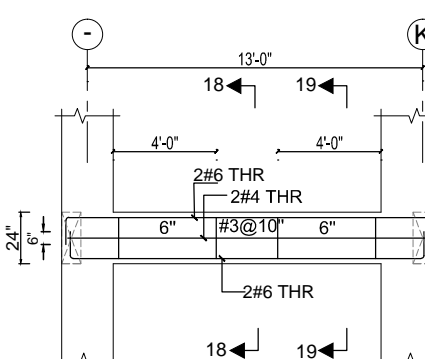
L-SECTION OF BEAM ISB-8
(9' x 24')



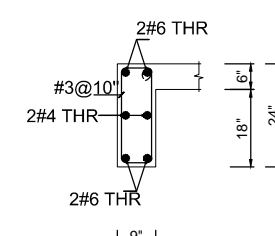
SECTION 14-14



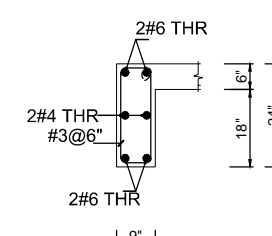
SECTION 15-15



L-SECTION OF BEAM ISB-9
(9' x 24')

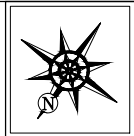


SECTION 18-18

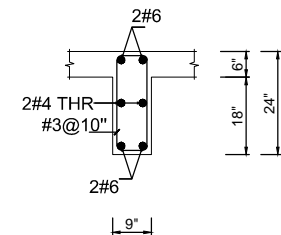
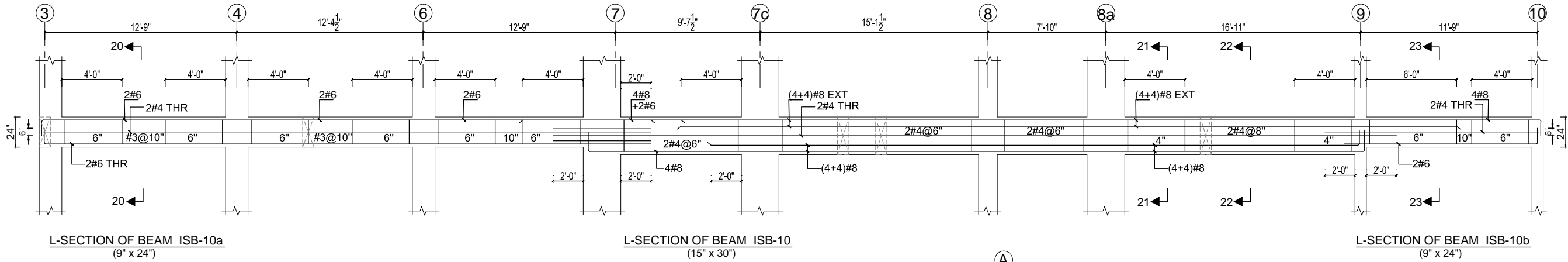


SECTION 19-19

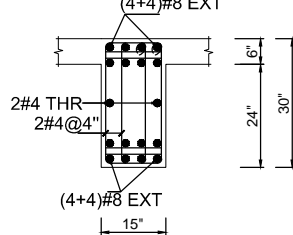
REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF BEAMS (GROUND FLOOR)	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 23	Scale: (A2) NTS
885		
ZAHREUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



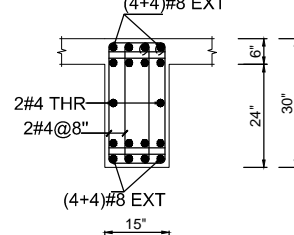
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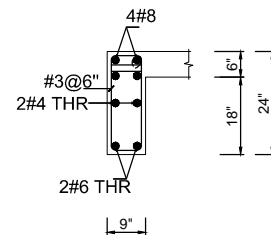
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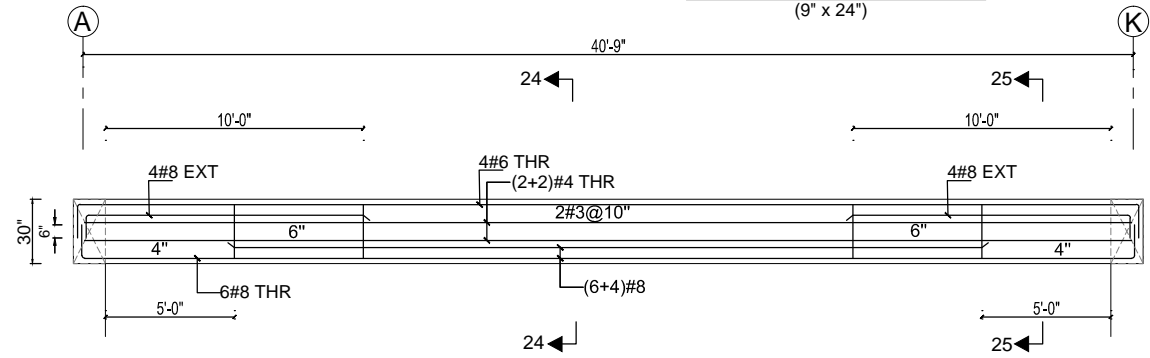
SECTION 21-21



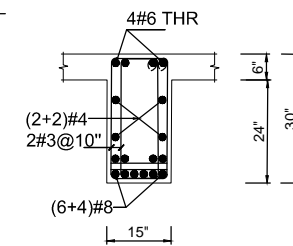
SECTION 22-22



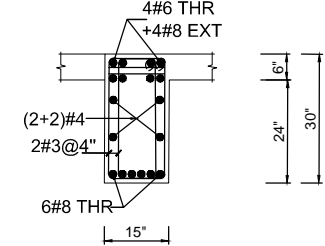
SECTION 23-23



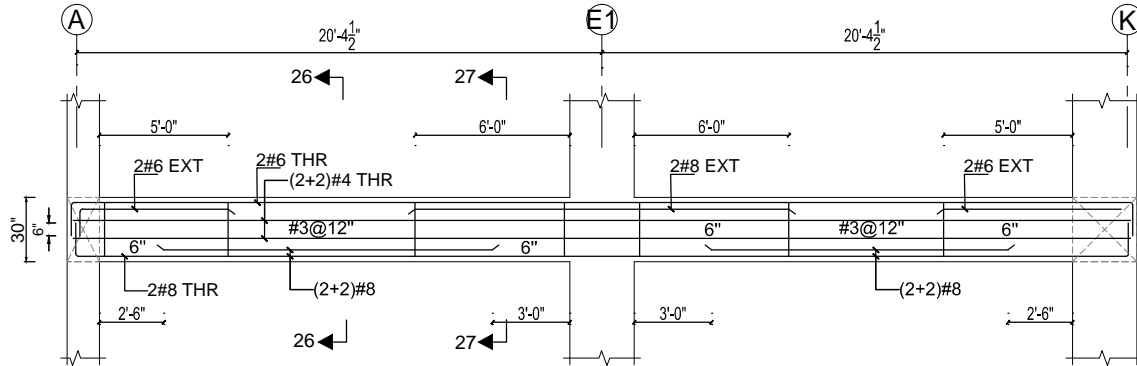
L-SECTION OF BEAM ISB-11
(15' x 30'')



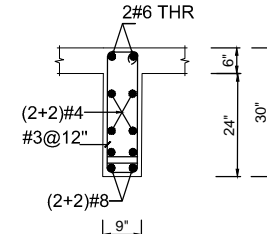
SECTION 24-24



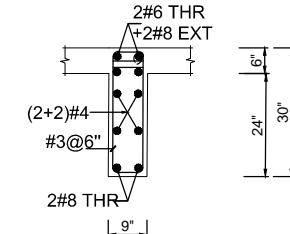
SECTION 25-25



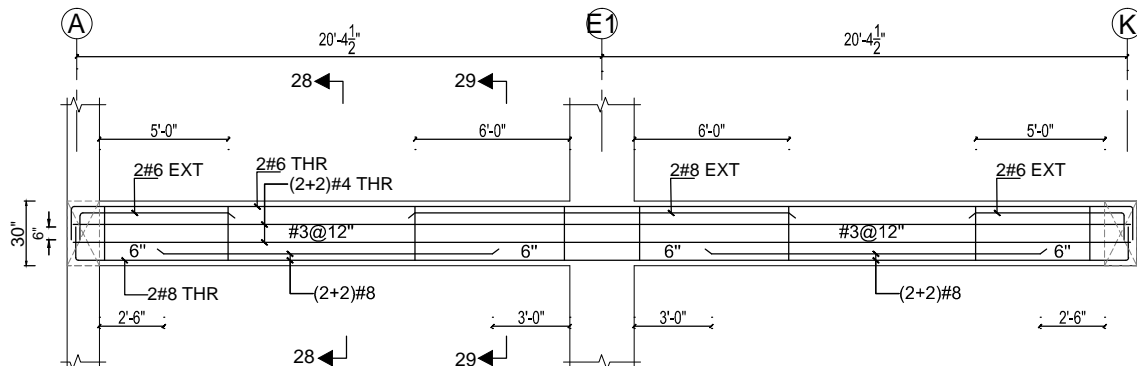
L-SECTION OF BEAM ISB-11a
(9' x 30'')



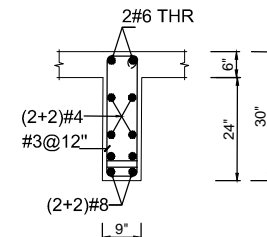
SECTION 26-26



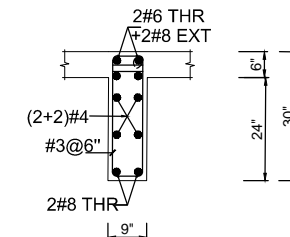
SECTION 27-27



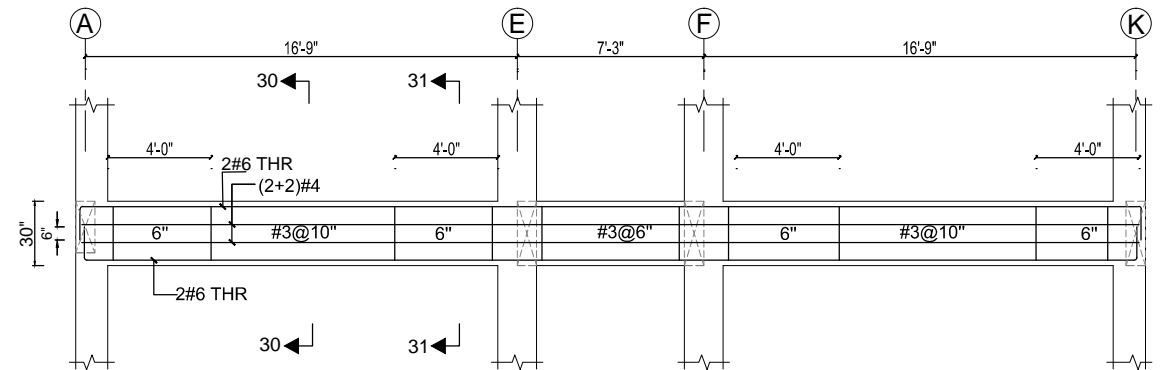
L-SECTION OF BEAM ISB-11b
(9' x 30'')



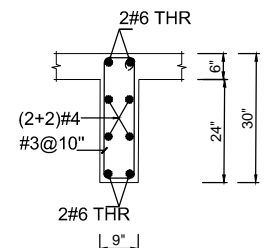
SECTION 28-28



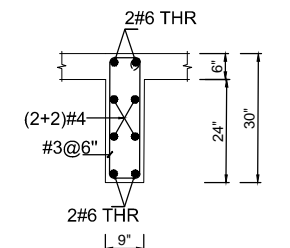
SECTION 29-29



L-SECTION OF BEAM ISB-12
(9' x 30'')

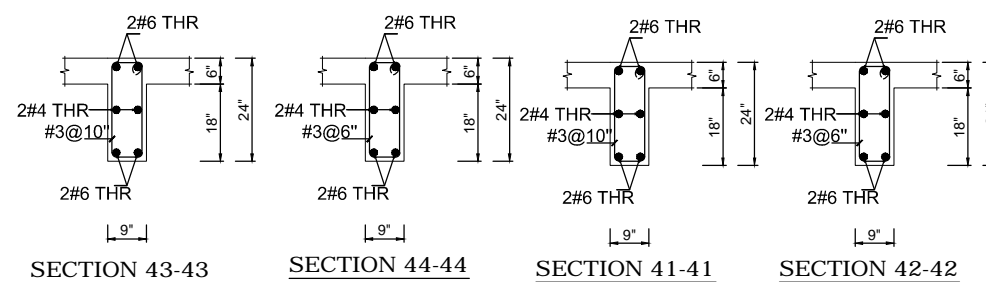
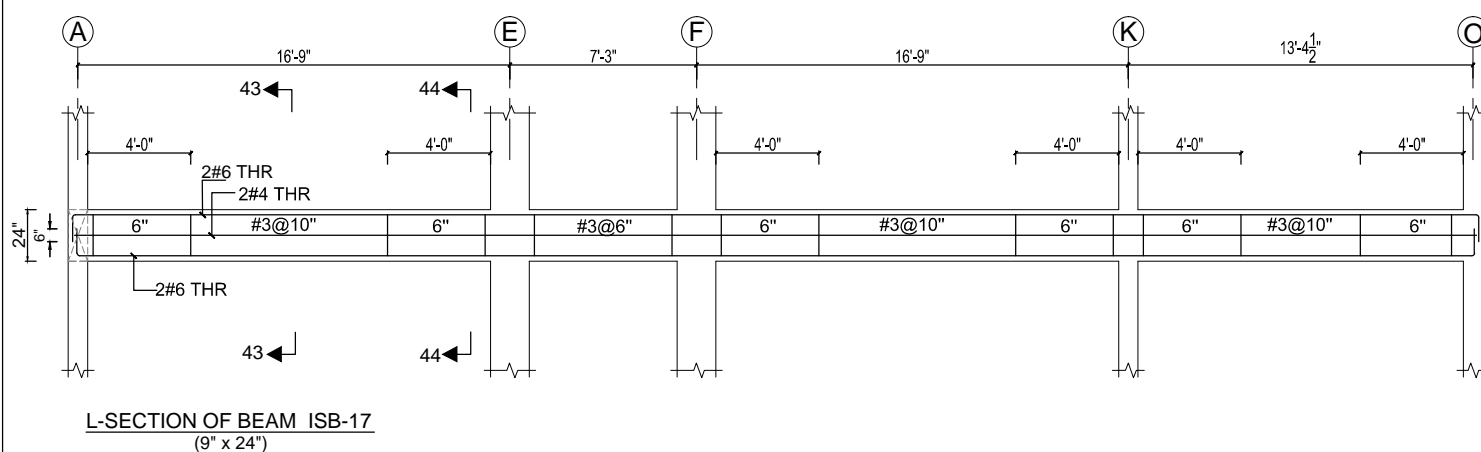
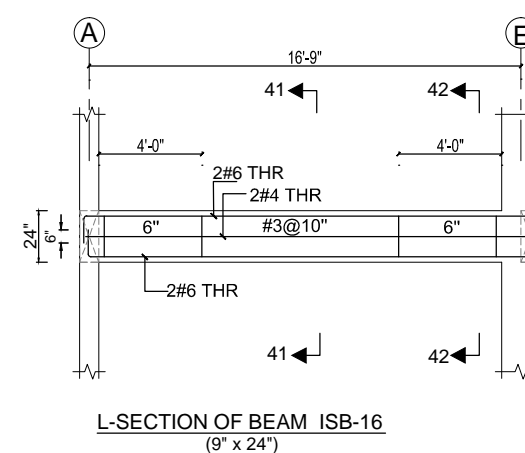
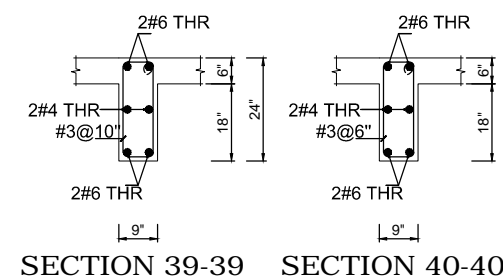
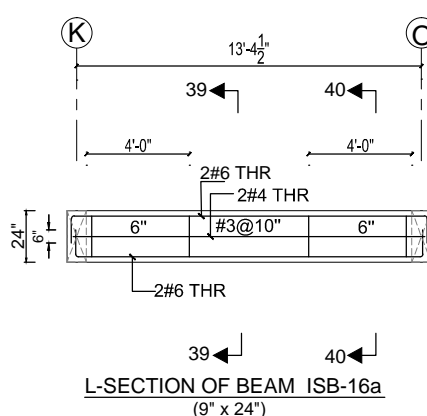
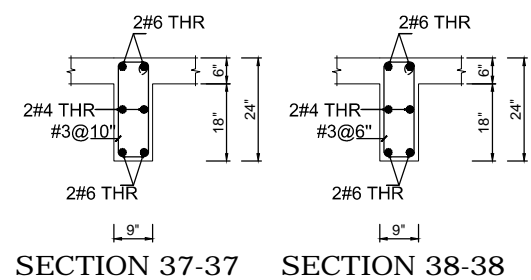
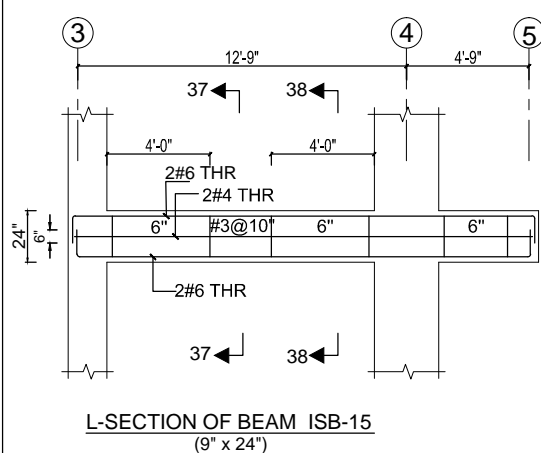
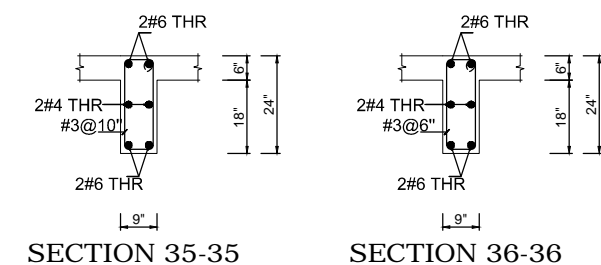
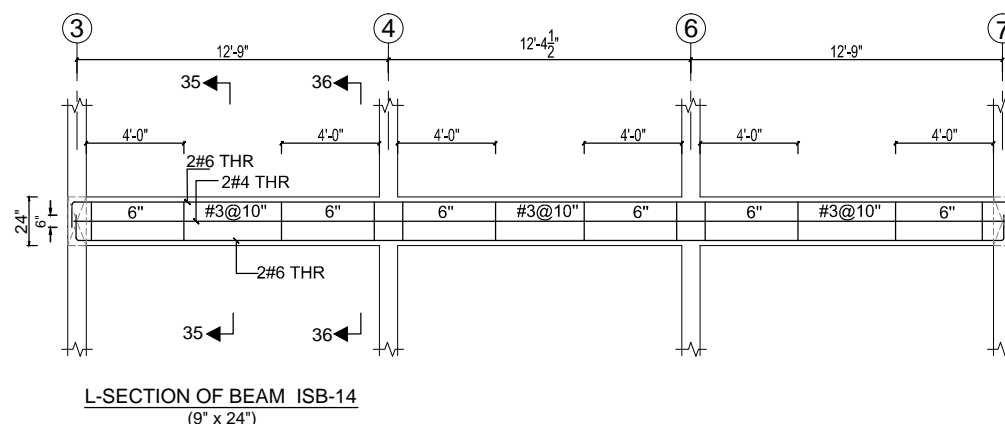
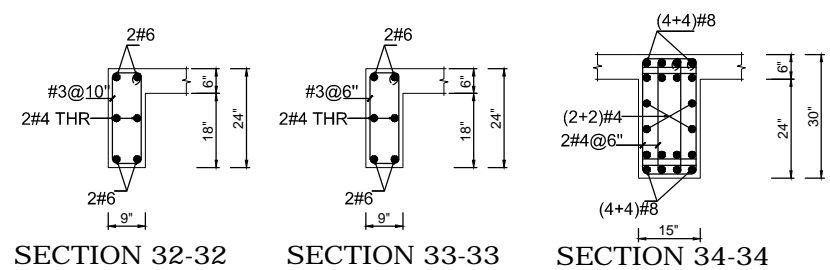
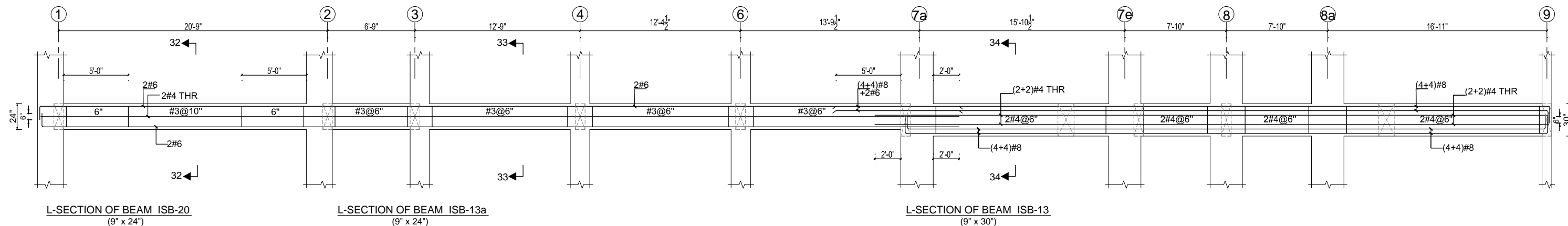
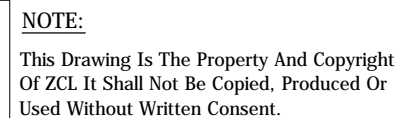



SECTION 30-30

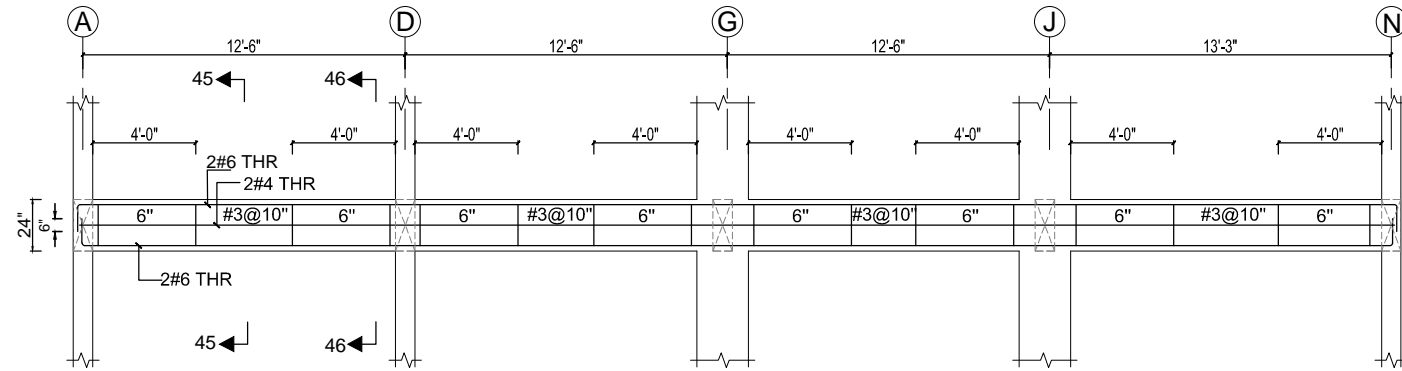


SECTION 31-31

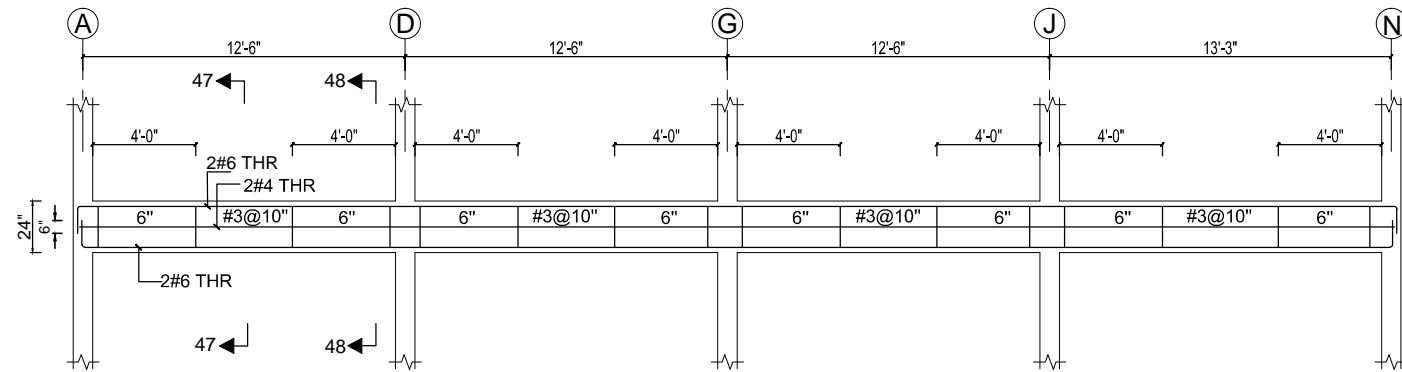
REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF BEAMS (GROUND FLOOR)	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 24	Scale: (A2) NTS
885		
ZAHREERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



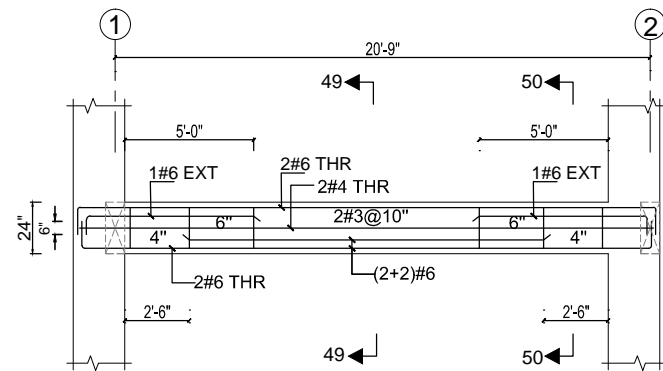
REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
	QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH	
	Drawing Title: DETAIL OF BEAMS (GROUND FLOOR)	Date : March 2024
	Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 25 Scale : (A2) NTS
		885
ZAHEERUDDIN CONSULTANTS (PVT) LTD		
■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGER		
5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN		



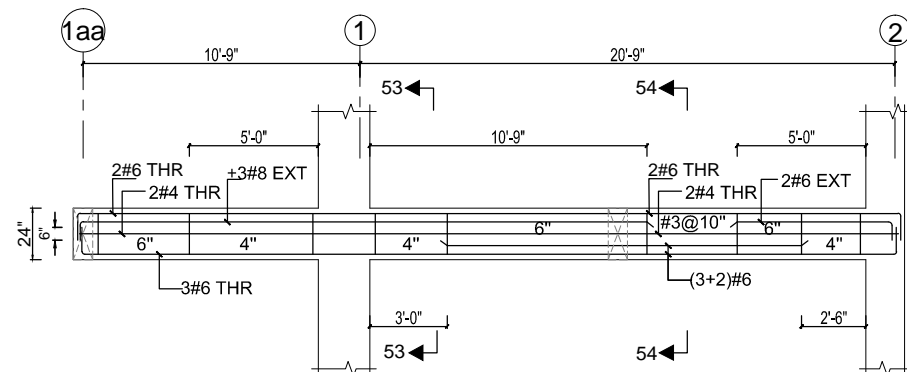
L-SECTION OF BEAM ISB-18
(9" x 24")



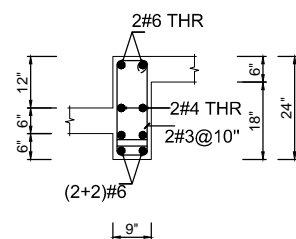
L-SECTION OF BEAM ISB-19
(9" x 24")



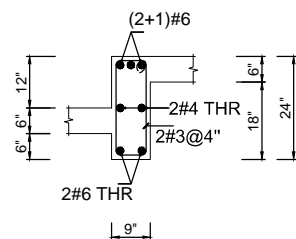
L-SECTION OF BEAM ISB-21a
(9" x 24")



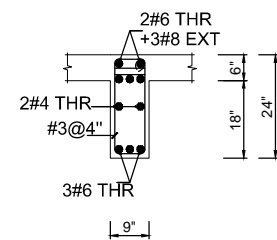
L-SECTION OF BEAM ISB-22
(9" x 24")



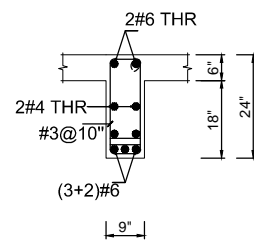
SECTION 49-49



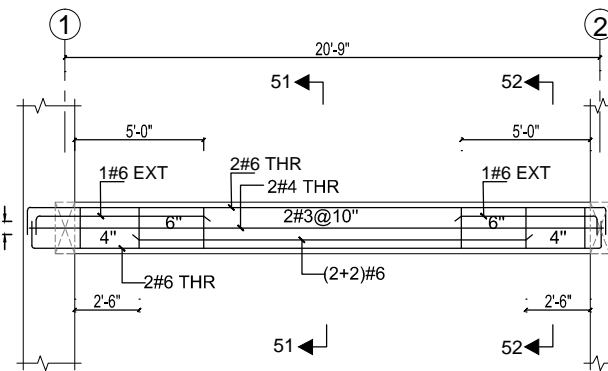
SECTION 50-50



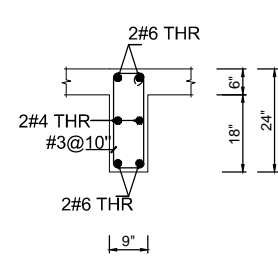
SECTION 53-53



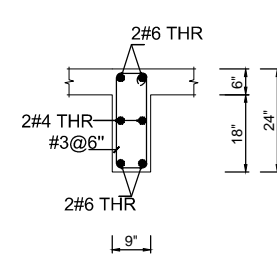
SECTION 54-54



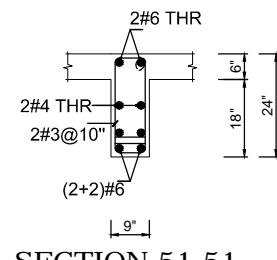
L-SECTION OF BEAM ISB-21
(9" x 24")



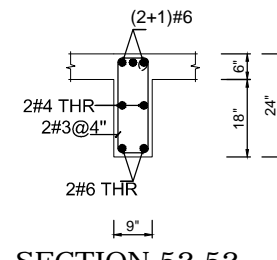
SECTION 45-45



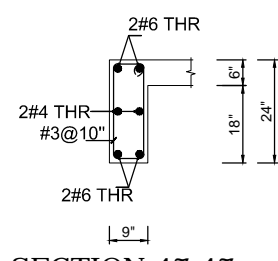
SECTION 46-46



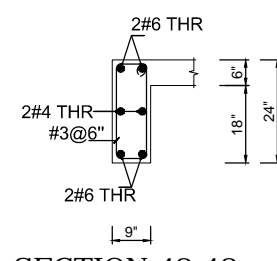
SECTION 51-51



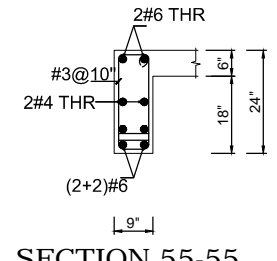
SECTION 52-52



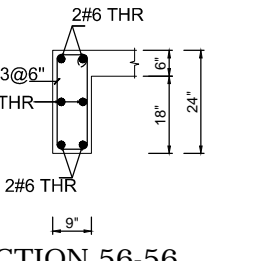
SECTION 47-47



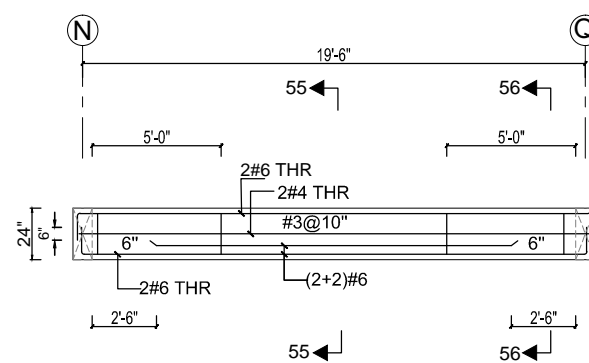
SECTION 48-48



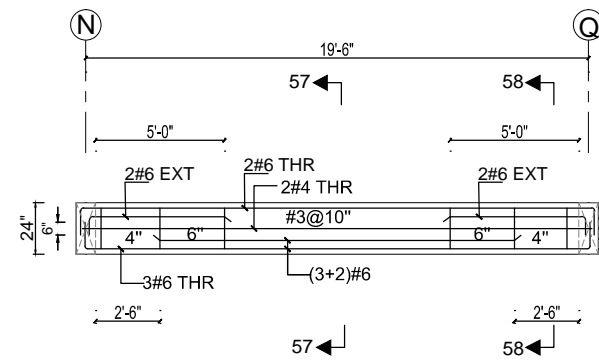
SECTION 55-55



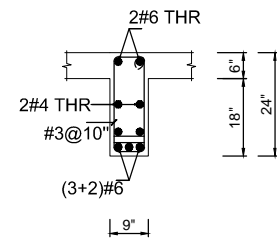
SECTION 56-56



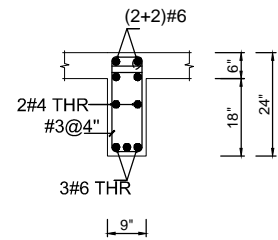
L-SECTION OF BEAM ISB-23
(9" x 24")



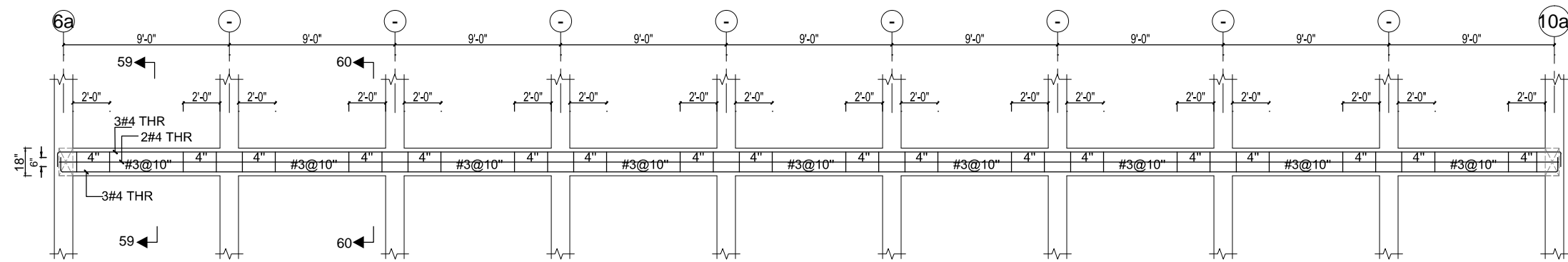
L-SECTION OF BEAM ISB-24
(9' x 24')



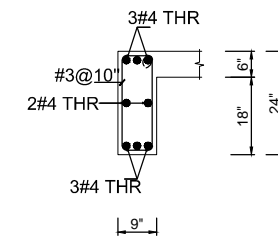
SECTION 57-57



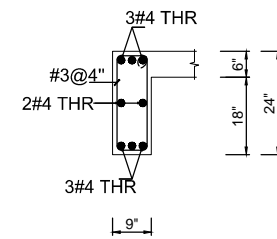
SECTION 58-58



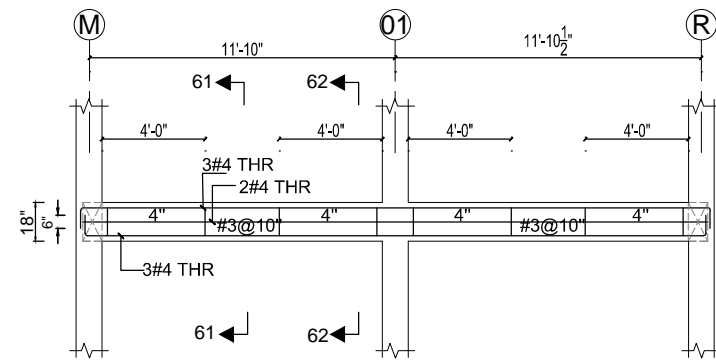
L-SECTION OF BEAM ISB-25
(9' x 18')



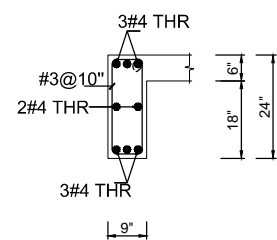
SECTION 59-59



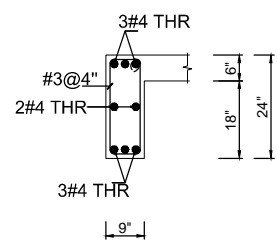
SECTION 60-60



L-SECTION OF BEAM ISB-26
(9' x 18')

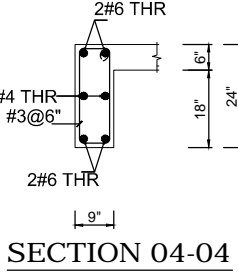
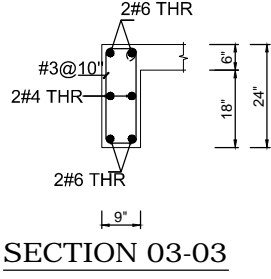
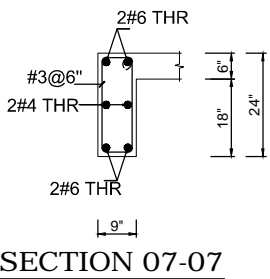
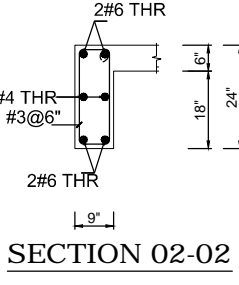
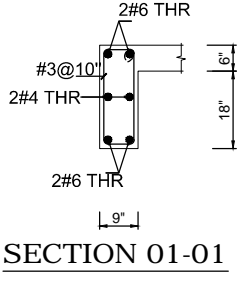
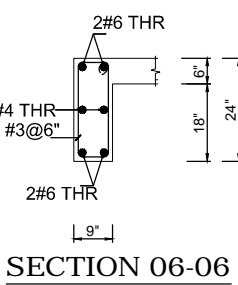
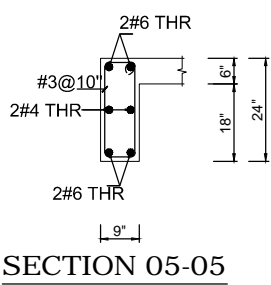
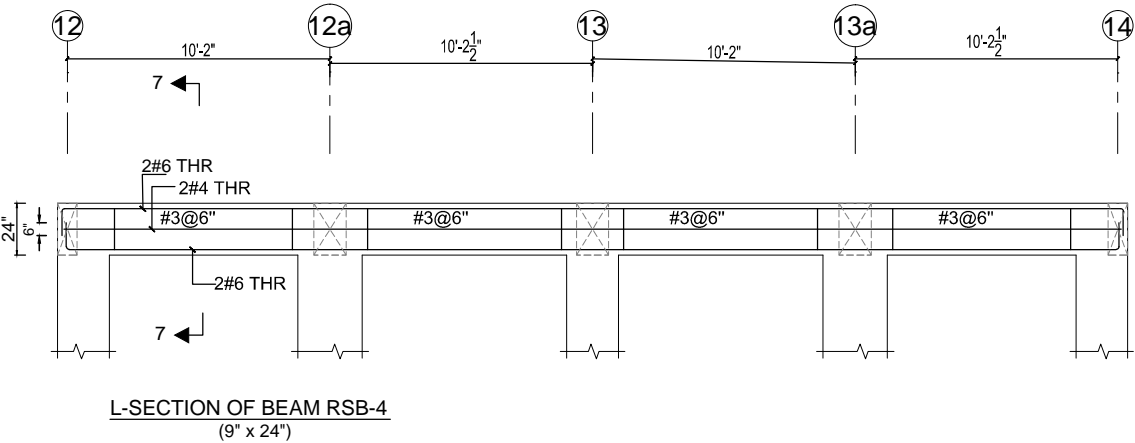
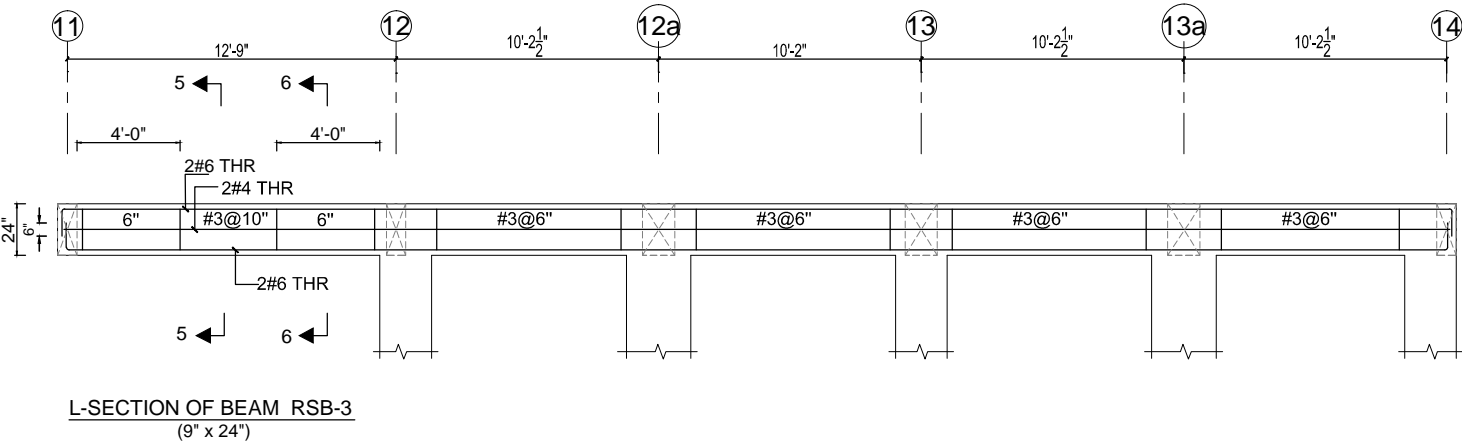
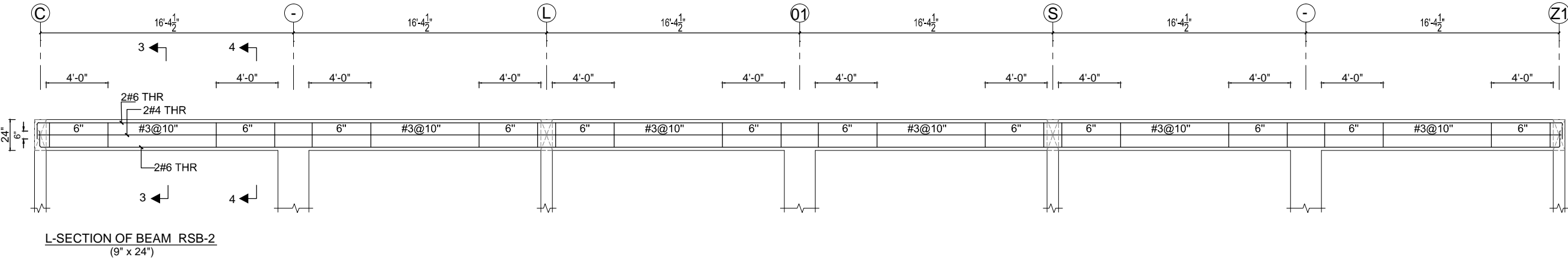
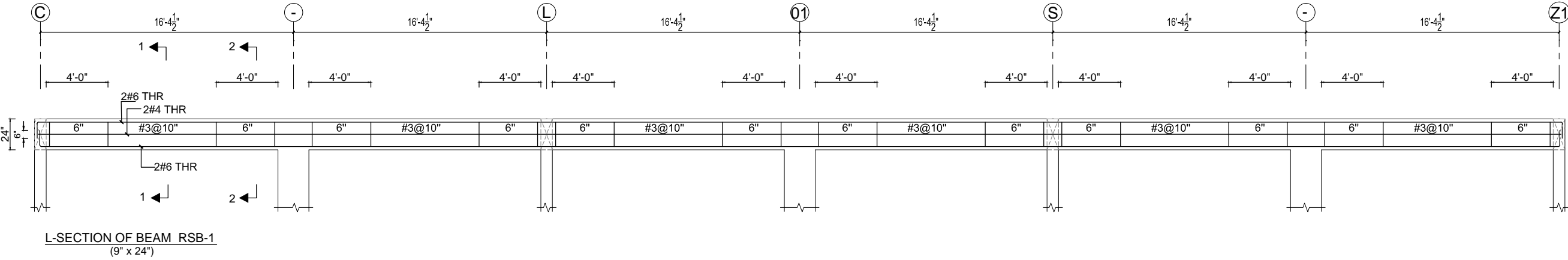


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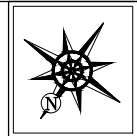


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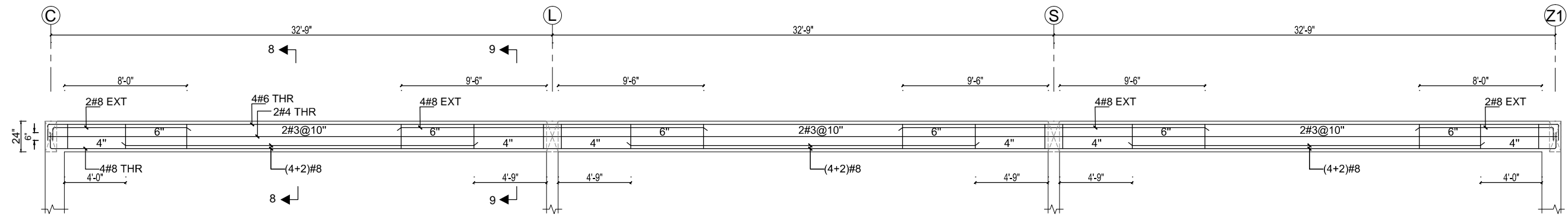
REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF BEAMS (GROUND FLOOR)	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 27	Scale: (A2) NTS
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



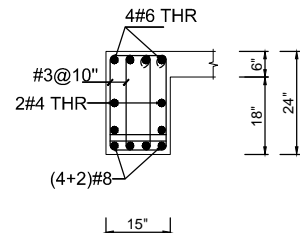
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QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF BEAMS (FIRST FLOOR)	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 28	Scale: (A2) NTS
885		
ZAHREERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



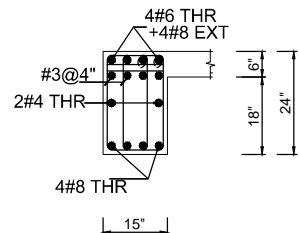
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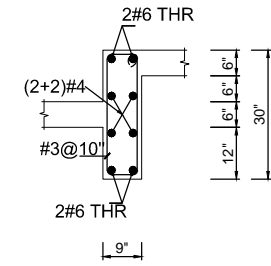
L-SECTION OF BEAM RSB-5
(15" x 24")



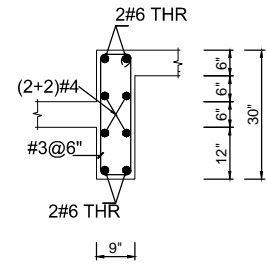
SECTION 08-08



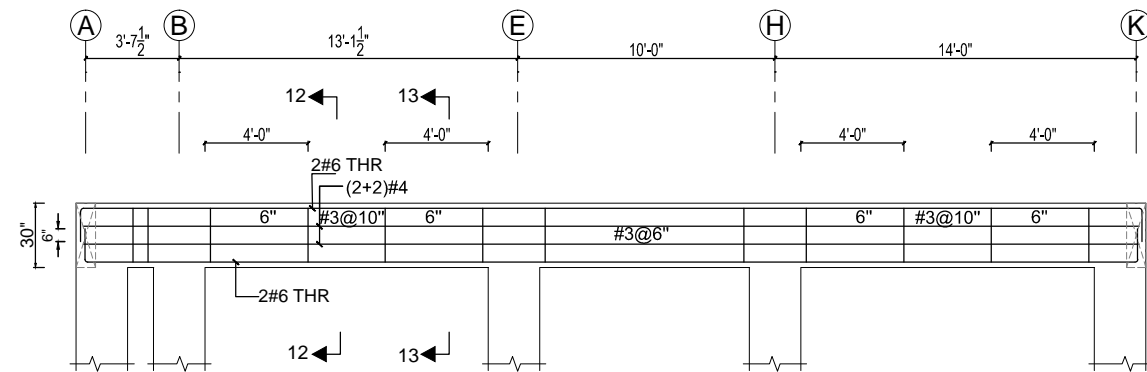
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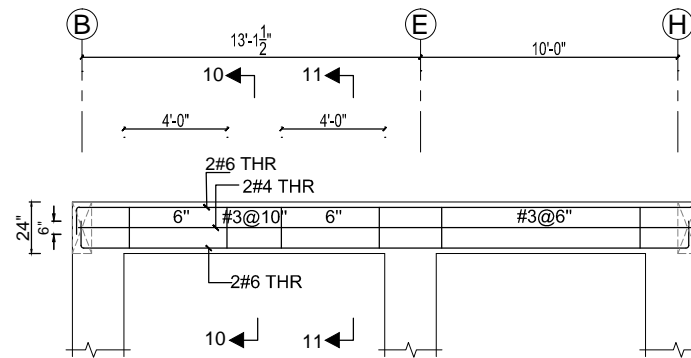
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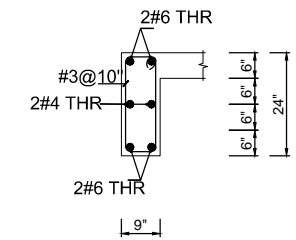
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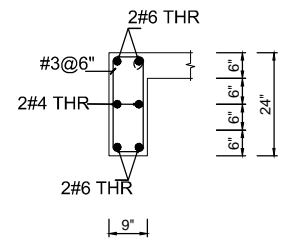
L-SECTION OF BEAM RSB-7
(9" x 30")



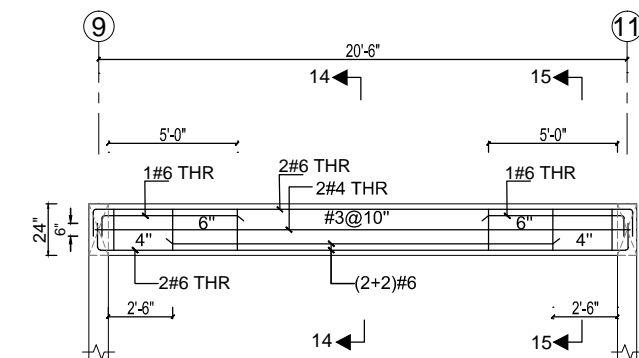
L-SECTION OF BEAM RSB-6
(9" x 24")



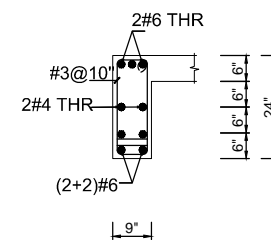
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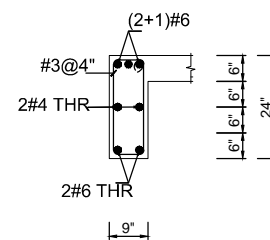
SECTION 11-11



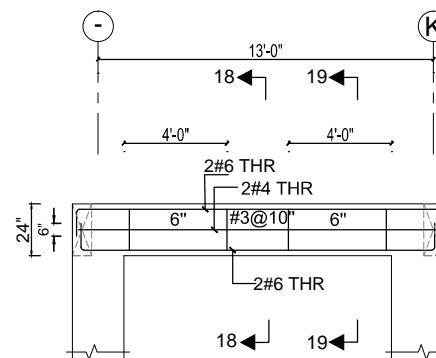
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(9" x 24")



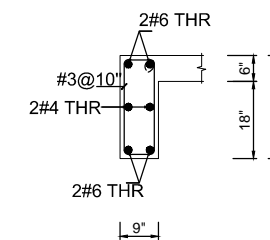
SECTION 14-14



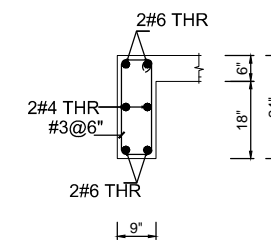
SECTION 15-15



L-SECTION OF BEAM RSB-9
(9" x 24")



SECTION 18-18

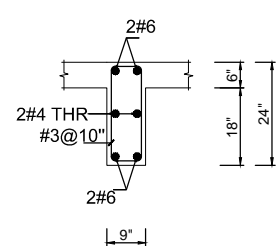
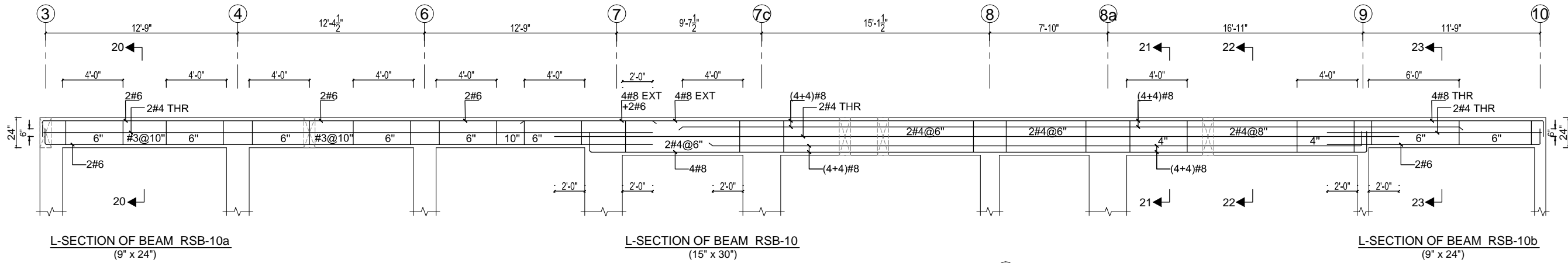


SECTION 19-19

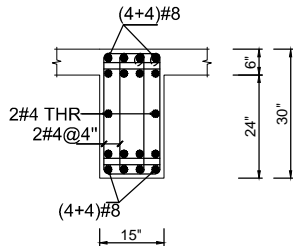
REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF BEAMS (FIRST FLOOR)	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 29	Scale: (A2) NTS
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



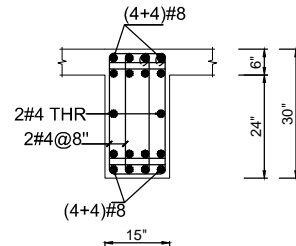
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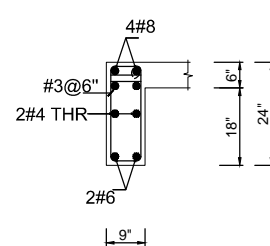
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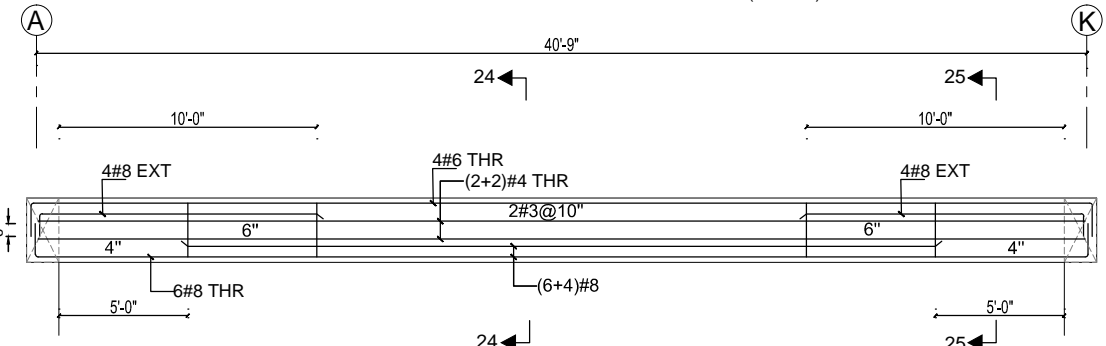
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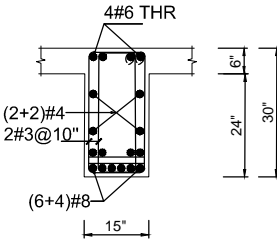
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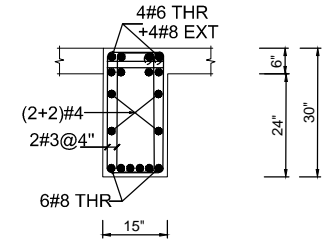
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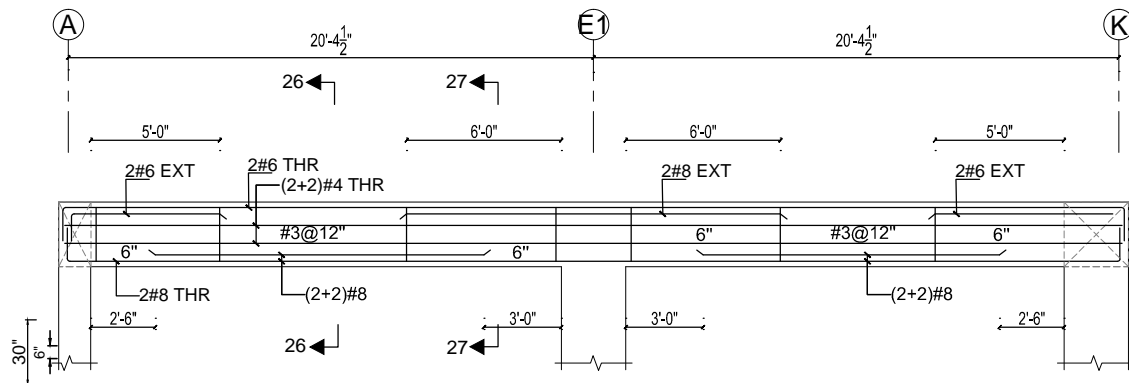
L-SECTION OF BEAM RSB-11
(15' x 30'')



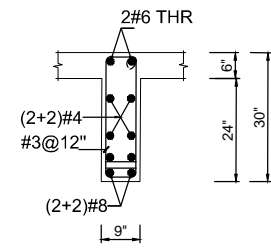
SECTION 24-24



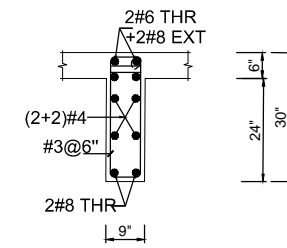
SECTION 25-25



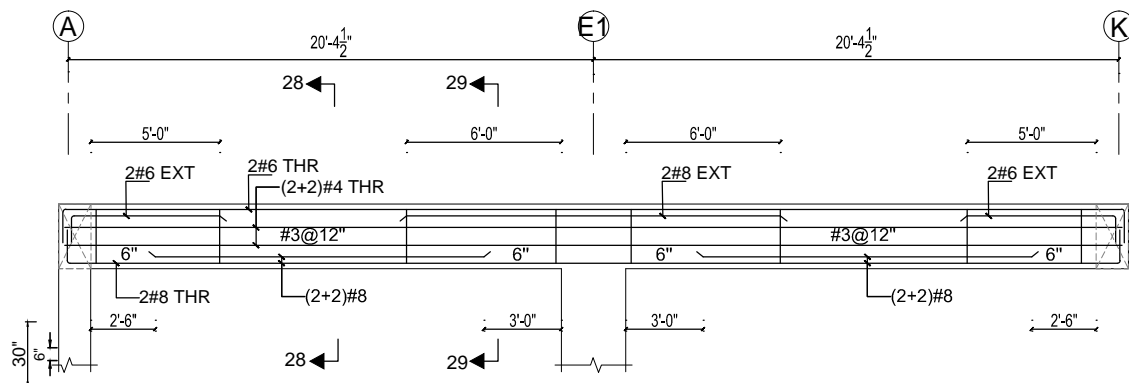
L-SECTION OF BEAM RSB-11a
(9' x 30'')



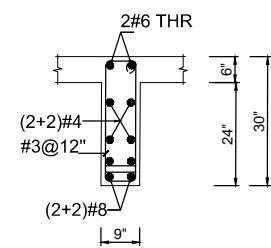
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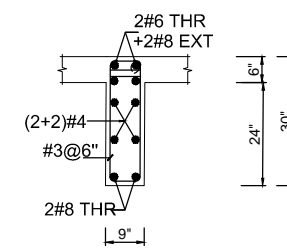
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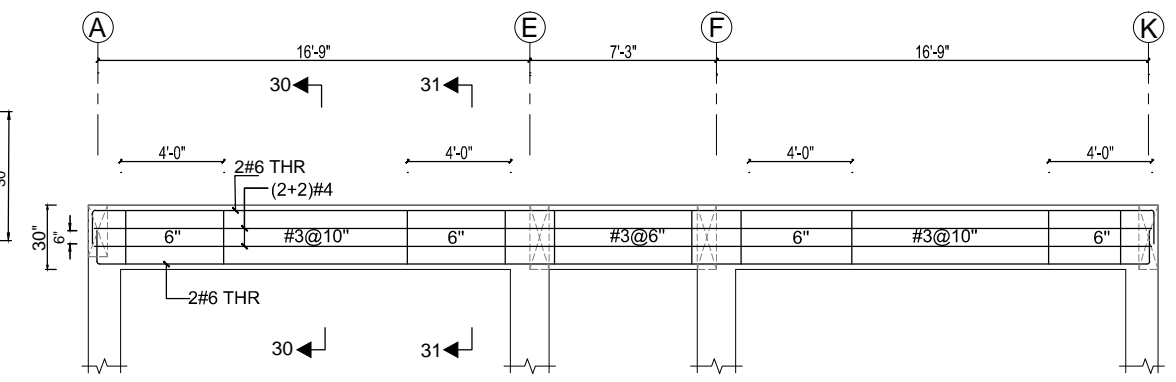
L-SECTION OF BEAM RSB-11b
(9' x 30'')



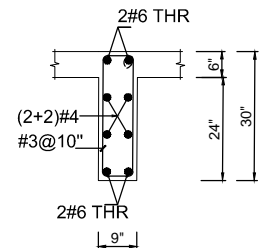
SECTION 28-28



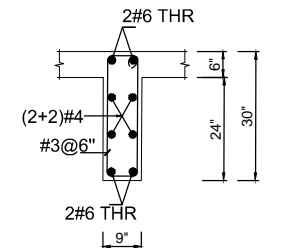
SECTION 29-29



L-SECTION OF BEAM RSB-12
(9' x 30'')

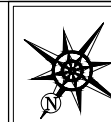


SECTION 30-30



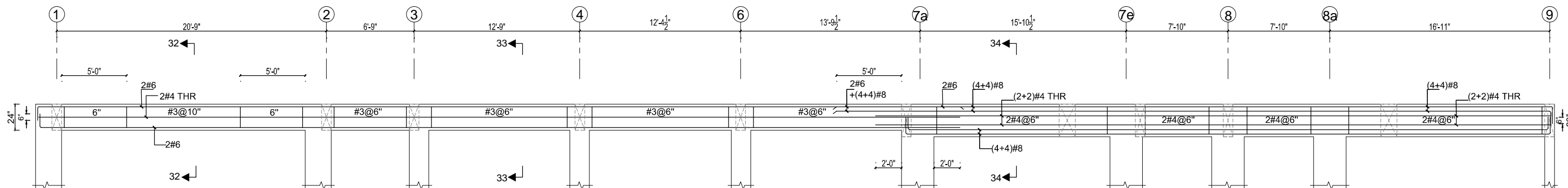
SECTION 31-31

REV. NO.	DATE	DESCRIPTION
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ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF BEAMS (FIRST FLOOR)	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 30	Scale: (A2) NTS
885		
ZAHREUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



NOTE:

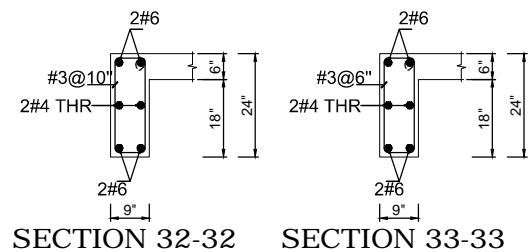
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L-SECTION OF BEAM RSB-20
(9" x 24")

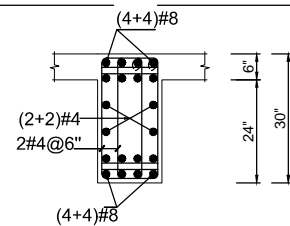
L-SECTION OF BEAM RSB-13a
(9" x 24")

L-SECTION OF BEAM RSB-13
(9" x 30")

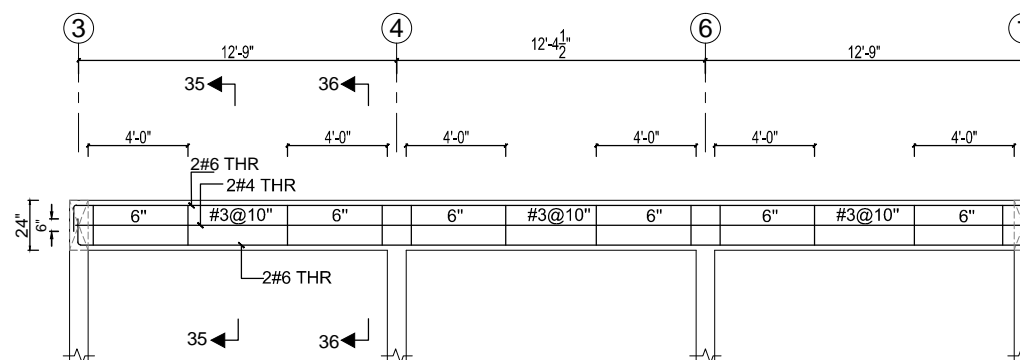


SECTION 32-32

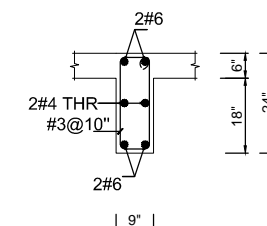
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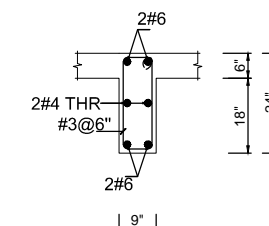
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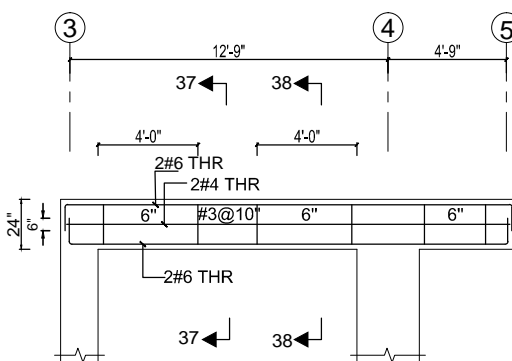
L-SECTION OF BEAM RSB-14
(9" x 24")



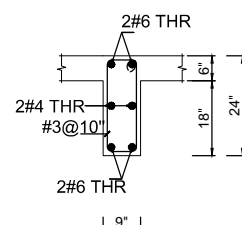
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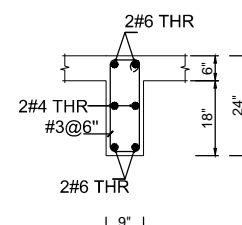
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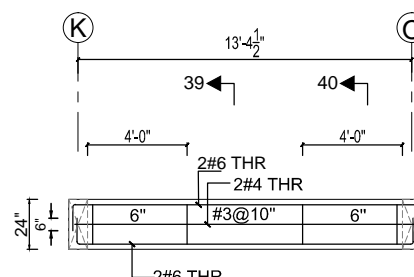
L-SECTION OF BEAM RSB-15
(9" x 24")



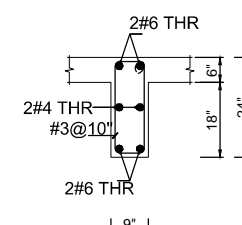
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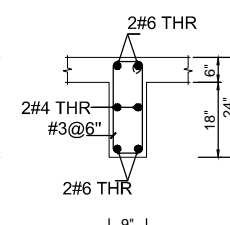
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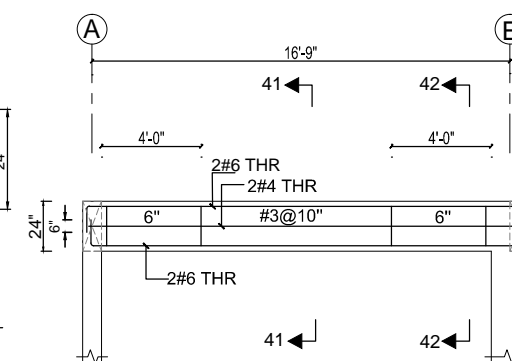
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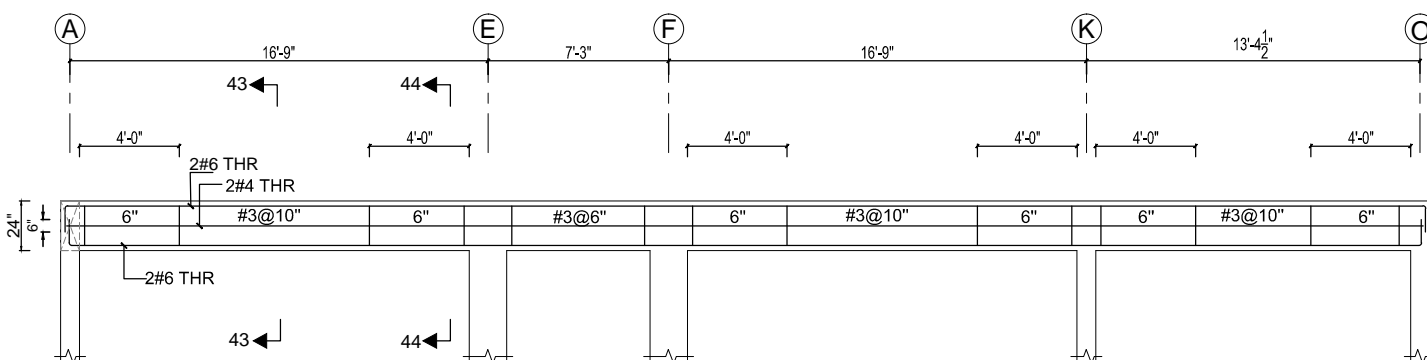
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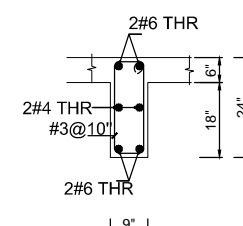
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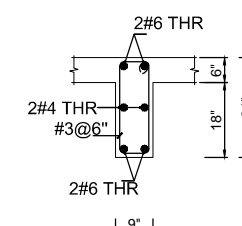
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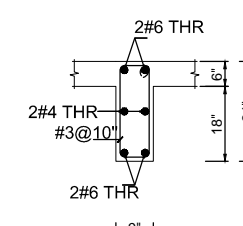
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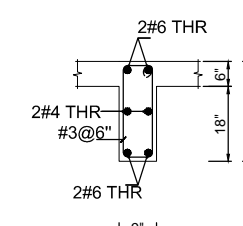
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SECTION 44-44

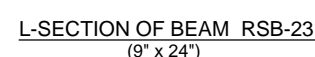
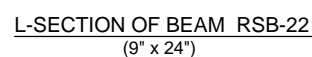
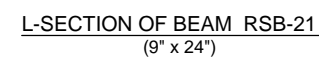
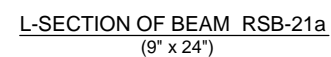
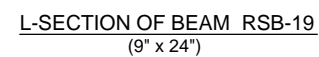
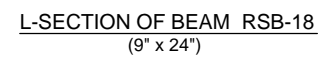
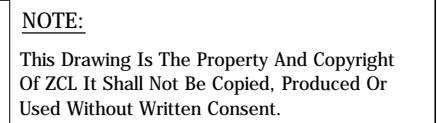




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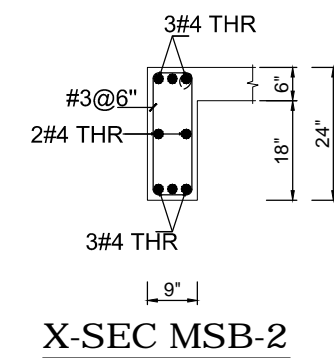
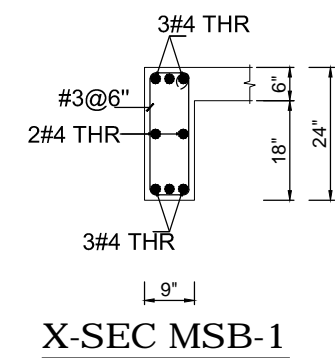
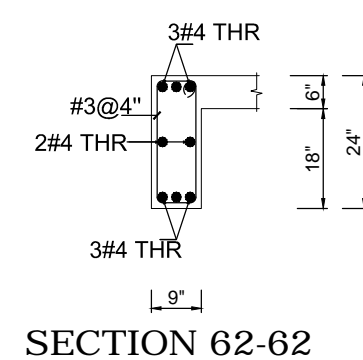
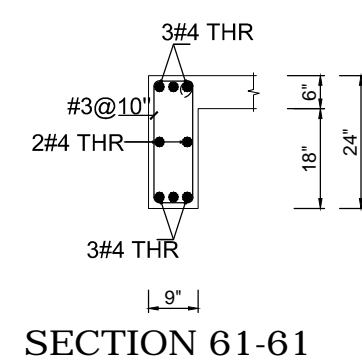
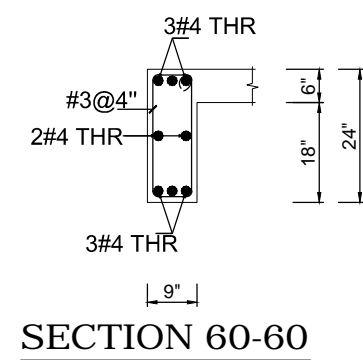
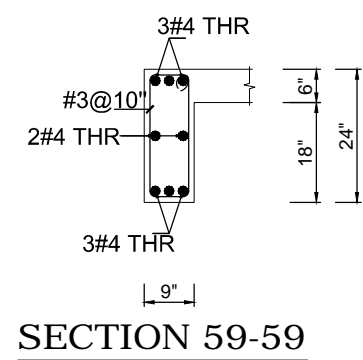
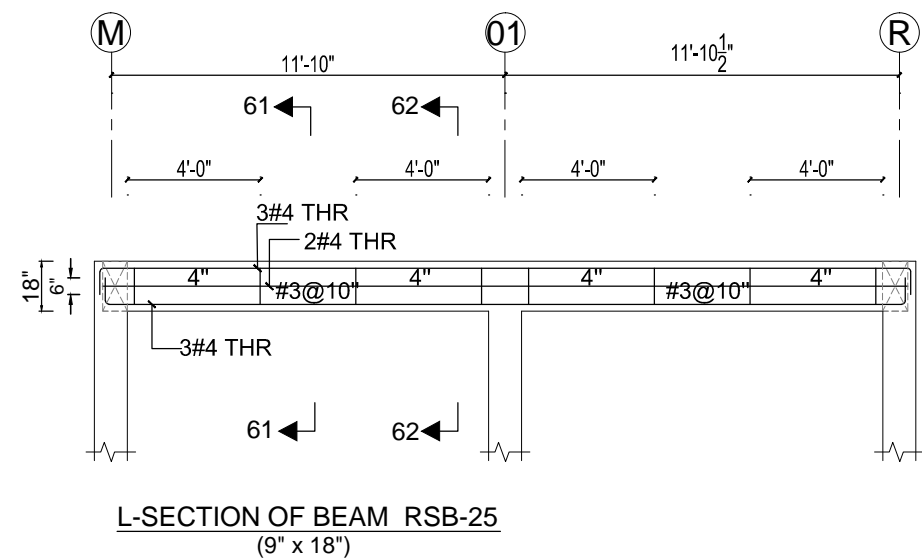
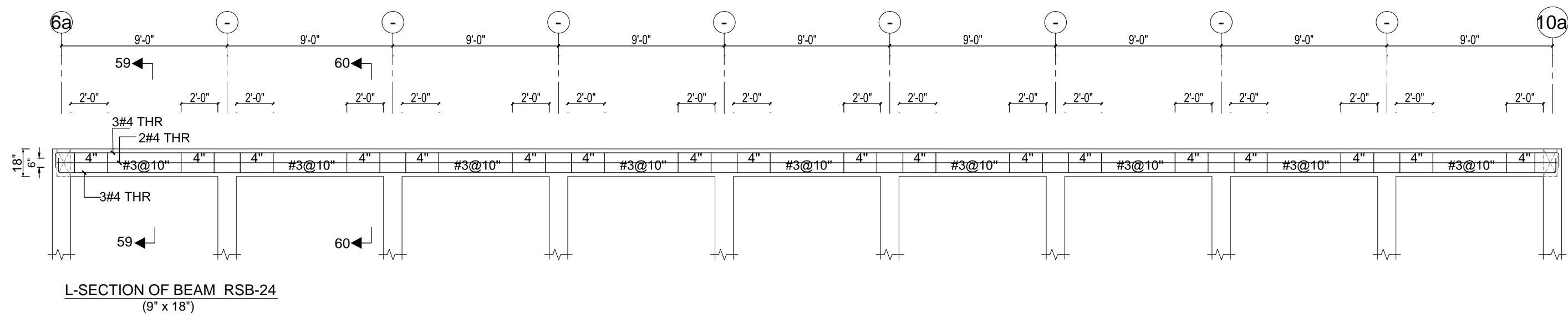


SECTION 42-42

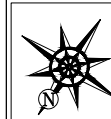
REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF BEAMS (FIRST FLOOR)	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 31	Scale: (A2) NTS
885		
ZAHREERUDDIN CONSULTANTS (PVT) LTD.		
ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS		
5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



REV. NO.	DATE	DESCRIPTION
<h1>TENDER DRAWING</h1>		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
	QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH	
Drawn: Shahzad	Drawing Title: DETAIL OF BEAMS (FIRST FLOOR)	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 32	Scale : (A2) NTS
		885
 ZAHEERUDDIN CONSULTANTS (PVT) LTD. ■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS ■ A. SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		

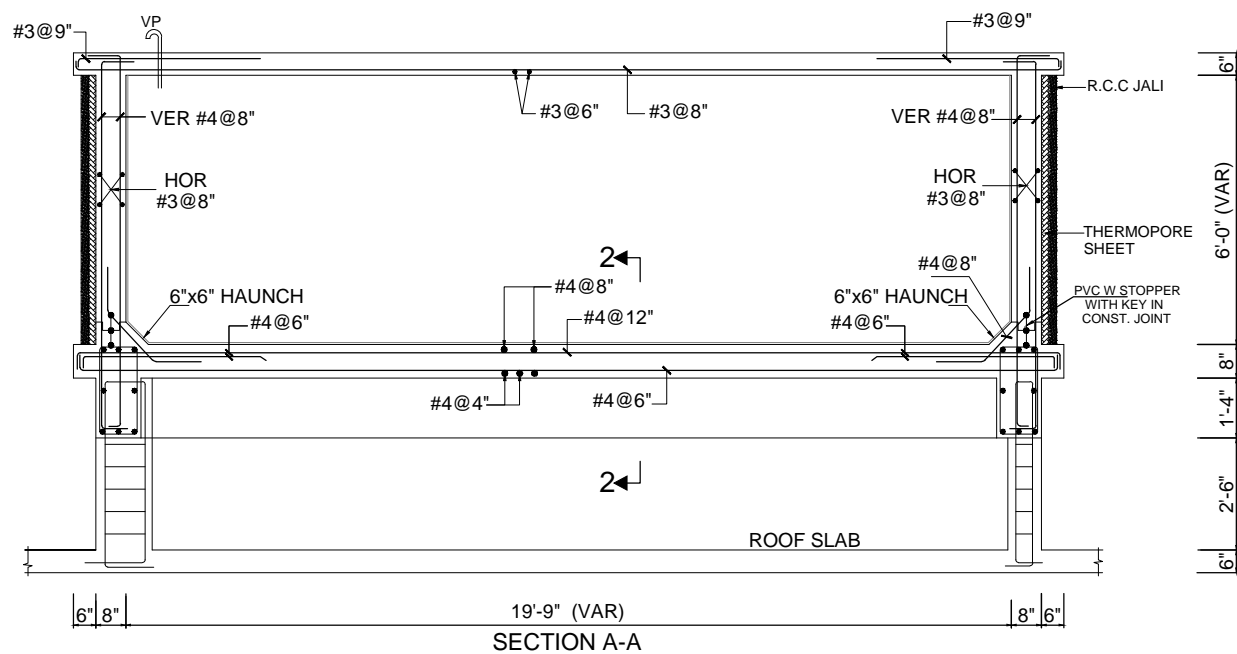


REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF BEAMS (FIRST FLOOR)	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 33	Scale: (A2) NTS
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		

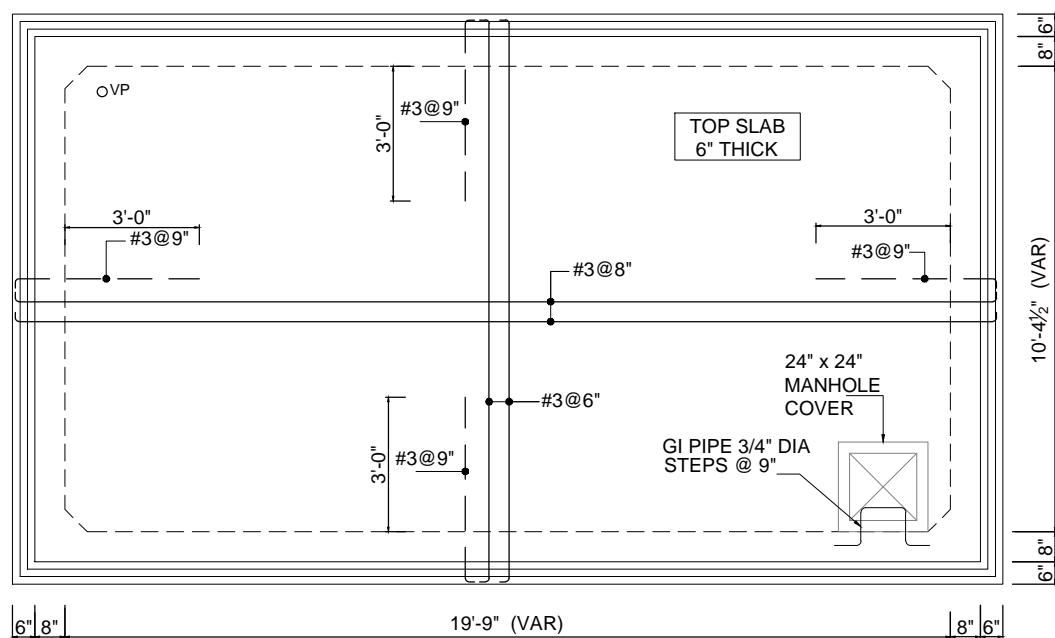


NOTE:

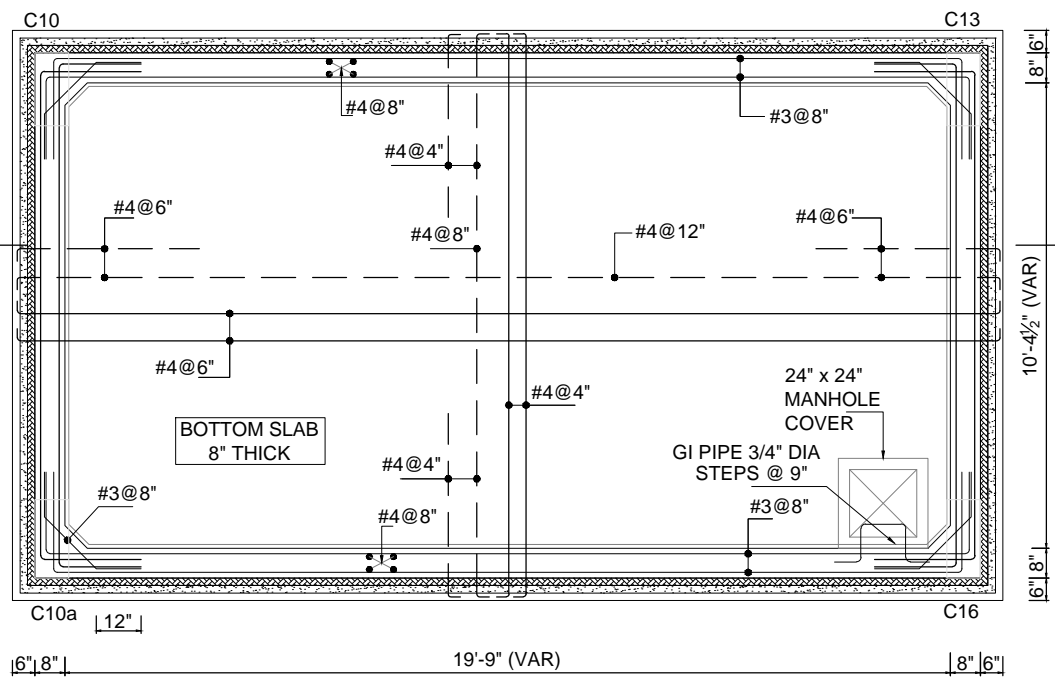
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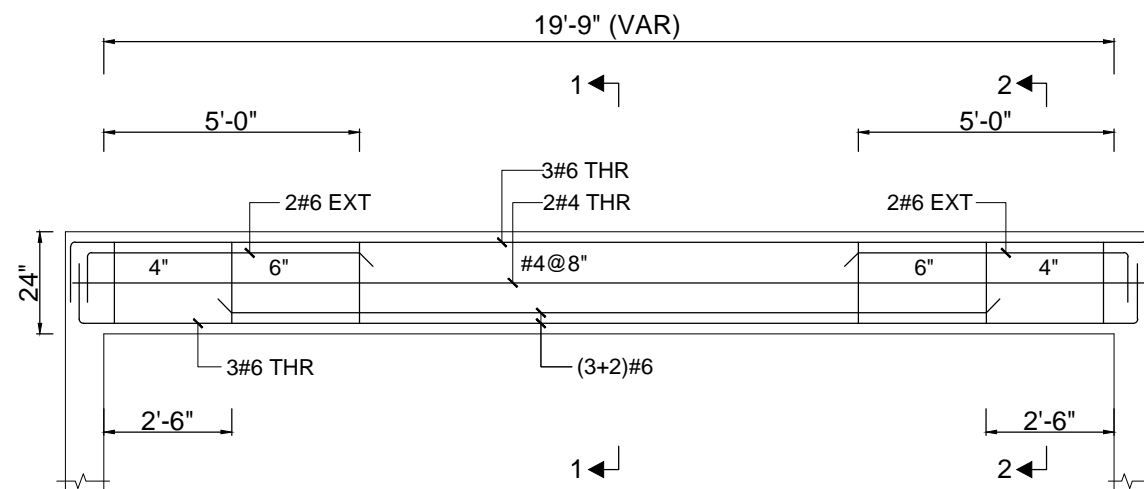
SECTION A-A



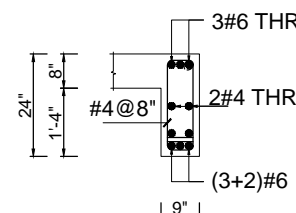
PLAN OF O.H. WATER TANK TOP SLAB



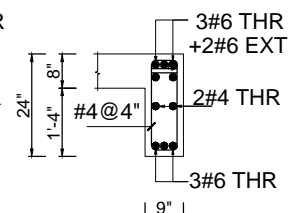
PLAN OF O.H. WATER TANK
(CAPACITY 7,000 GALLONS)



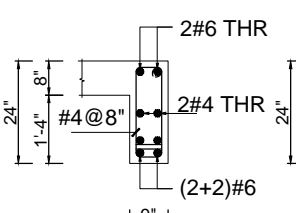
L-SECTION OF BEAM TSB-1 (9" x 24")



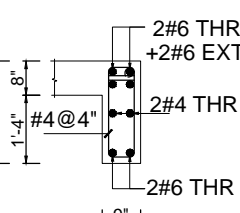
SECTION 1-1



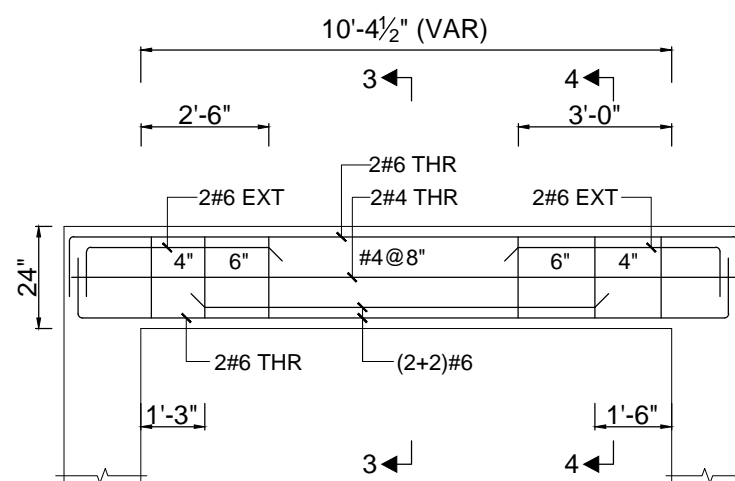
SECTION 2-2



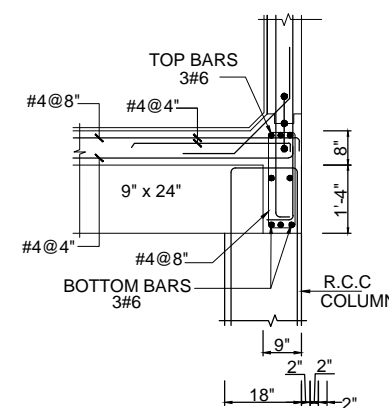
SECTION 3-3



SECTION 4-4



L-SECTION OF BEAM TSB-2 (9" x 24")



SECTION 2-2 FOR
O.H.T BOTTOM BEAM

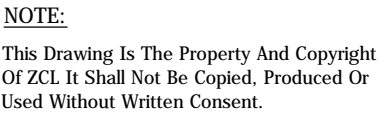
QUALITY OF CONCRETE

- WALLS AND BOTTOM SLABS.**
Minimum concrete compressive strength for 6"x12" cylinder to be 4000 psi at 28 days age. Concrete Nominal Mix to be 1:1½:3 or more rich to provide specified strength (Equivalent 6"x6"x6" cube strength 4500 psi) with 5lbs of pudlo or Hi Bond Pre-packaged Polymer Modified mortar (DHPMM) per bag of cement as an admixture as approved
- COLUMNS AND TOP SLABS.**
Minimum concrete compressive strength for 6"x12" cylinder to be 4000 psi at 28 days age. Concrete Nominal Mix to be 1:1½:3 or more rich to provide specified strength (Equivalent 6"x6"x6" cube strength 4500 psi)
- Use of super plasticizers and water reducing agents recommended to reduce the water cement ratio and to increase workability and density of concrete.
- All concrete mixes to be used, should be got designed & approved before execution of work.
- Quality, size and gradation of aggregates (fine & course) as used during the mix design, should be strictly adhered with.

QUALITY OF STEEL REINFORCEMENT.

- Use deform steel Grade-60 bars for size No:3 (3/8"dia) & No:4 (1/2" dia) for column ties, beam stirrups. ASTM specification A615. (Minimum yield strength 60,000 psi)
- Use deform steel Grade-60 bars for size No:3 (3/8"dia) & No:4 (1/2" dia) for slab steel. ASTM specification A615. (Minimum yield strength 60,000 psi)
- Use deform steel Grade-60 for size No:5 & larger for all columns, beams, walls, etc. ASTM specification A615. (Minimum yield strength 60,000 psi)

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAILS OF OVER HEAD WATER TANK	Date: March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / S 34	Scale: (A2) NTS
Job No. 885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



All slabs at different floors, will be placed at correct levels.
All slab reinforcement details should be studied thoroughly before preparing bar bending schedule and proceeding with fabrication of steel reinforcement.
All slabs top and bottom bars are to be provided with 90° L- hooks of suitable length at discontinuous ends. The cut off bar reinforcement in slabs needs special attention, since most of the steel fabricators are not conversant with this system. The detail of top bar reinforcement at discontinuous ends (outer supports) and bottom bars at interior supports, should therefore be thoroughly understood. The top bar at discontinuous ends are to be provided with U-bend to provide full development length as shown.

Additional reinforcement will be provided around all openings in slabs. Moreover interrupted steel replacement will be added along the opening sides (For details see Fig-5)

Extra reinforcement will be provided at all outer corners in two bands in the diagonal direction, one each at top and bottom.
(For details see Fig-6)

The stairs consist of horizontal and sloping members and needs special detailing and construction techniques. Hence the detail of steel reinforcement at joint between landing slab & flight waist slab, should be carefully studied, and additional reinforcement provided at common joint.

All structural walls (lifts, stair & shear wall) will be placed at correct location. Lift walls will be provided with lift pit of suitable depth below the lower floor and machine room at the top roof, above upper floor. All walls will be provided with additional steel reinforcement around the openings and at corners. Reinforcement details for these structural walls should be studied thoroughly before preparing the bar banding schedule and proceeding with fabrication of steel reinforcement. The placement of reinforcement at wall corners needs special attention (For details see Fig-8.9)

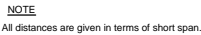
In reinforced concrete building frame system, brick & block masonry walls are considered as fillers and their structural value is normally not taken into consideration.

But if these walls are properly constructed and provided with suitable amount of reinforcement, will greatly enhance the behaviour of building structural system in resisting heavy latered loads. Moreover the possibility of these walls moving out of frame panels, during high intensity earth quacks, will also be reduced. It is therefore highly desirable to reinforce these walls with suitable amount of reinforcement so that these could provide additional strength to the building structural system and help in resisting heavy lateral loads during high intensity earth-quacks.

(For details see Fig-10)

As soon as the horizontal members of building frame system are casted and the form work from the under side of the beams and slabs is removed, suitable amount of deflection starts taking place. Its final value depend on member size, steel reinforcement, applied load, span length and age. Long term deflection is 2 to 2.5 times the immediate deflection. Hence it is better to pre-camber the beams and slabs during the stage of casting, by raising the form work gradually from face of supports towards mid point. Table-1 refers to amount of pre-cambering required depending on length of spans for beams and slabs.

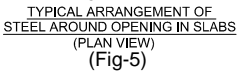
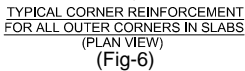
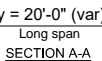
(For details see Table-1)



SLAB STEEL
As (min) Top & Bottom = 0.0018 ($f_y = 60$)
or 0.0020 ($f_y = 40, 50$)

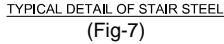
Top Bar _____
(Dotted)

Bottom Bar _____
(Full)



1. Horizontal steel band at door head level & window sill level.
2. vertical steel band along door & window jambs.
3. For UBC 1997 zone 3,4 use 2#4 bars.
4. For UBC 1997 zone 2A, 2B use 2#3 bars.

6. $\ell d_h = \frac{0.02 f_y d_b}{f'_c}$
For grade 40 bars, $\ell d_h = 12d_b$
For grade 60 bars, $\ell d_h = 18d_b$
but shall not be less than $8d_b$ or $6"$



$$\lambda_{\Delta} = \frac{\mathcal{E}}{1+50 \rho'}$$

equation 6.11
P-217
Nilsol

$$\rho' = \frac{As^s}{bd}$$

time dependent
co-efficient

$$\mathcal{E} = 2$$




For $\rho' = 0.02$

$$\lambda_{\Delta} = \frac{2}{1+50 \times 0.02} = 1$$



(PRE-CAMBERING OF BEAMS & SLABS)

S.NO	SPAN	Δ
1	Span upto 10 ft	0.5"
2	11 to 15 ft	0.75"
3	16 to 20 ft	1.0"
4	21 to 25 ft	1.25"
5	26 to 30 ft	1.50"
6	31 to 35 ft	1.75"
7	36 to 40 ft	2.0"
8	41 to 45 ft	2.25"
9	46 to 50 ft	2.50"
10	51 to 55 ft	2.75"
11	56 to 60 ft	3.0"
12	61 to 65 ft	3.25"
13	66 to 70 ft	3.50"
14	71 to 75 ft	3.75"
15	76 to 80 ft	4.0"
16	81 to 85 ft	4.25"
17	86 to 90 ft	4.50"
18	91 to 95 ft	4.75"
19	96 to 100 ft	5.0"
20	101 to 105 ft	5.25"
21	106 to 110 ft	5.50"
22	111 to 115 ft	5.75"
23	116 to 120 ft	6.0"
24	121 to 125 ft	6.25"

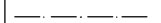
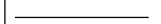
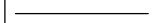



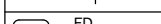
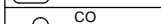


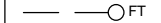

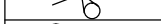

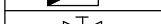
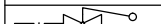

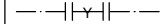


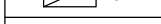


REV. NO.	DATE	DESCRIPTION
<h1>TENDER DRAWING</h1>		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
 <p style="text-align: center;">QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH</p>		
Drawn: Shahzad Check by: Zarrar	Drawing Title: BRIEF SPECIFICATIONS. CONSTRUCTION PROCEDURE & TYPICAL STRUCTURAL DETAILS Dwg. No. ZCL / QUEST-EED / S 36	Date : March 2024 Scale : (A2) NTS
		
 <p style="text-align: center;">ZAHEERUDDIN CONSULTANTS (PVT) LTD. ■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS ■ A. SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.</p>		

SPECIAL NOTES:

- 1- ALL R.C.C PIPES WILL CONFORM TO RESPECTIVE ASTM SPECIFICATION C 76-89 STANDARD SPECIFICATION FOR REINFORCED CONCRETE PIPES CLASS-3, WITH WALL C.
- 2- CONCRETE MIX 1:1-1/2:3 WITH MINIMUM CUBE CRUSHING STRENGTH OF 4,500 PSI.
- 3- ALL PIPES TO BE JOINTED AS PER ASTM STANDARD BY PROVIDING SPIGET-SOCKET OR COLLAR JOINTS AS APPROVED.
- 4- DEFORM STEEL GRADE-40 TO BE USED BOTH FOR LONG & HOOP BARS.
- 5- ALL PVC PIPES WILL CONRFIRM TO B.S.S SPECIFICATION FOR CLASS B & D AS REFERRED.

GENERAL NOTES

- 1- PIPE PASSING THROUGH WALL, FLOOR OR ROOF, SHALL BE PROTECTED WITH SLEEVE.
- 2- CLEAN OUT OR ACCESS DOOR SHALL BE PROVIDED AT THE BASE OF ALL DRAINAGE STACK AND AT EACH FLOOR LEVEL.
- 3- DRAINAGE STACKS SHALL BE CONNECTED TO HORIZONTAL FIXTURE DRAIN PIPES BY 90° SWEEP TEE OR Y AND BEND OF 30°,45°,OR 60°
- 4- DRAINGE STACKS SHALL BE CONNECTED TO UNDER GROUND DRAIN PIPE BY EITHER 90° LARGE/LONG RADIUS BEND OR TWO BENDS.
- 5- PIPE SIZES ARE IN INCHES.
- 6- PLUMBING SERVICES, SHALL BE CO-ORDINATED WITH OTHER SERVICES SUCH AS ELECTRICAL, AC, ETC TO AVOID CONFLICT OR INTERFERENCE WITH OTHER SERVICES.
- 7- SIZE OF FLOOR DRAIN UNLESS OTHERWISE STATED, SHALL BE SAME AS THE SIZE OF OUTLET DRAIN PIPE .
- 8- WHERE EVER FLOOR DRAIN TRAP IS SHOWN, SLOPE FLOOR TOWARDS DRAIN / TRAP.
- 9- ALL COLD AND HOT WATER PIPES SHALL BE OF G.I, MEDIUIM / HEAVY, GRADE CONFORMING TO BRITISH STANDARD NO.1387. OR PPRC DADEX AS APPROVED.
- 10- ALL SOIL, WASTE, RAIN & VENT PIPES SHALL BE OF SPUN CAST IRON CONFORMING TO BRITISH STANDARD NO.416 OR uPVC CLASS "B" OF . DADEX AS APPROVED
- 11- ALL EXPOSED G.I PIPES ARE TO BE PROTECTED FROM DIRECT SUN SHINE /COLD BY INSULATION OF AEROFLEX.
- 12- ALL MS OR G.I PIPES TO BE LAID BELOW GROUND, ARE TO BE TREATED WITH A COAT OF BITUMEN & WRAPPED WITH HESSIAN CLOTH .
- 13- ALL HW /HWR PIPES TO BE INSULATED WITH AEROFLEX AND LAID AT A SUITABLE DISTANCE FROM CW PIPES.
- 14- ALL EXPOSED SURFACES OF CONCRETE IN CONTACT WITH SOIL FOR U.G. OR HARVESTING WATER TANK ARE TO BE TREATED BY BITUMEN & FELT. (BASE,WALLS & TOP SLAB).
- 15-MATERIAL STRENGTHS
- (a) DEFORM STEEL GRADE-60
- (b) R.C.C FOR U.G & O.H TANKS TO BE FAIR FACE FOR BASE & TOP WALL (1:1 1/2:3) WITH PUDLO AT 5lbs PER BAG OF CEMENT. HAVING CUBE STRENGTH 4,500 PSI AT 28 DAYS AGE.
- (c) MAN HOLES R.C.C (1:2:4) CUBE STRENGTH 3,750 P.S.I.

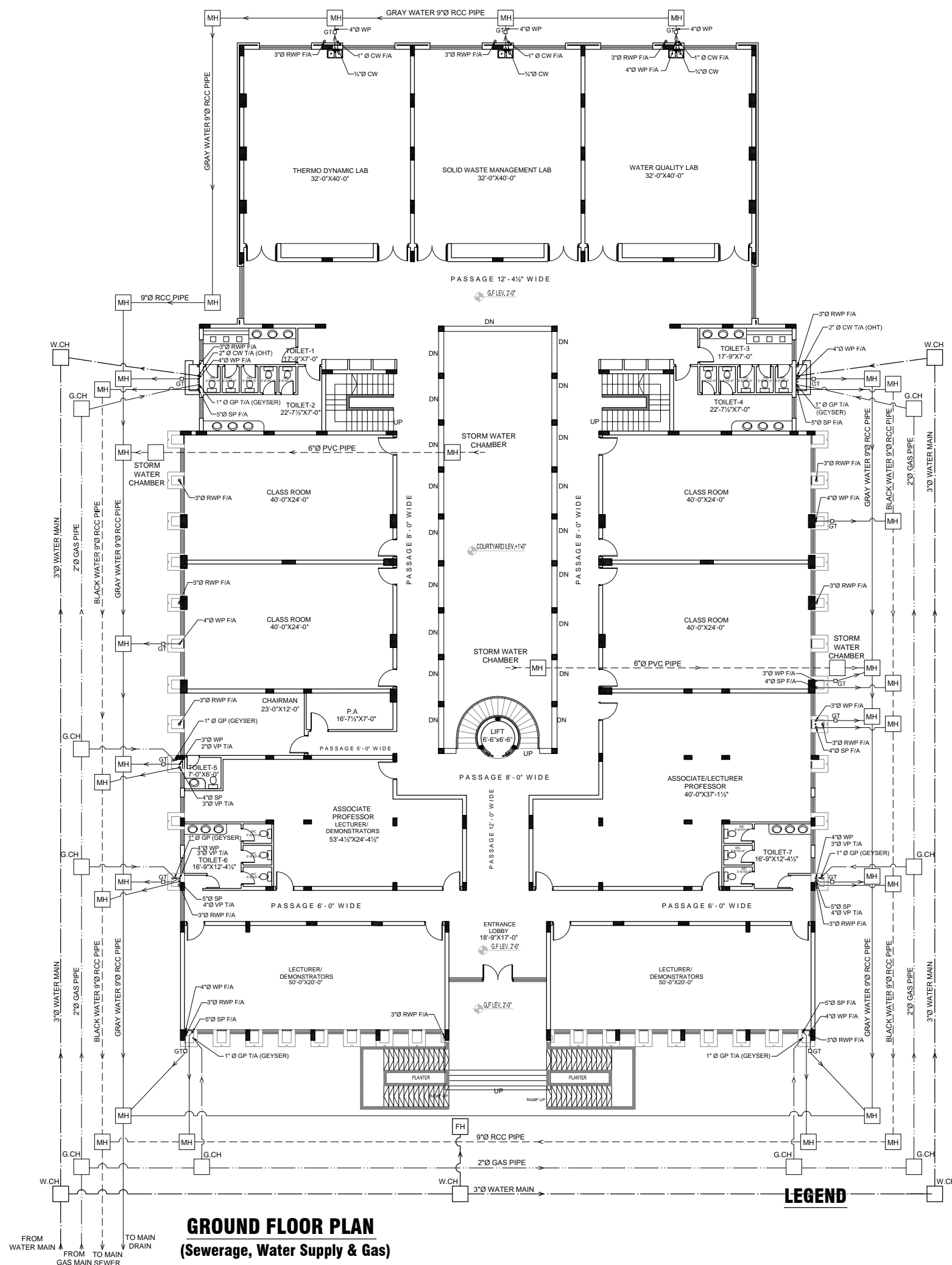
LEGEND	
	COLD WATER PIPE
	HOT WATER PIPE
	SOIL PIPE
	WASTE PIPE
	VENT PIPE
	GATE VALVE ON HORIZONTAL
	WATER TAP
	FLOOR DRAIN WITH TRAP
	FLOOR CLEAN OUT
	PIPE RISER WITH BEND
	DIRECTION OF FLOW
	FLOOR TRAP
	CLEANOUT IN THE FALSE CEILING
	GATE VALVE ON VERTICAL PIPE
	MUSLIM SHOWER
	FIRE HOUSE CABINET
	PRESSURE REDUCING VALVE
	FLOAT VALVE
	CHECK VALVE OR NON- RETURN VALVE
	STRAINER
	SIMESE TWIN FITTING
	GULLY TRAP
	GREASE TRAP

ABRV	DESCRIPTION
	DIAMETER OF PIPE
CW	COLD WATER PIPE
HW	HOT WATER PIPE
CW/HW	COLD WATER / HOT WATER
SP	SOIL PIPE
WP	WASTE PIPE
VP	VENT PIPE
T/A	TO ABOVE
F/A	FROM ABOVE
F/B	FROM BLEOW
W/S	WASTE STACK
S/S	SOIL STACK
V/S	VENT STACK
EWB	ELECTRIC WATER HEATER
GWH	GAS WATER HEATER
RWP	RAIN WATER PIPE
AFC	ABOVE FALSE CEILING
WC	WATER CLOSET
U.G	UNDER GROUND
O.H	OVER HEAD
B/G	BELOW GROUND
B/F	BELOW FLOOR
T/B	TO BELOW
L/L	LOW LEVEL
H/L	HIGH LEVEL
M.H	MAN HOLE
W.CH	WATER CHAMBER
G.CH	GAS CHAMBER
A.V	AIR VALVE
N.T.S	NOT TO SCALE
GP	GAS PIPE
GC	GAS COCK
FP	FIRE PIPE
FC	FIRE CABINET
FH	FIRE HYDRANT
EWB	ELECTRIC WATER COOLER
B/C	BELOW CEILING
A/C	ABOW CEILING



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1. SEWERAGE

- i. RCC PIPE 9" Ø
- ii. MANHOLE

2. WATER SUPPLY

- i. GI PIPE 3" Ø
- ii. WATER CHAMBER
- iii. FIRE HYDRANT

3. GAS MAIN

- i. GAS PIPE MS PIPE 2" Ø
- ii. GAS CHAMBER

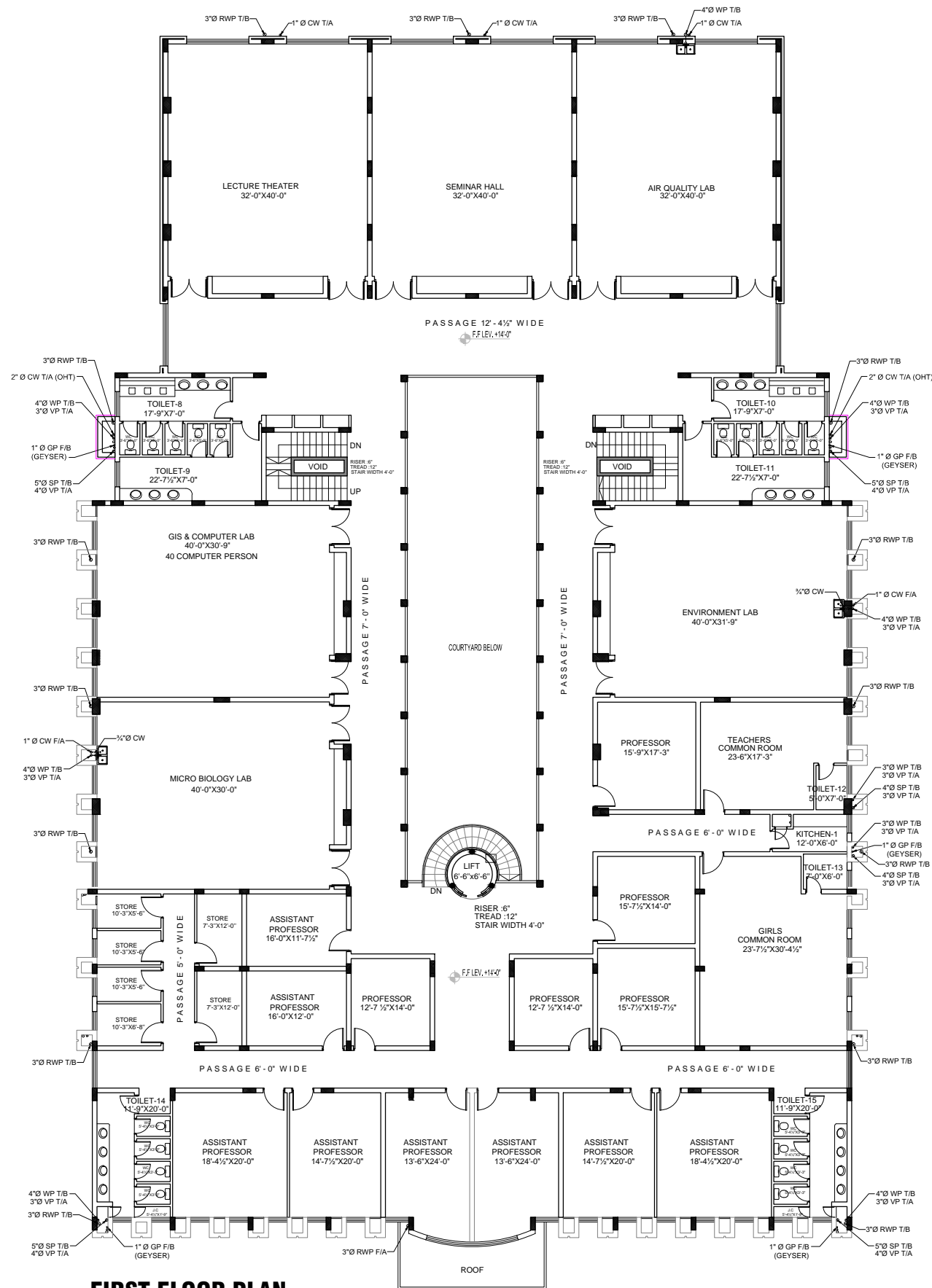
GROUND FLOOR PLAN
(Sewerage, Water Supply & Gas)

LEGEND

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
Drawn: Shahzad	Drawing Title: GROUND FLOOR PLAN (Sewerage, Water Supply & Gas)	Date: March 2024
Check by: Zarar	Dwg. No. ZCL / QUEST-EED / P 02	Scale: A2 NTS
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD.		
■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS		
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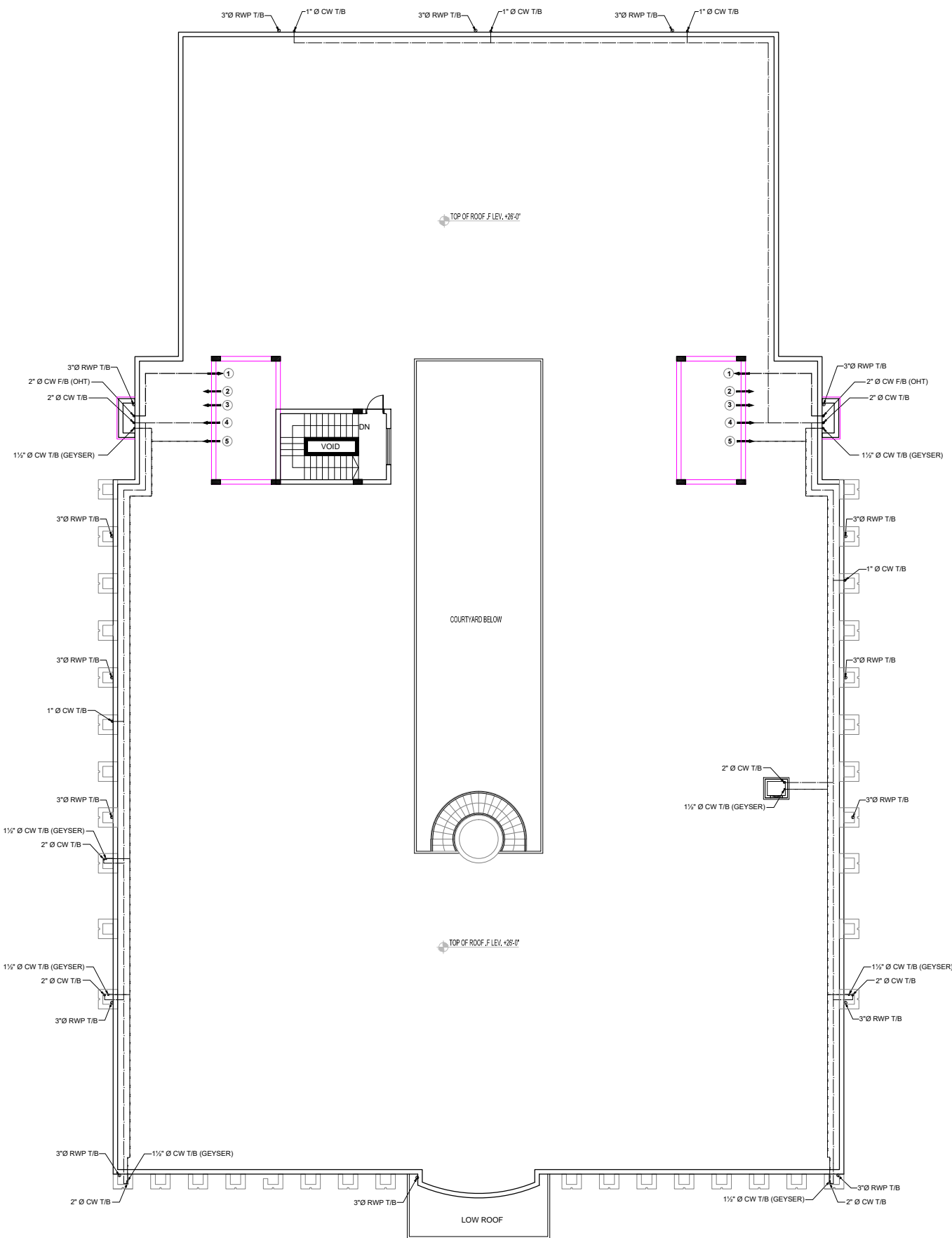


FIRST FLOOR PLAN
(Sewerage, Water Supply & Gas)

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: FIRST FLOOR PLAN (Sewerage, Water Supply & Gas)	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / P 03	Scale: A2 NTS
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		

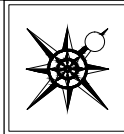


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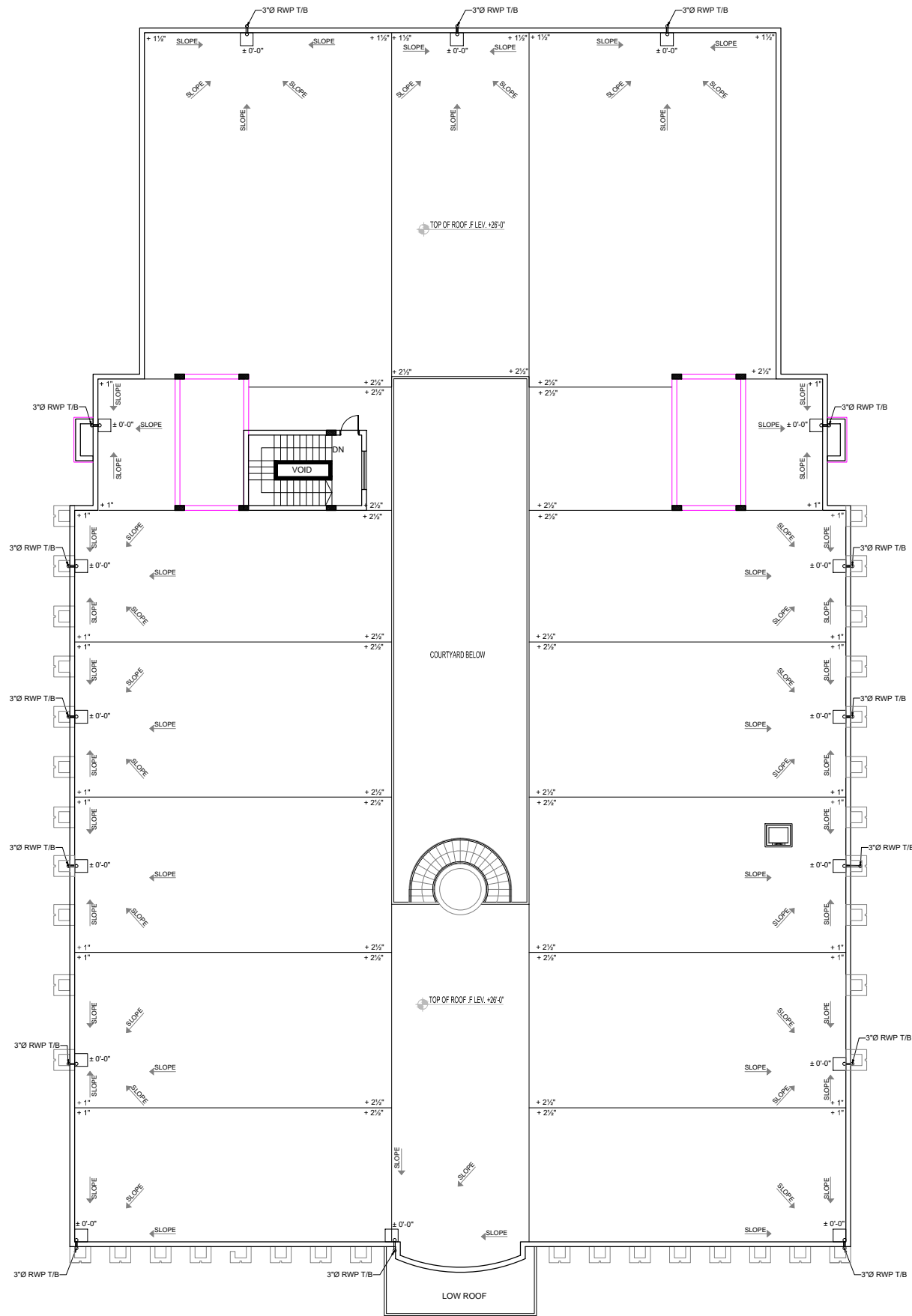
ROOF PLAN SHOWING WATER SUPPLY DISTRIBUTION LINES

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: ROOF PLAN SHOWING WATER SUPPLY DISTRIBUTION LINES	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / P 04	Scale : A2 NTS
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		





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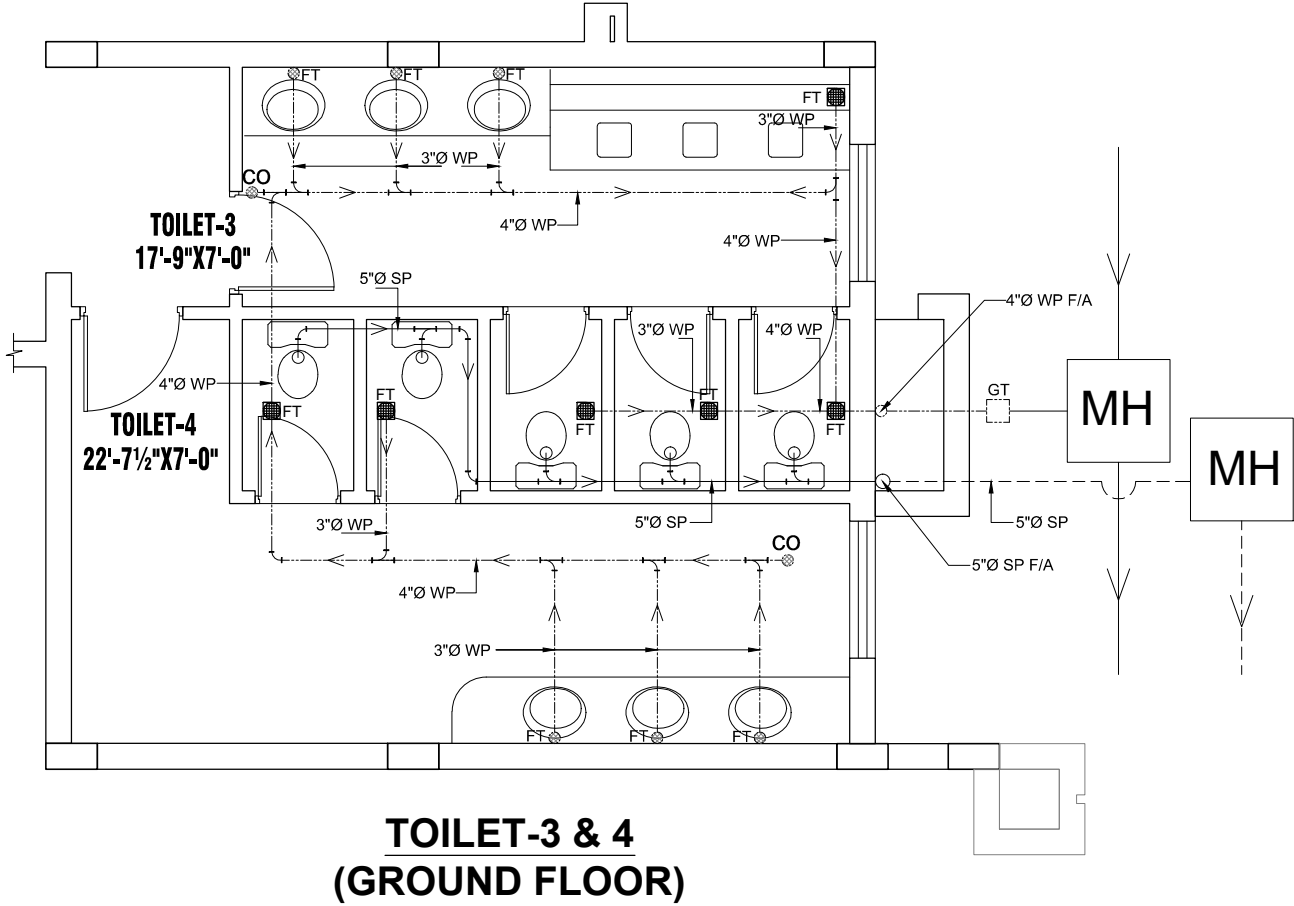
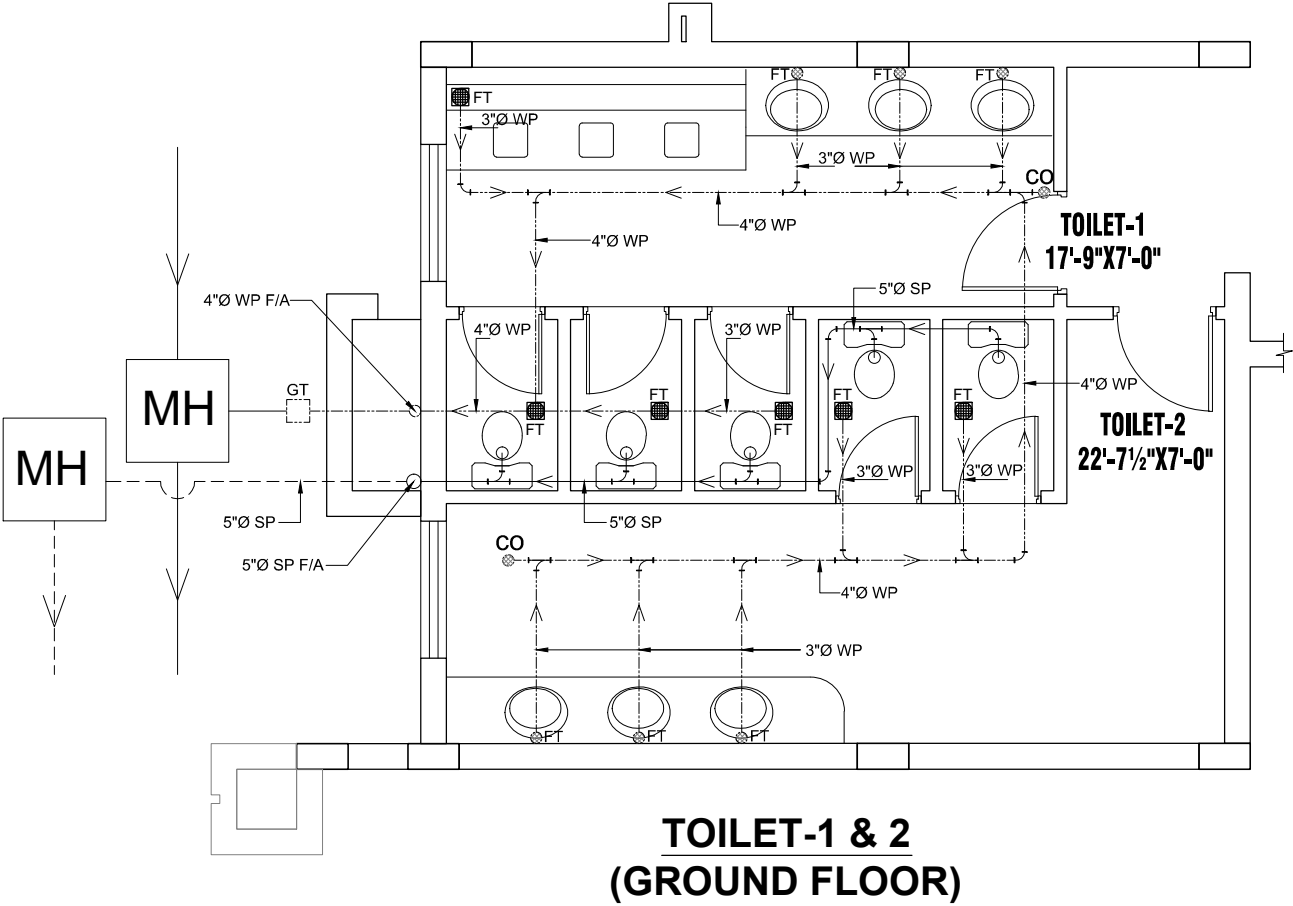


ROOF PLAN SHOWING STORM WATER DRAINAGE

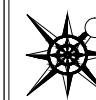
REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
	QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH	
Drawn: Shahzad	Drawing Title: ROOF PLAN SHOWING STORM WATER DRAINAGE	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / P 05	Scale: A2 NTS
885		
 ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



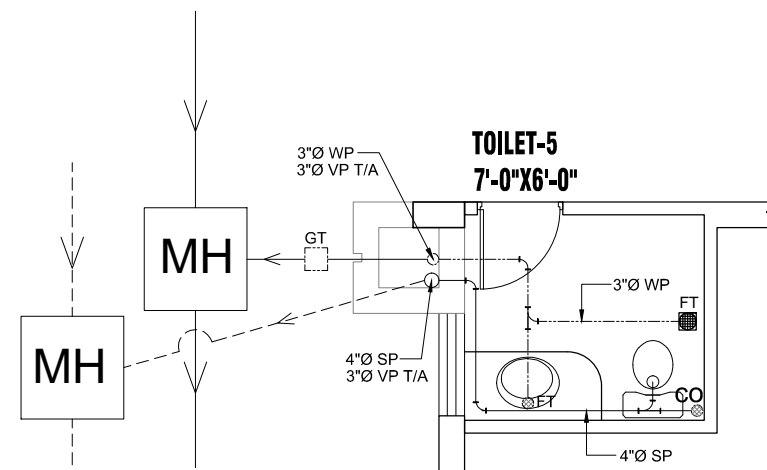
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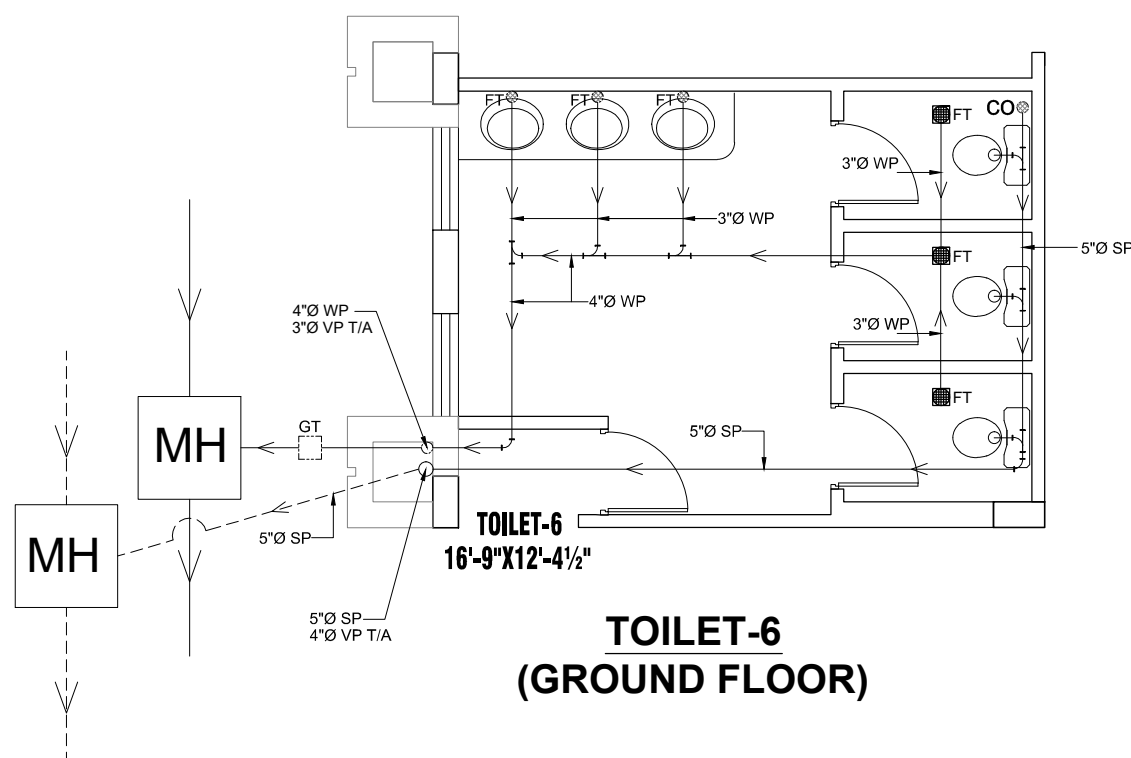
REV. NO.	DATE	DESCRIPTION
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ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF TOILETS 1, 2, 3 & 4 GROUND FLOOR (SEWERAGE)	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / P 06	Scale : A2 1/4"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



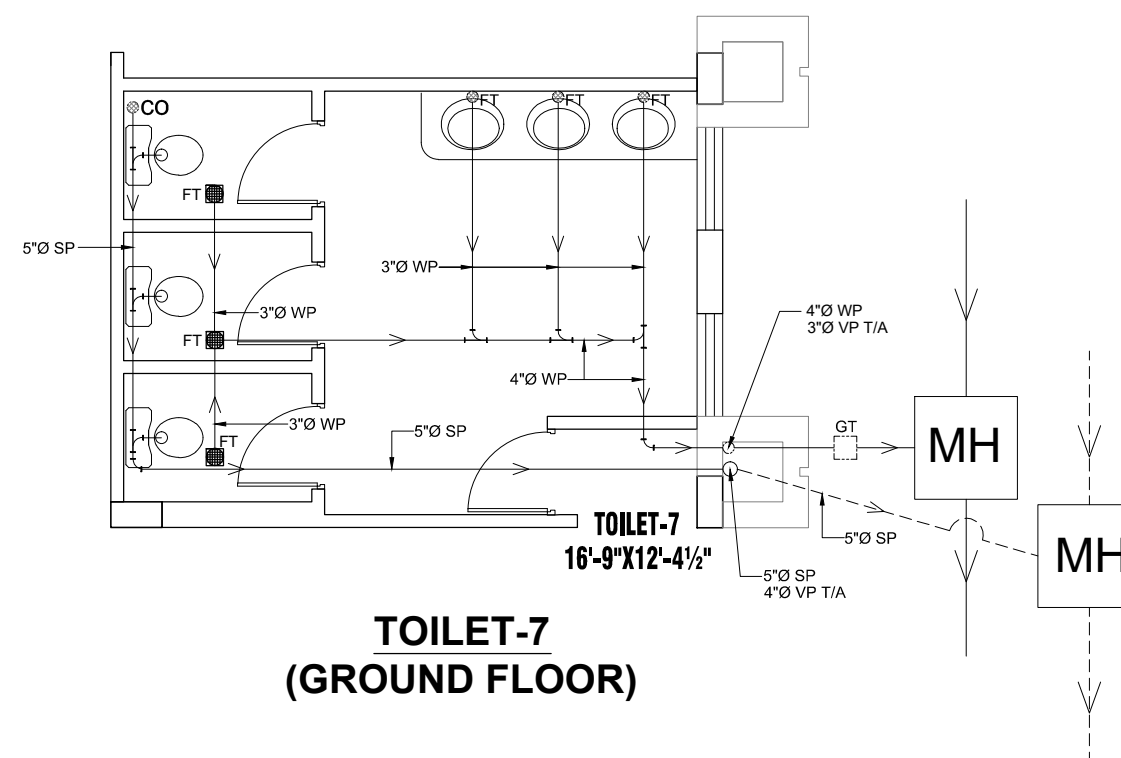
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**TOILET-5
(GROUND FLOOR)**



**TOILET-6
(GROUND FLOOR)**



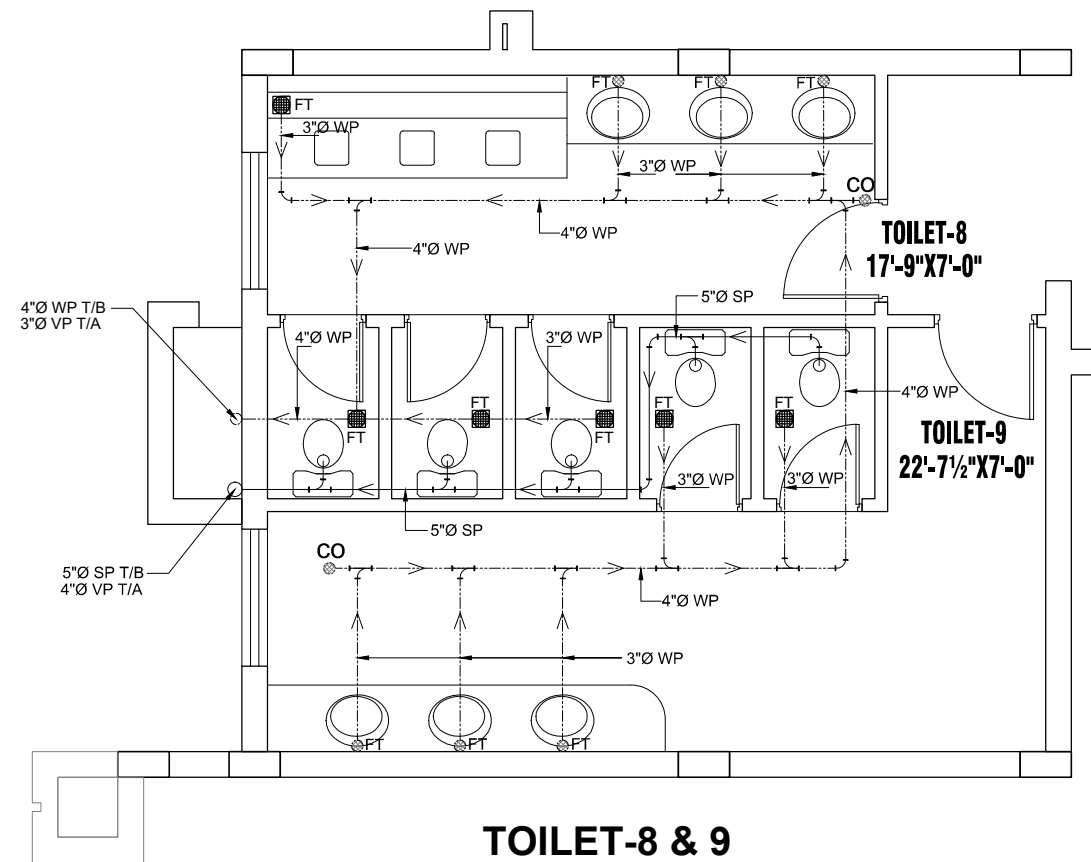
**TOILET-7
(GROUND FLOOR)**

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
 QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF TOILETS 5, 6, & 7 GROUND FLOOR (SEWERAGE)	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / P 07	Scale : A2 1/4"
885		
 ZAHEERUDDIN CONSULTANTS (PVT) LTD. ■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		

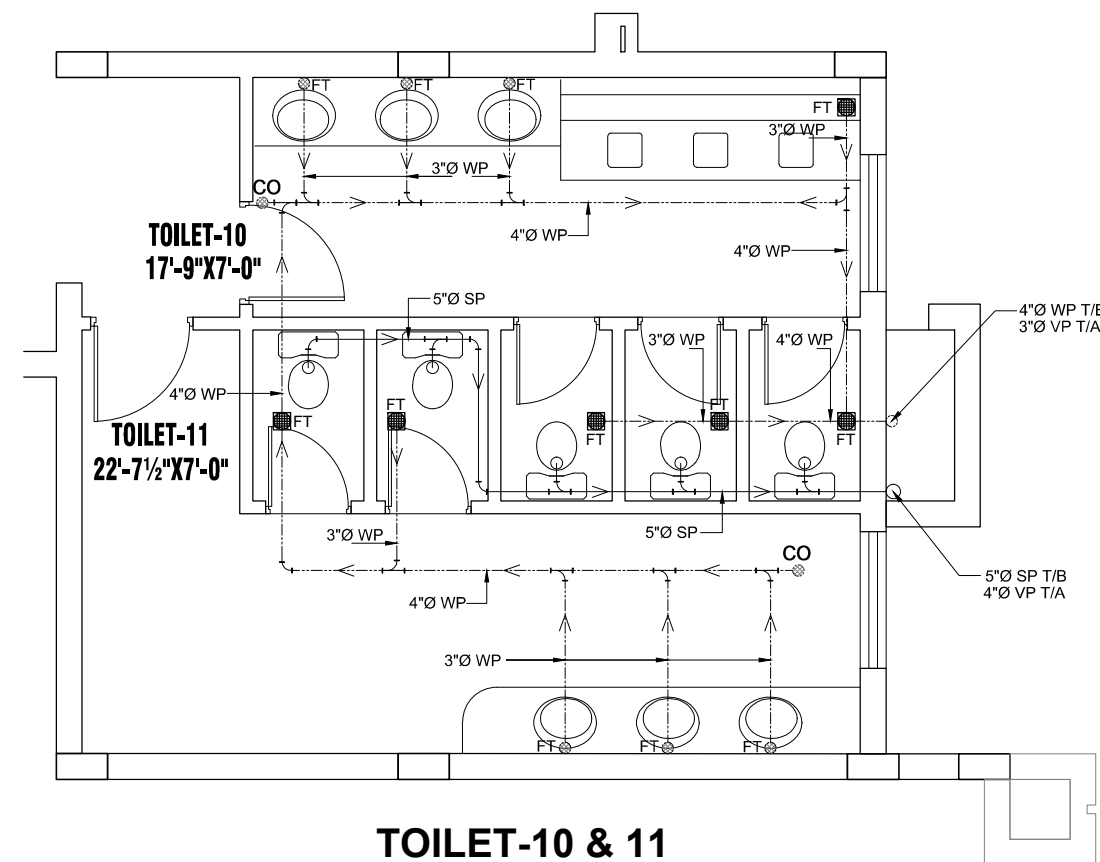


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**TOILET-8 & 9
(FIRST FLOOR)**

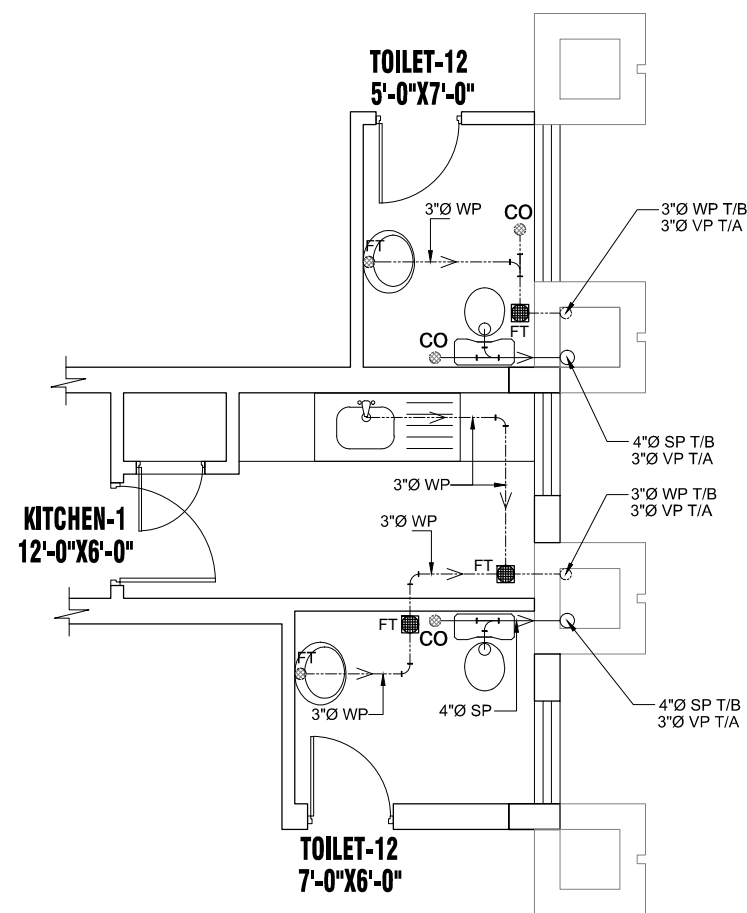


**TOILET-10 & 11
(FIRST FLOOR)**

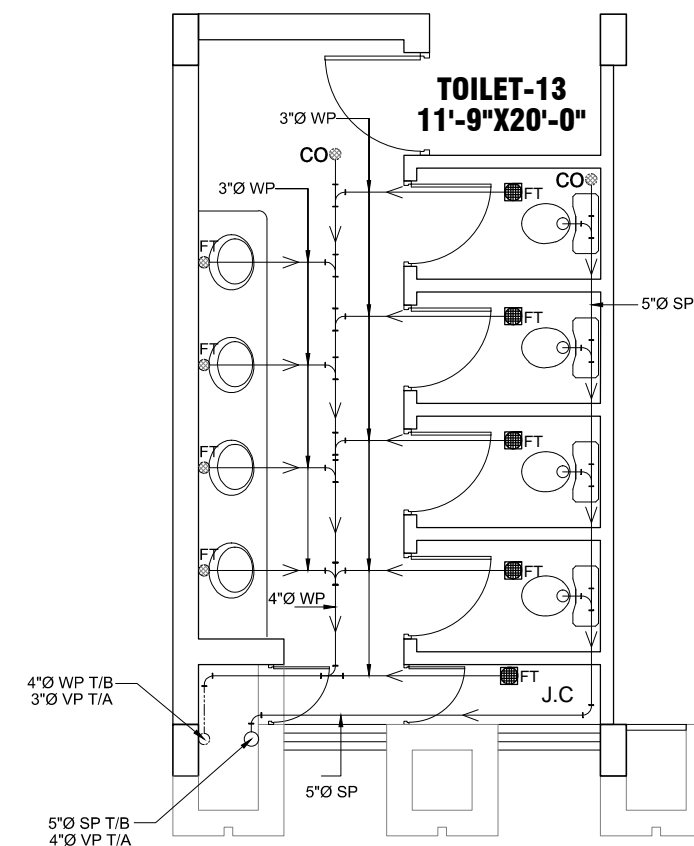
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ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF TOILETS 8, 9, 10 & 11 FIRST FLOOR (SEWERAGE)	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / P 08	Scale : A2 1/4"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



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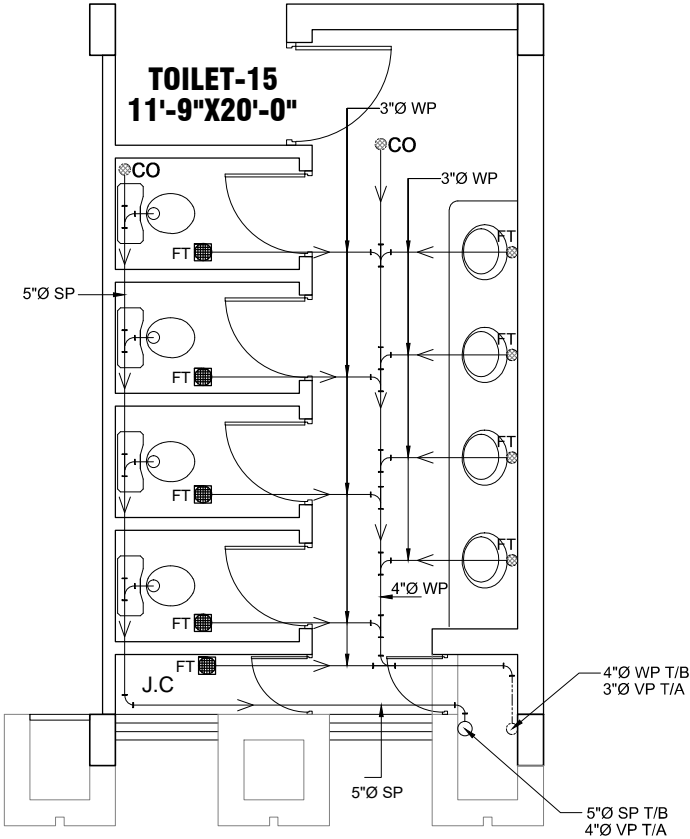


**KITCHEN-1 & TOILET-12 & 13
(FIRST FLOOR)**



**TOILET-14
(FIRST FLOOR)**

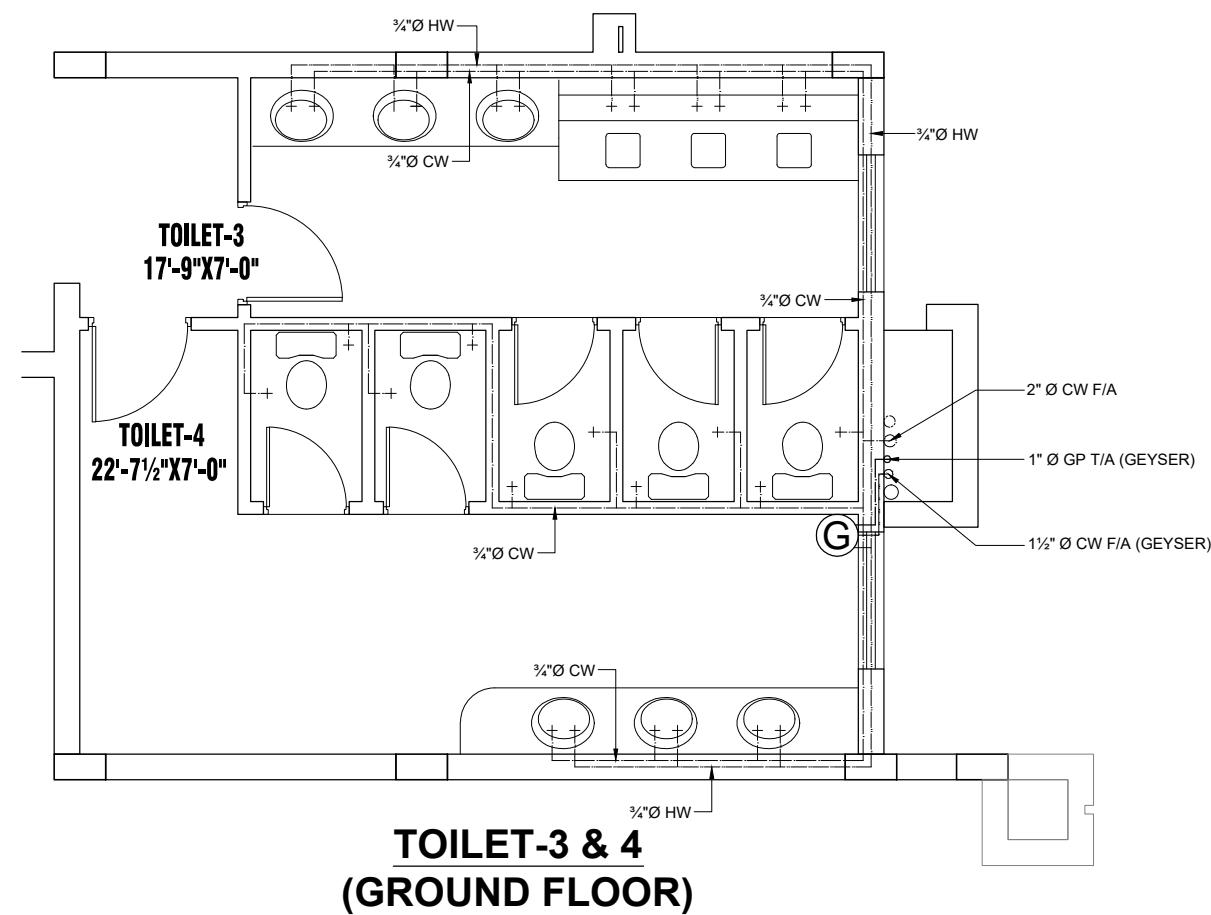
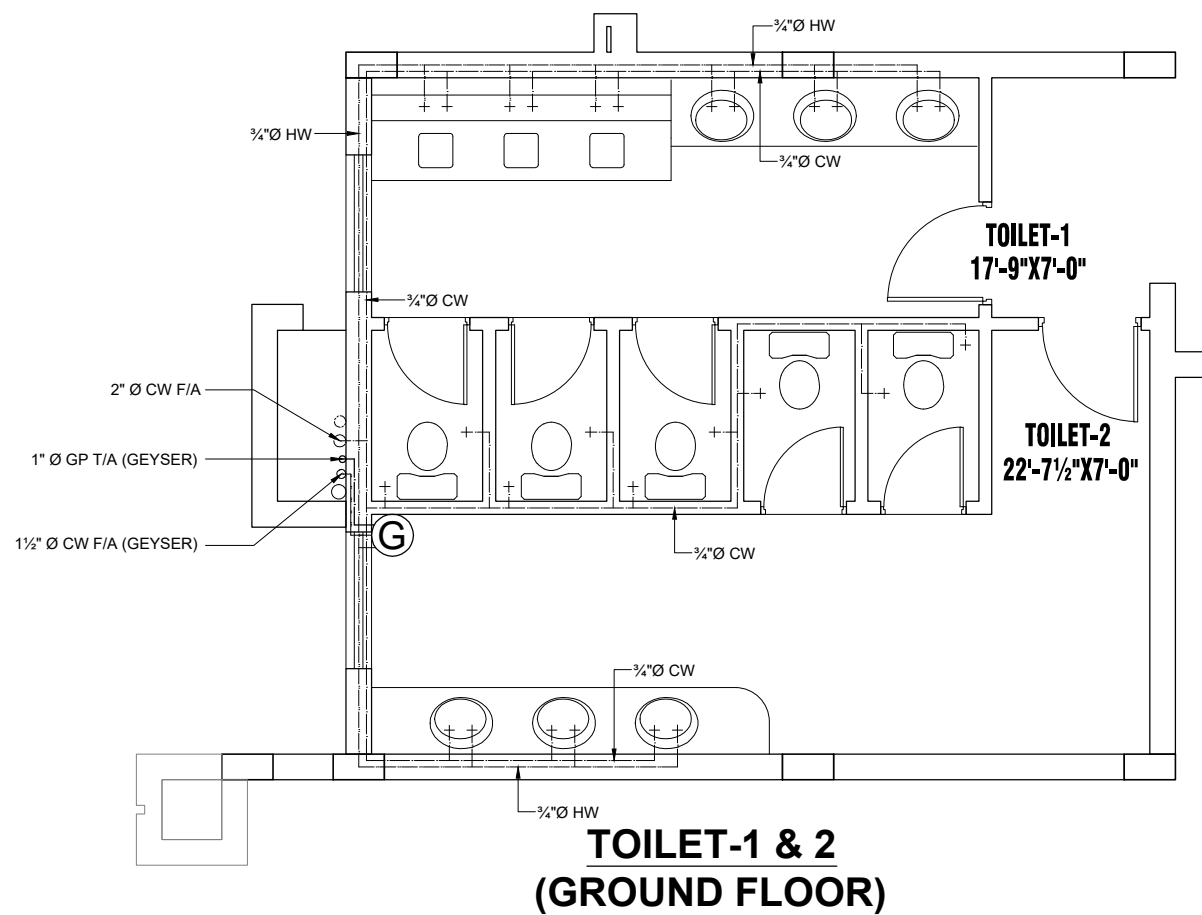
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ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF KITCHEN - 1 TOILETS - 12, 13 & 14 FIRST FLOOR (SEWERAGE)	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / P 09	Scale : A2 1/4"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



**TOILET-15
(FIRST FLOOR)**



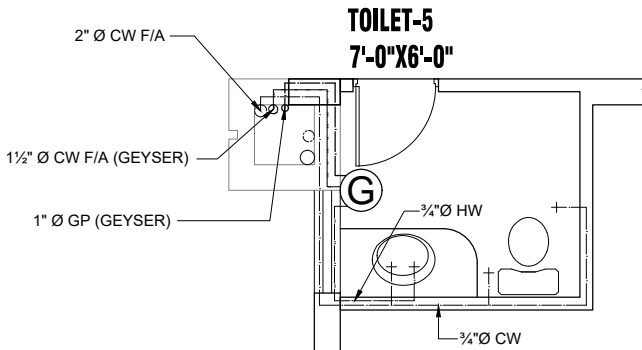
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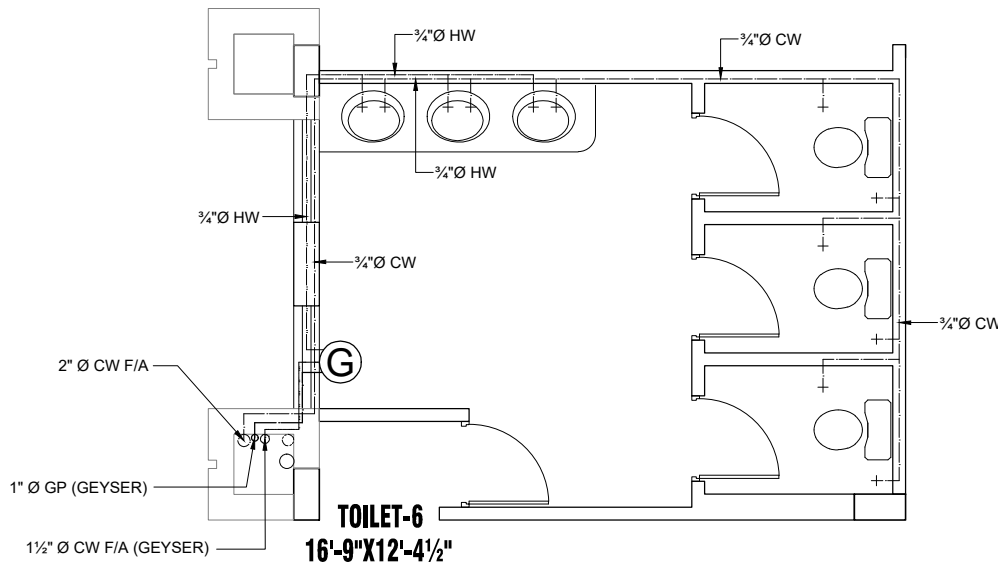
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ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF TOILETS 1, 2, 3 & 4 GROUND FLOOR (WATER SUPPLY)	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / P 11	Scale : A2 1/4"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



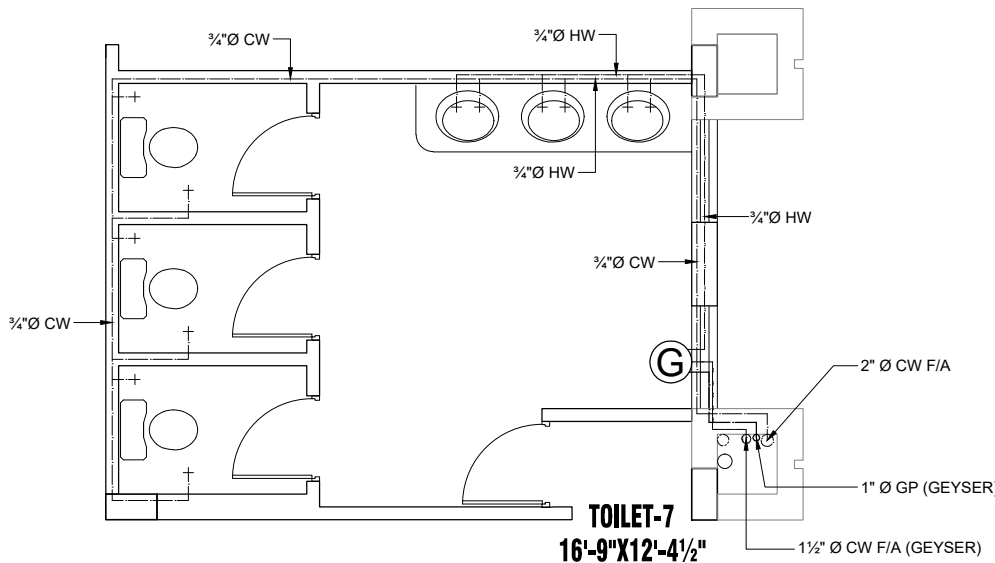
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TOILET-5
(GROUND FLOOR)



TOILET-6
(GROUND FLOOR)

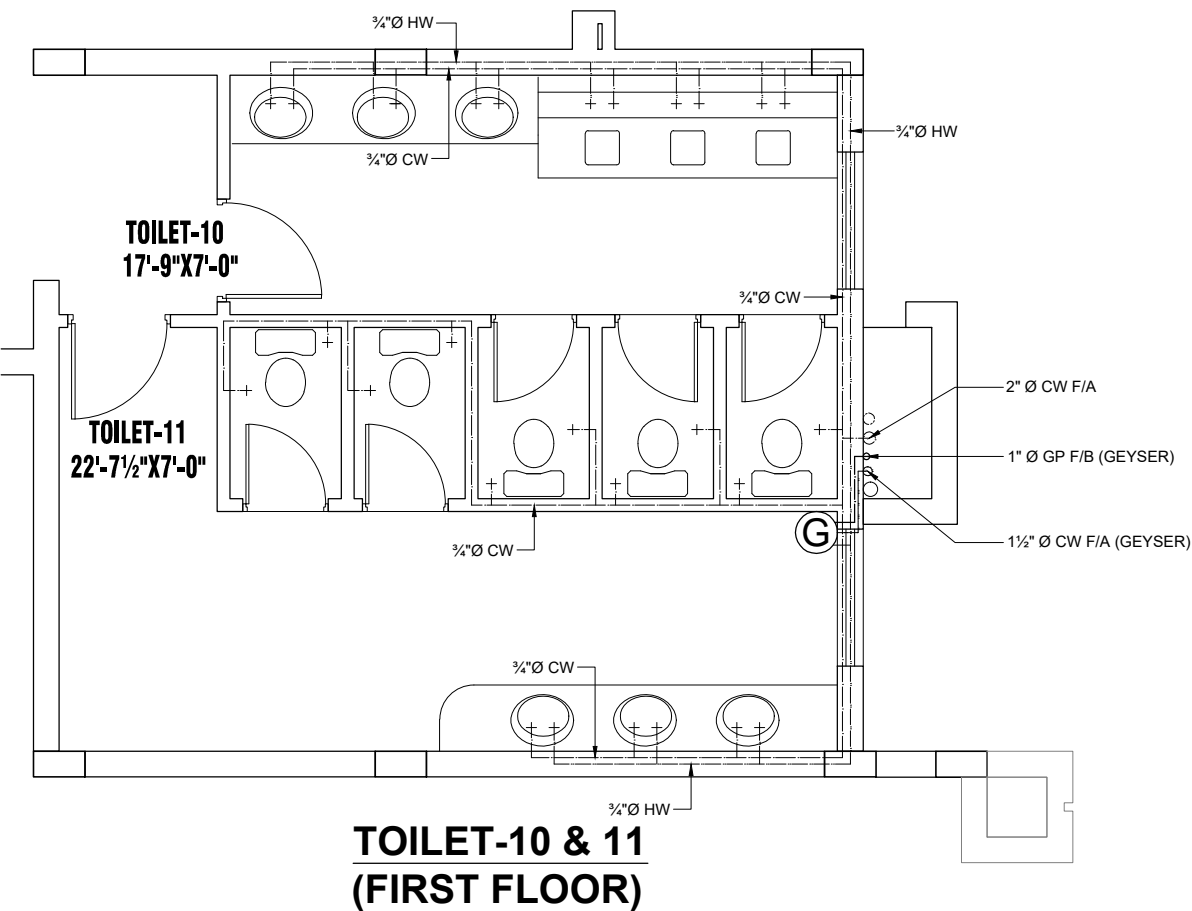
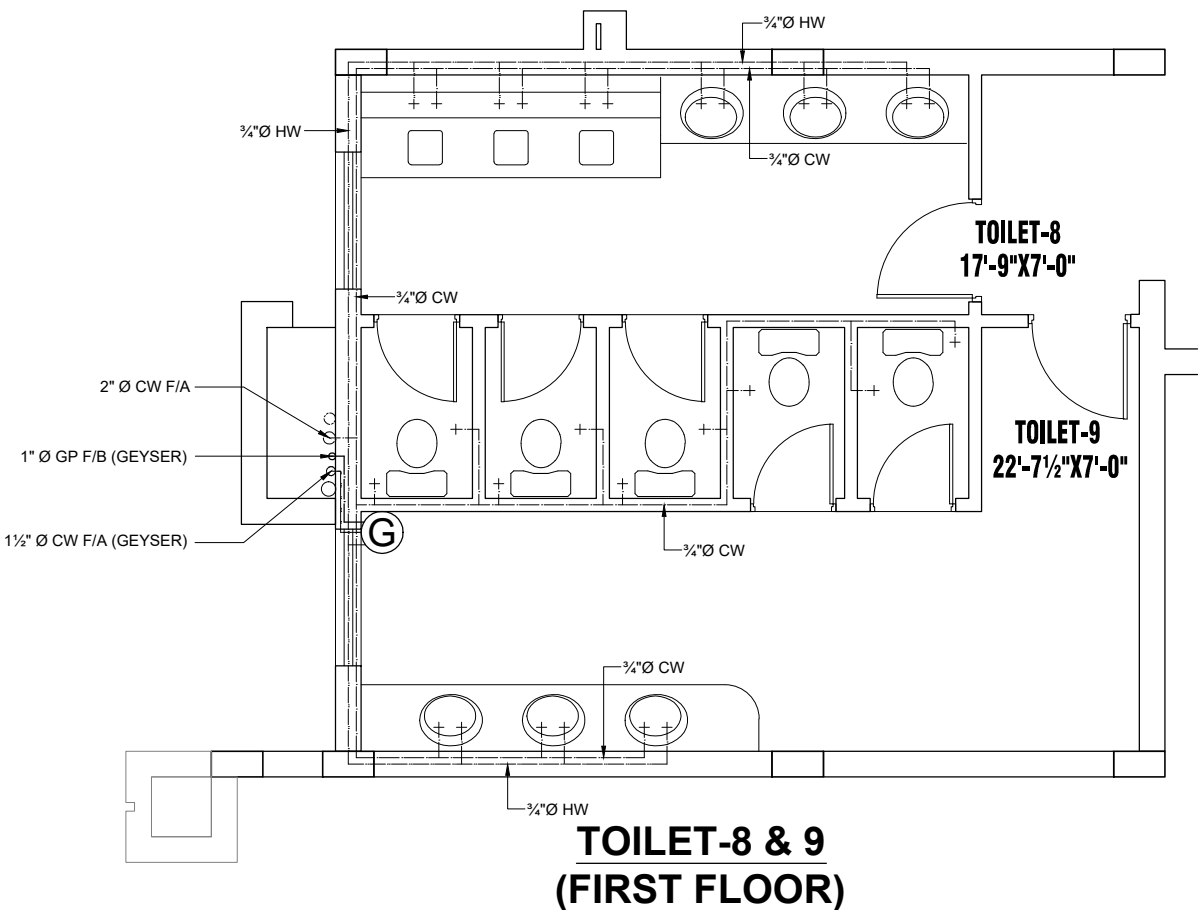


TOILET-7
(GROUND FLOOR)

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF TOILETS 5, 6, & 7 GROUND FLOOR (WATER SUPPLY)	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / P 12	Scale : A2 1/4"
885		
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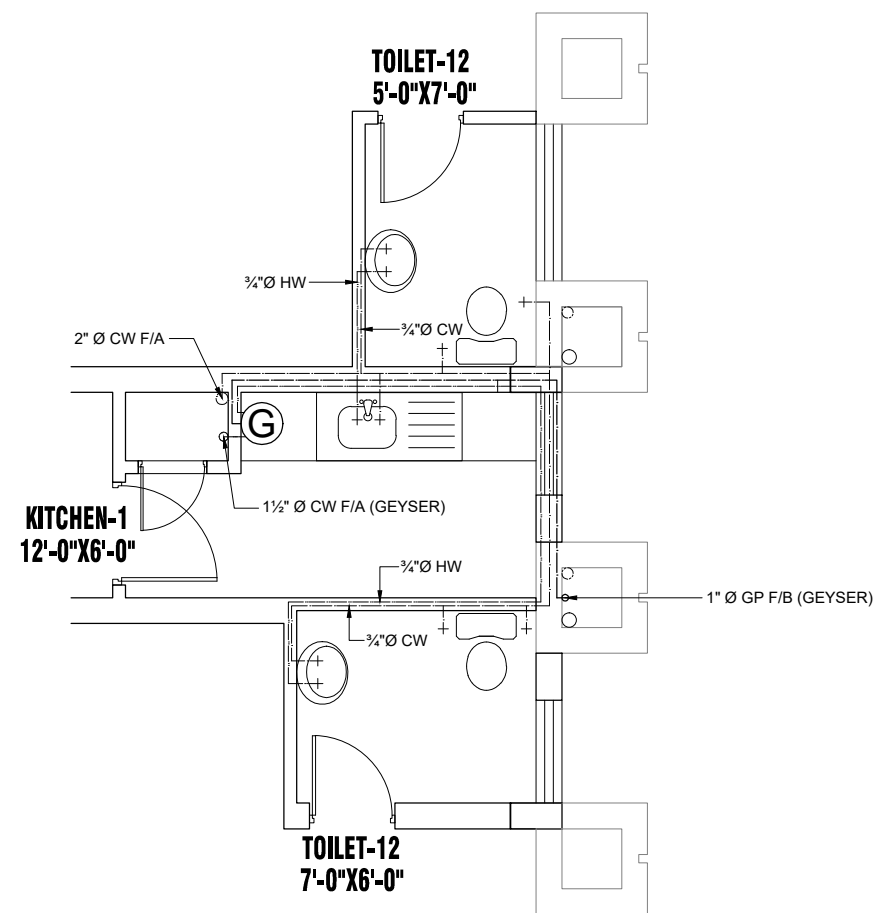
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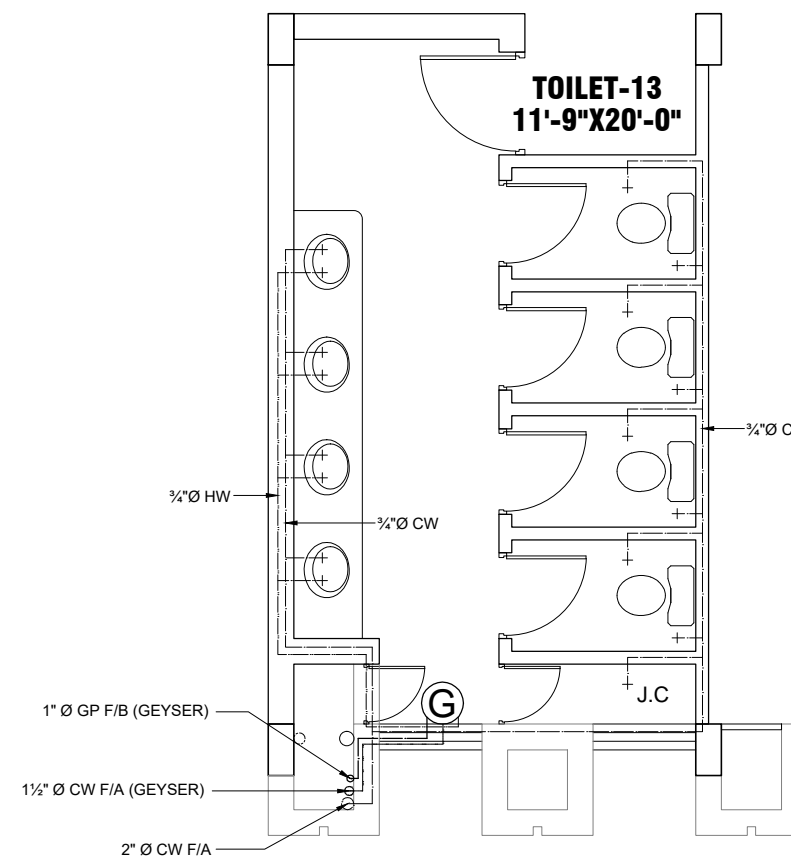
REV. NO.	DATE	DESCRIPTION
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ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF TOILETS 8, 9, 10 & 11 FIRST FLOOR (WATER SUPPLY)	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / P 13	Scale : A2 1/4"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



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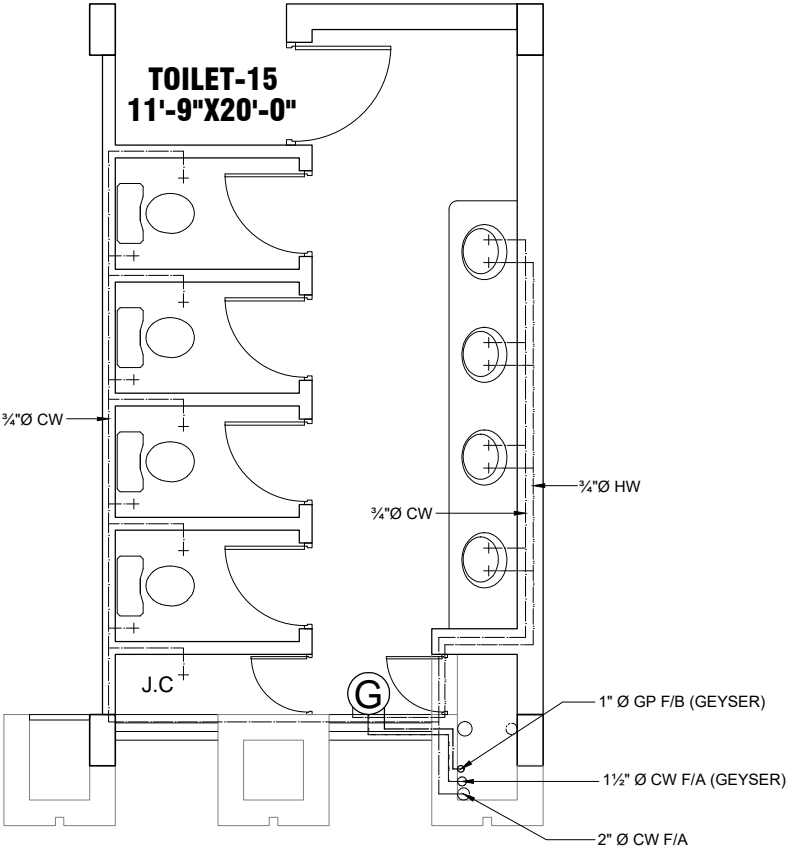


**KITCHEN-1 & TOILET-12 & 13
(FIRST FLOOR)**



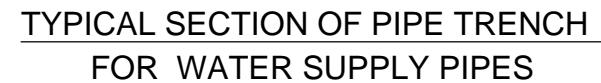
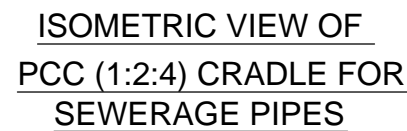
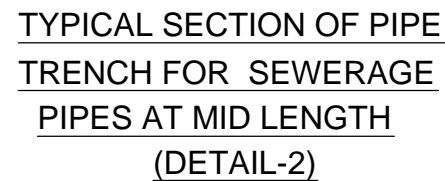
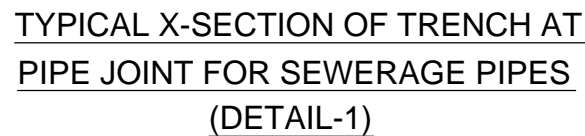
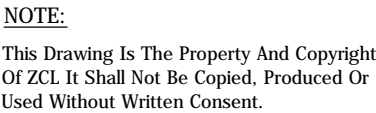
**TOILET-14
(FIRST FLOOR)**

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF KITCHEN - 1 TOILETS - 12, 13 & 14 FIRST FLOOR (WATER SUPPLY)	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / P 14	Scale : A2 1/4"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



**TOILET-15
(FIRST FLOOR)**

REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH		
Drawn: Shahzad	Drawing Title: DETAIL OF TOILETS-15 FIRST FLOOR (WATER SUPPLY)	Date : March 2024
Check by: Zarrar	Dwg. No. ZCL / QUEST-EED / P 15	Scale : A2 1/4"
885		
ZAHEERUDDIN CONSULTANTS (PVT) LTD. ARCHITECTS ENGINEERS CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		



3'-0"

3/4" Ø GALV MS LADDER
RUNG AT 12" C/C

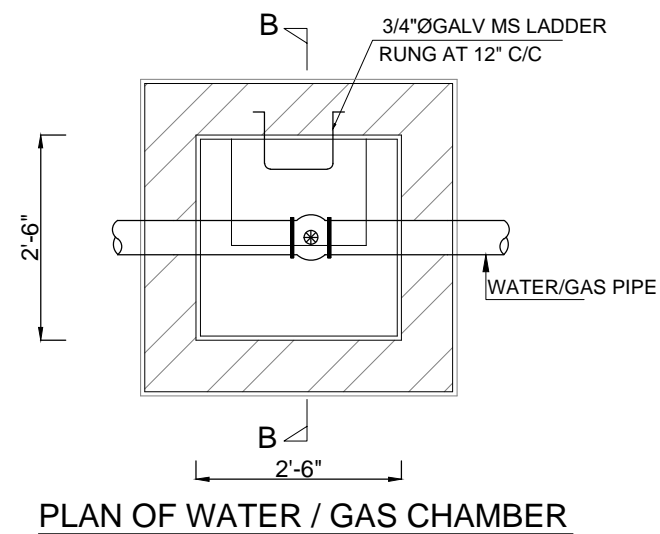
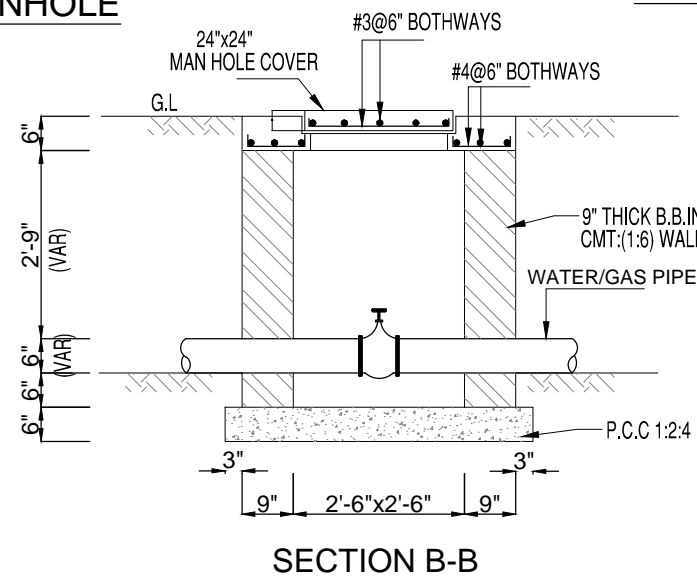
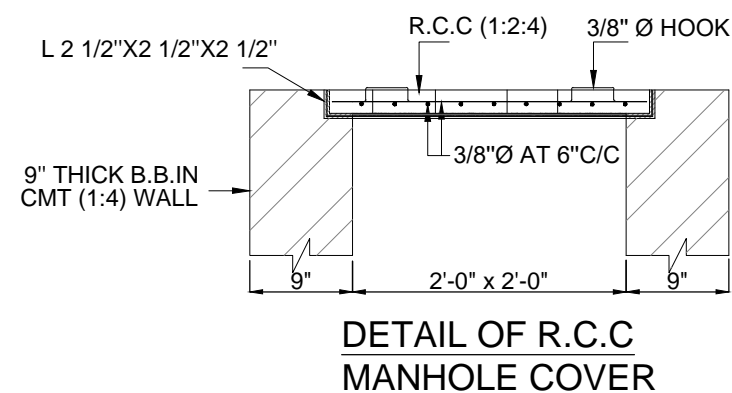
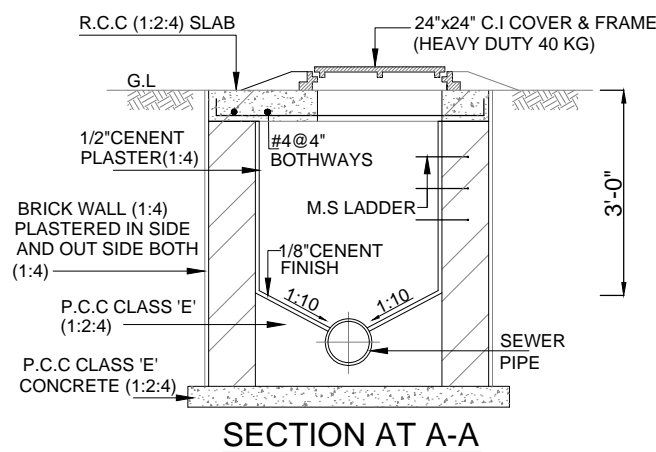
1:10



1:10

WATER PIPE

3'-0"

PLAN OF MANHOLE



REV. NO.	DATE	DESCRIPTION
TENDER DRAWING		
ENVIRONMENTAL ENGINEERING DEPARTMENT		
	QUAID-E-AWAM UNIVERSITY OF ENGINEERING SCIENCES & TECHNOLOGY NAWABSHAH	
Drawn: Shahtzad Check by: Zarrar	Drawing Title: DETAIL OF MANHOLE & CHAMBER Dwg. No. ZCL / QUEST-EED / P 16	Date : March 2024 Scale : A2 1/4"
		Job No. 885
 ZAHEERUDDIN CONSULTANTS (PVT) LTD. ■ ARCHITECTS ■ ENGINEERS ■ CONSTRUCTION MANAGERS 5 - A, SINDHI MUSLIM SOCIETY, KARACHI-74400 PAKISTAN.		