CALL FOR EXPRESSION OF INTEREST FOR PROPOSED CONSTRUCTTION OF MULTISERVICE CENTER (Sheikh Abdullah Al Dabagh Orphan Care Center Project Number 313469) IN KIJITONYAMA, DAR ES SALAAM

Location:	Kijitonyama, Kinondoni, Dar es salaam, Tanzania
Procurement Process:	Construction of Multiservice Center
Type of Contract:	Contract for Construction services
Application Deadline:	Expression will be open until 05th May 2025

Qatar Charity office in Tanzania is interested to explore the available Contractors on the local market for eligible contractors who have niche-expertise across a wide range of work areas and thus can support Qatar Charity efforts in humanitarian field.
Who can submit expression of interest? – Local Contractors are invited to submit expression of interest (International institutions with local presence are welcomed to apply)

Areas of work and services to express Provision of Services in:

1. Construction & Services Contractors (Civil & Building works, Electrical, Renewable Energy, Mechanical, Plumbing, HVAC etc.)

DATA SHEET

Data Sheet		Specific Instructions / Requirements
1.	Scope	The reference number of this Invitation to Bid (ITB) is: QC/2025/19 The as further described in Section 5 of this ITB. Construction of Multiservice Center in Kijitonyama, Kinondoni District, Dar es salaam, Tanzania
2.	Eligible bidders	Local Contractors and international bidders with local presence
3.	Clarification of solicitation documents	Contact details for clarification of solicitation documents: Address: Qatar Charity Tanzania, House No. 22 "A" & "B" Oysterbay, Msasani Peninsula Area, P.O BOX 8504, Dar es salaam, Tanzania E-mail address: qctanzania@qcharity.org **ATTENTION: BIDS SHALL NOT BE SUBMITTED TO THE ABOVE ADDRESS BUT TO THE LINK AND THE QR CODE FOR BID SUBMISSION AS SET OUT IN THE TENDER ANNOUNCEMENT**

		Deadline for submitting requests for clarifications/questions: Date: 23-Apr-25 (Mid-duration of the tender period) Time: 1700hrs. Time zone: East Africa Time (EAT)
04.	Language	All bids, information, documents and correspondence exchanged between Qatar Charity and the bidders in relation to this bid process shall be in English
05.	Price adjustment	The price quoted by the Bidder shall be subject to adjustment during the performance of the contract.
06.	Partial bids (lots)	Partial bids shall not be allowed. Bidders must quote prices for the total requirement requested under Section 5. Schedule of Requirements. Evaluation will be done for the total requirement.
07.	Bid currencies	Prices shall be quoted in Tanzanian Shillings (TZS)
08.	Duties and taxes	All prices shall: Be inclusive of VAT and other applicable indirect taxes.
09.	Bid validity period	14 Days
10.	Bid security	Required in the amount of 5% of the proposed total Bid amount. The bid security will be in the same currency as stipulated in Tender Announcement. Acceptable forms of bid security ☒Bid security form template set out issued by a reputable Bank
11.	Alternative bids	Not permitted
12.	Site inspection	Will be conducted upon Contractor's Request on the above Inquiry Address any day and time upon receiving of full tender document
13.	Instruction for bid submission	Allowable manner of submitting proposals: ☒e-tendering (through QR Code or URL Link provided) ☐Email

		☐ Courier / hand delivery **PLEASE DO NOT SEND THE EMAILS WITH YOUR BID TO ANY OTHER EMAIL ADDRESS (NOT EVEN AS CC. or BCC).** ▪ File Format: PDF ▪ File names must be maximum 60 characters long and must not contain any letter or special character other than from Latin alphabet/keyboard. ▪ All files must be free of viruses and not corrupted. ▪ Mandatory subject of email: **CONSTRUCTTION OF MULTISERVICE CENTER (Sheikh Abdullah Al Dabagh Orphan Care Center Project Number 313469) IN KIJITONYAMA, DAR ES SALAAM** ▪ If the bid consists of large files, it is recommended that these files be sent in separate emails prior to the submission deadline. ▪ Multiple emails must be clearly identified by indicating in the subject line "email no. X of Y", and the final "email no. Y of Y. ▪ Documents which are required in original (e.g. bid security) should be sent to the below address with a PDF copy submitted as part of the electronic submission: **May 05, 2025.** ▪ It is recommended that the entire bid be consolidated into as few attachments as possible.
14.	Deadline for bid submission	Date: 05-May-25 Time: 1700Hrs. Time zone: East Africa Time (EAT).
15.	Bid opening	☒ Public bid opening will not be held ☐ Public bid opening will be held as per below details.
	Expected date for commencement of contract	02-Jun-25
16.	Right to vary requirement at time of award	The maximum percentage by which quantities may be increased is 10% The maximum percentage by which quantities may be decreased is 10%

17.	Contract award to one or more bidder	Qatar Charity will award a contract to: One Bidder or Joint Venture Bidders
18.	Type of contract to be awarded	Construction Contract
19.	Conditions of contract to apply	Terms and Conditions of the Construction Contract.
20.	Performance security	Required in the amount of at least ten per cent (10%) of the total contract amount The performance security will be in the same currency as stipulated in Bid currencies. The Performance Security shall be in the form of a Bank Guarantee.
21.	Advance payment	Allowed up to a maximum of ___% of contract value.
22.	Liquidated Damages	Will be imposed as follows: Percentage of contract price per week of delay: 0.1% up to a maximum of 10% of the Contract value, after which Qatar Charity may terminate the contract.

QUALIFICATION CRITERIA AND REQUIREMENTS:
All applicants commit themselves to comply with minimum qualification requirements. The qualification will be of two stages.

1. Prequalification
2. Post Qualification

1. Preliminary Qualification.
The preliminary qualification will be in strict compliance with Tanzania Laws and Qatar Charity policies for qualification. Prequalification will be of the following criteria and requirements.

Criteria	**Documents to establish compliance**
Completeness and validity of the bid	All documents and technical documentation requested Instructions to Bidders have been provided and are complete
Bidder accepts QC General Conditions of Contract as specified in Tender document.	Form C: Bid Submission
Bid Validity and Eligibility	Form C

Bid Security with a compliant validity period	Form I

- Completeness and Validity of submitted documents
- Verification
- Eligibility

Complete and Valid documents to be submitted

Submissions should be valid and includes.

- Applicants Company Profile.
- Applicant's Organisation Chart;
- Ownership details (Article of association)
- Certificate of Incooperation
- Completed project details, contract sum and photos.
- Filled, signed and stamped provided Application Forms below
- Articles & Certificate of Incorporation of Firms (Each Partner's in case of JV)
- In case of Government owned Enterprises documents establishing;
  - ✓ Legal Status and Financial Autonomy
  - ✓ Operations under Commercial Law
- Audited Accounts with Financial Statements for the last 3 years (for each of the Partners in case of JV);
- Documentary Evidence for sources of Finances to meet cash flow (for each of the Partners in case of JV);
- Table of General Construction Experience years (for each of the Partners in case of JV);
- Details of Each supervisory staff;
- Details of Plant and Equipment;
- Name and details of sub-contractors.
- Details for Environmental Safety and Health Policy & Quality Certificates (OSHA, IOS etc)
- Bank details with Bank verification letter

Documentary Evidence (for the Main Partner in case of JV);

- Registration and Licenced with the respective registration board CRB under Class 1 OR Joint Venture of Class 5 & Class 3/Class 2 and Class 4 & Class 3/Class 2 the respectively, Class 6 and Class 7 are not eligible for Joint Venture.
- Valid groundwater drilling and groundwater exploration licenses.
- Valid Business Licence;
- Valid VAT Registration;
- Valid TIN Registration;

Verification of Submission

- Should be duly filled in;
- Are signed (and initialled as appropriate) by an authorised person;

- A written confirmation of authorisation to sign on behalf of the company such as a "**Power of Attorney"** for the signatory which must be a certificate copy of original;
- The language of the application as well as of all correspondence is; "**English**"

Eligibility

Submissions should ensure that:

- Applicants are from eligible country;
- In case of Joint Venture, all partners of the JV are from eligible country;
- Applicants are not affiliated with the financing organization or companies that provided the consulting services on the specifications of the related services (For Construction & Service Contractors).
- Applicants are not public owned enterprises from the funding country.
- No conflict of interest
- A minimum of three years of specific relevant experience in the area of work for which the contractor is expressing interest.
- Be solvent, not subject to liquidation, its property should not be seized, its financial and economic activities should not be suspended in accordance with the law.

Eligibility Criteria	**Documents to establish compliance**
Bidder is a legally registered entity	Form D: Bidder Information ● Trade certificate of Business Registration ● Tax compliance certificate. ● Valid certification as a Civil/Architectural firm in the construction business (National or International) issued by relevant construction regulatory bodies. ● VAT Registration certificate
Bidder belongs to a diverse supplier group including micro, small or medium sized enterprise, women or youth owned business or other.	Form D: Bidder Information
Vendor is not suspended, nor otherwise identified as ineligible by any UN Organization, the World Bank Group or any other International Organization	Form C: Bid Submission
No conflicts of interest	Form C: Bid Submission
The bidder has not declared bankruptcy, in not involved in bankruptcy or receivership proceedings, and there is no judgment or	Form C: Bid Submission

pending legal action against the vendor that could impair its operations in the foreseeable future	

2. Post Qualification

The purpose of post qualification is to verify that the bidder is capable of executing the contract if awarded.

The post qualification information supplied on the Prequalification stage will examined in strict accordance with the post-qualification requirements. The qualification will be carried out using the following criteria

(i) Eligibility (nationality, conflict of interest, bank eligibility, Government owned entity and ineligibility based on a United Nations resolution or funding country law).

(ii) Historical contract non-performance (history of non-performing contracts and pending litigation)

- Non-performance of a contract did not occur within the last Three (3) years prior to the deadline for application submission, based on all information on fully settled disputes or litigation. A fully settled dispute or litigation is one that has been resolved in accordance with the Dispute Resolution Mechanism under the respective contract, and where all appeal instances available to the applicant have been exhausted.
- All pending litigation shall in total not represent more than **TEN** percent (10%) of the applicant's net worth and shall be treated as resolved against the applicant.

(iii) Financial Situation (historical financial performance, average annual turnover the last three years and financial resources)

- Audited balance sheets & financial statements, for the last Three (3) years to demonstrate the current soundness of the bidders financial position and its prospective long term profitability
- Minimum average annual turnover calculated as total certified payments received for contracts in progress or completed, within the last three years.
- The Applicant must demonstrate access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments to meet the overall cash flow requirements and concurrent commitments.

(iv) In case of Joint Venture, ratio of the venture must be clearly indicated with at least one partner must meet at least FIFTY PERCENT (50%) of the requirement.

	Qualification Criteria	Documents to establish compliance
	History of non-performing contracts: Non-performance of a contract did not occur as a result of contractor default within the last 3 years.	Form F: Eligibility and Qualification Form
	Litigation History: No consistent history of court/arbitral award decisions against the bidder for the last 3 years.	Form F: Eligibility and Qualification Form
	Previous Experience:	
	Minimum Three (3) years of relevant experience.	Form F: Eligibility and Qualification Form
	Minimum Three (3) contracts of similar value, nature and complexity implemented over the last Three (3) years. *(For JV/Consortium/Association, all Parties cumulatively should meet requirement).*	Form F: Eligibility and Qualification Form
	Financial Standing:	
	Liquidity: the ratio Average current assets / Current liabilities over the last 3 years must be equal or greater than 1.	Copy of audited financial statements for the last three years. / Form F: Eligibility and Qualification Form
	Turnover: Bidders should have an annual sales turnover of minimum TSHS Six Billion (6,000,000,000.00) or Tanzania Shillings: 6,000,000,000.00) for the last three years. *(For JV/Consortium/Association, all Parties cumulatively should meet requirement).*	Copy of audited financial statements for the last three years. Form F: Eligibility and Qualification Form

(v) Applicant's experience (general experience and specific experience)

- General experience
  - ✓ List at least Three (3) biggest contracts within the last three (3) years that applicants have participated as contractor, management contractor, or subcontractor, or service provider, that have been successfully and substantially completed. The similarity shall be based on the physical size, complexity, methods/ technology or other characteristics.

- Specific Experience
  - ✓ For the above or other contracts executed during the period stipulated in General Experience above, a minimum experience in the following key activities: successfully completed:
    - Experience in English speaking countries in Sub Saharan Africa or developing countries
    - Experience in Non- Profit Organization Projects, Humanitarian & Relief projects
    - Experience of Working on a tight construction site of a Functional Hospital or Health Facility, Education centres, WASH project, Mosques, Commercial buildings, Islamic Centres and Facilities.
    - Structural Work – Reinforced Concrete Framework & Steel structures.
    - Internal Block work and Lightweight Partitions
    - External Façade – Tiles Finish Surface
    - Steel Roof Structure/Timber Roof structures with Aluminium Roof Covering
    - Double Glazed Aluminium windows
    - Glazed Aluminium Doors and Hardwood Doors with High Quality Ironmongery
    - Stainless Steel Balustrade and Handrails
    - High Quality Finishing and High Quality Screening
    - Sophisticated Specialized Mechanical, Electrical and Plumbing Services to Include Disposal Systems, Water Supply Installations, Ventilation and Air Conditioning Installation. Heat Source Installations Medical Gas Installation, Communications and Security System, Equipment Related to Clinical Services Building Management Services (BMS) and Lift Installations
    - External Works Comprising of Boundary Walling, Driveways, Paved Areas, Water Features and Water, Electrical and Drainage Reticulation

(vi) Applicant's Equipment.

(vii) The applicant must have suitably qualified personnel.

S/N	Professional	Minimum Requirement
1	Project Manager.	1. Degree in Construction Management, Civil Engineering, Architecture, or related field.

		2. PMP (Project Management Professional) or equivalent project management certification is preferred. 3. 7 years' experience in project management in construction or design, with experience in managing large-scale design and build projects and registered with professional bodies. 4. Skills: Strong leadership, communication, problem-solving, budgeting, and contract management.
2	Construction Manager	1. Degree Construction Management, or related field. 2. Registered with professional bodies. 3. 5 years' experience in contract management, preferably in construction or large-scale projects. 4. Strong understanding of contract law, negotiation, dispute resolution, and procurement
3	Project Quantity Surveyor	1. Principal Quantity Surveyor 2. Degree / Advanced Diploma in Quantity Surveying/ Building Economics 3. 7 yrs Experience in Contract / Project Management 4. 7 yrs Experience as a Quantity Surveyor 5. Registered with Architects and Quantity Surveyors Registration Board
4	Project Civil / Structural Engineer	1. Degree in Civil / Structural Engineering 2. 7 yrs Experience as Structural / Civil Engineer 3. Registered with Engineers Registration Board a professional engineer

5	Project Electrical Engineer	1. Degree in Electrical Engineering 2. 10 yrs. Experience in Electrical Engineering Works 3. Registered with Engineers Registration Board a professional engineer
6	Project Mechanical Engineer	1. Degree in Mechanical Engineering 2. 7 yrs. Experience in Mechanical Engineering Works 3. Registered with Engineers Registration as a professional engineer
7	Project ICT Engineer	1. Degree in Telecommunication Engineering 2. 7 yrs Experience 3. Registered with Engineers Registration Board as a professional engineer
8	Biomedical Engineer	1. Degree in Biomedical Engineering 2. 3 yrs. Experience in Biomedical Engineering Works 3. Registered with Engineers Registration Board as professional Engineer
9	Site foreperson	1. Degree or Diploma in Construction, Civil Engineering, or a related field. 2. 5 yrs. Experience as a site supervisor, overseeing day-to-day construction activities. 3. Registered with Engineers Registration Board as professional Engineer/technician.
10	Health and safety	1. Degree or Certification in Occupational Health and Safety or Environmental Health. 2. 3 Yrs. Experience in health and safety roles, preferably in construction. 3. Skills: Knowledge of health and safety regulations, risk assessments, and site safety management

11	Health and safety	1. Degree or Certification in Occupational Health and Safety or Environmental Health. 2. 3 Yrs. Experience in health and safety roles, preferably in construction. 3. Skills: Knowledge of health and safety regulations, risk assessments, and site safety management

(viii) Applicants In-house policies and procedures of Environmental, Social, Health and Safety (ESHS)

Exclusion criteria

Applicants shall be excluded from participation if:

1. They are bankrupt or being wound up, are having their affairs administered by the courts, have entered into an arrangement with creditors, have suspended business activities, are the subject of proceedings concerning those matters, or are in any analogous situation arising from a similar procedure provided for in national legislation or regulations.
2. They or persons having powers of representation, decision making or control over them have been convicted of an offence concerning their professional conduct by a judgment of a competent authority of a Member State which has the force of res judicata.
3. They have been guilty of grave professional misconduct proven by any means which the contracting authority can justify including by decisions of the European Investment Bank and international organizations.
4. They are not in compliance with their obligations relating to the payment of social security contributions or the payment of taxes in accordance with the legal provisions of the country in which they are established or with those of the country of the contracting authority or those of the country where the contract is to be performed.
5. They or persons having powers of representation, decision making or control over them have been the subject of a judgment which has the force of res judicata for fraud, corruption, involvement in a criminal organization, money laundering or any other illegal activity, where such an illegal activity is detrimental to the Union's financial interests.
6. They are subject to an administrative penalty for being guilty of misrepresentation in supplying the information required by the contracting authority as a condition of participation in a procurement procedure or failing to supply information or being declared to be in serious breach of their obligation under a contract covered by the budget.
7. They have a conflict of interest in connection with the contract; a conflict of interest could arise in particular as a result of economic interests, political or national affinities, family or emotional ties or any other relevant connection or shared interest.

Protection of personal data

If processing your expression of interest involves the recording and processing of personal data (such as your name, address, and CV), the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data.

Unless indicated otherwise, your reply to this notice and any personal data requested are required for the purposes indicated above in point 4 and will be processed solely for those purposes by the contracting authority indicated in point 1, which is also acting as data controller.

Request for clarifications:

Any request for clarifications shall be submitted in writing by e-mail to the QC Tanzania procurement unit at the **following email addresses: qctanzania@qcharity.org**

Selection criteria:

This call is solely intended for establishing a **roster of potential Contractors**, that could be considered as potential interested Contractors for specific future services required to be obtained by QC in Tanzania and will be part of the trusted suppliers list that will be assessed after a while. There is no guarantee on immediate opportunity for contracting.

QC Tanzania will use a set of unified criteria to evaluate the qualifications of Applicants for considering listing in the roster of potential contractors. Eligible Applicants will be assessed in one-stage process for compliance with the requirements set out in the call for expression of interest. Each Applicant will be assessed on a "Pass/Fail" basis as to whether each criterion is satisfactorily met as set in Call for Expression of Interest. All Applicants that meet the eligibility and qualification criteria set in Call shall **form the roster of potential contractors.**

Note: The Inclusion on the list entails no obligation on the part of QC concerning the conclusion of contracts

Selection criteria for specific assignment prior to contracting:

Upon need of specific services, specific Terms of Reference/Technical Description for Goods and/or Services will be either;

1) Announced and respective contractors from established roster qualifications of whom meet the area(s) of works/services identified in the relevant specific Terms of Reference/Technical Description for Goods and/or Services will be notified on announcement and invited to participate OR
2) Specific Terms of Reference/Technical Description for Goods and/or Services will be sent (e-mailed) to the respective contractors from established roster, qualifications of whom meet the area(s) of work/services identified in the relevant specific Terms of Reference/Technical Description for Goods and/or Services and requested to provide with the Bid/Proposal.

A committee will review and score qualification of the contractors, against requirements stipulated in the specific Terms of Reference/Technical Description for Goods and/or Services and the award of the contract should be made based on either **Pass/Fail Lowest priced technically responsive, eligible, and qualified bid <u>OR</u> Combined Scoring Method taking into consideration the combination of the technical and financial proposal.**

<u>Expiry date of the list resulting from this call for expressions of interest</u>

The list resulting from this notice is valid initially for five years from dispatch of this notice. Basically, the list will be updated once each year, and might be updated more than once in case of insufficient number of applicants in certain field. Interested parties can update their information/interests and data any time during the validity of this list by sending official email.

APPLICATION FORMS & FORMATTING

Application Submission Form

Date: [*insert day, month, year*]
EOI No. and title: [*insert ICB number and title*]

To: [*insert full name of Employer*]

We, the undersigned, apply to be qualified for the referenced EOI and declare that:

(a) We have examined and have no reservations to the Expression of Interest Documents issued in accordance with Instructions to Applicants [*insert the number and issuing date of EOI*].

(b) We, including any subcontractors or suppliers for any part of the contract resulting from this qualification process, have nationalities from eligible countries, [*insert the nationality of the Applicant, including that of all partners in case of a Joint Venture, and the nationality of each already identified subcontractor and supplier of related services, if applicable*];

(c) We, including any subcontractors or suppliers for any part of the contract resulting from this prequalification, do not have any conflict of interest.

(d) we, including any subcontractors or suppliers for any part of the contract resulting from this prequalification, have not been declared ineligible by the Bank, or under the Employer's country laws, official regulations, or under execution of a Bid Securing Declaration in the Employer's Country, or by an act of compliance with a decision of the United Nations Security Council.

(e) [*insert either "we are not a Government owned entity" or "we are a Government entity*], and we meet the requirements.

(f) we, plan to subcontract the following key activities and/or parts of the works: [*insert any of the key activities identified "Area of work and service to express interest" which the Applicant intends to contract*]

(g) we declare that the following commissions, gratuities, or fees have been paid or are to be paid with respect to the prequalification process, the corresponding bidding process or execution of the Contract:

Name of Recipient	Address	Reason

			Amount
[*insert full name for each occurrence*]	*[insert street/city/country]*	*[indicate reason]*	*[specify amount in Tshs]*
……	……	……	……
……	……	……	……
……	……	……	……

[*If none has been paid or is to be paid, indicate "none".*]

(h) We understand that you may cancel the prequalification process at any time and that you are neither bound to accept any application that you may receive nor to invite the prequalified applicants to bid for the contract subject of this prequalification, without incurring any liability to the Applicants.

Signed *[insert signature(s) of an authorized representative(s) of the Applicant*]

Name [*insert full name of person signing the application*]

In the Capacity of [*insert capacity of person signing the application*]

Duly authorized to sign the application for and on behalf of: Applicant's

Name [*insert full name of Applicant] Address [insert street number/town or city/country address*]

Dated on [*insert day number] day of [insert month], [insert year*]

Applicant Information Form

Date: *[insert day, month, year*]
EOI No. and title: *[insert EOI number and title]*
Page *[insert page number]* of *[insert total number]* pages

Apllicant Legal Name [*insert full legal name]*
In case of Joint Venture (JV), legal name of each partner: [*insert full legal name of each partner in JV]*
Applicant's Actual or Intended country of constitution: *[indicate country of Constitution*]
Applicant's actual or Intended year of constitution: *[indicate year of Constitution]*
Applicant's legal address in country of constitution: [*insert street/ number/ town or city/ country]*
Applicant's authorized representative information Name: *[insert full legal name*] Address: [*insert street/ number/ town or city/ country*] Telephone/Fax numbers*: [insert telephone/fax numbers, including country and city codes]* E-mail address: [*indicate e-mail address]*
Attached are copies of original documents of ☐ Articles of Incorporation or Documents of Constitution, and documents of registration of the legal entity named above. ☐ In case of JV, letter of intent to form JV or JV agreement. ☐ In case of Government owned entity, documents establishing legal and financial autonomy and compliance with commercial law.

Applicant's Party Information Form

[The following form shall be filled in for the Applicant's parties including partner(s) of a joint venture,subcontractors, suppliers and other parties]

Date: ~*insert day, month, year]*
EOI No. and title: ~*insert EOI number and title]*
Page ~*insert page number]* of ~*insert total number]* pages

JV Apllicant Legal Name [*insert full legal name]*
Applicant's Party legal name: *[insert full legal name of Applicant's Party]*
Applicant's Party country of registration: *[indicate country of registration]*
Applicant Party's year of constitution: *[indicate year of constitution]*
Applicant Party's legal address in country of constitution: *[insert street/ number/ town or city/ country]*
Applicant Party's authorized representative information Name*: [insert full legal name]* Address: *[insert street/ number/ town or city/ country]* Telephone/Fax numbers: *[insert telephone/fax numbers, including country and city codes]* E-mail address*: [indicate e-mail address]*

Attached are copies of original documents of

- ☐ Articles of Incorporation or Documents of Constitution, and Registration Documents of the legal entity named above.
- ☐ •In case of a Government owned entity, documents establishing legal and financial autonomy and compliance with commercial law.

Historical Contract Non-Performance

[The following table shall be filled in for the Applicant and for each partner of a Joint Venture]

Applicant's Legal Name: *[insert full name]*
Date: *[insert day, month, year]*
Joint Venture Party Legal Name:[*insert full name]*
EOI No. and title: *[insert EOI number and title]*
Page *[insert page number]* of *[insert total number]* pages

Non-Performing Contracts in accordance with Qualification Criteria and Requirements			
☐ Contract non-performance did not occur during the *[number*] years specified in Qualification Criteria and Requirements. ☐ Contract(s) not performed during the [*number*] years specified in Qualification Criteria and Requirements.			
Years	**Non performed portion of contract**	**Contract Identification**	**Total Contract Amount (current value, TSHS equivalent)**
[Insert Year]	*[Insert Amount and Percentage]*	Contract Identification: *[indicate complete contract name/ number, and any other identification]* Name of Employer*: [insert full name]* Address of Employer: *[insert street/city/country]* Reason(s) for non-performance: *[indicate main reason(s)]*	*[Insert Amount]*
Pending Litigation, in accordance with Qualification Criteria and Requirements ☐ No pending litigation in accordance with Qualification Criteria and Requirements ☐ Pending litigation in accordance with Qualification Criteria and Requirements.			

Years	Outcome as Percentage of Total Assets.	Contract Identification	Total Contract Amount (current value, TSHS equivalent)
[Insert Year]	*[Insert Percentage]*	Contract Identification: *[indicate complete contract name/ number, and any other identification]* Name of Employer*: [insert full name]* Address of Employer: *[insert street/city/country]* Reason(s) for non-performance: *[indicate main reason(s)]*	*[Insert Amount]*

Financial Situation

[The following table shall be filled in for the Applicant and for each partner of a Joint Venture]

Applicant's Legal Name: *[insert full name]*
Date: *[insert day, month, year]*
Applicant's Party Legal Name*:[insert full name]*
EOI No. and title: *[insert EOI number and title]*
Page *[insert page number]* of *[insert total number]*

1. Financial Data

Financial information in (TSHS)	**Historic information for previous** *[insert number] years, [insert in words]*				
	Year 1	Year 2	Year 3	Year ……	Year n
Information from Balance Sheet					
Total Assets (TA)					
Total Liabilities (TL)					
Net worth (NW)					
Current Assets (CA)					
Current Liabilities (CL)					
Information from the Income Statements					
Total Revenue (TR)					
Profits Before Taxes (PBT)					

2. Financial documents

The Applicant and its parties shall provide copies of the balance sheets and/or financial statements for three [3] years pursuant Qualifications Criteria and Requirements. The financial statements shall:

(a) Reflect the financial situation of the Applicant or partner to a JV, and not sister or parent companies.

(b) Be audited by a certified accountant.

(c) Be complete, including all notes to the financial statements.

(d) Correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).

☐ Attached are copies of financial statements (balance sheets, including all related notes, and income statements) for the [3] years required above; and complying with the requirement

Average Annual Construction Turnover

[The following table shall be filled in for the Applicant and for each partner of a Joint Venture]

Applicant's/Joint Venture Partner's Legal Name: *[insert full name]*
Date: [insert day, month, year] Applicant's Party Legal Name*: [insert full name]*
EOI No. and title: *[insert ICB number and title]*
Page *[insert page number]* of *[insert total number] pages*

Annual Turnover Data		
Year	**Amount and Currency**	**TSHS Equivalent**
[Indicate Year]	*[Insert Amount and Indicate Currency]*	*[Insert Amount in TSHS]*
Average Annual Construction/consultancy Turnover		

Note: Average annual construction/consultacy turnover calculated as total certified payments received for work in progress or completed, divided by the number of years specified in Qualification Criteria and Requirements.

General Construction Experience

[The following table shall be filled in for the Applicant and for each partner of a Joint Venture]

Applicant's/Joint Venture Partner's Legal Name: *[insert full name*]
Date: *[insert day, month, year]*
Applicant JV Party Legal Name: *[insert full name*]
EOI No. and title: *[insert ICB number]*
Page *[insert page number] of [insert total number]* pages

[Identify contracts that demonstrate continuous construction work over the past [3] years pursuant to Qualification Criteria and Requirements. List contracts chronologically, according to their commencement (starting) dates.]

Starting Month/Year	Ending Month/Year	Contract Identification	Role of Applicants
[Indicate Month/Year]	*[Indicate Month/Year]*	Contract name*: [insert full name]* Brief Description of the Works performed by the Applicant: *[describe works performed briefly]* Amount of contract: *[insert amount in UTSHS equivalent]* Name of Employer: *[indicate full name]* Address: *[indicate street/number/town or city/country]*	*[insert "Contractor" or "Subcontractor" or "Contract Manager"]*
		Contract name*: [insert full name]* Brief Description of the Works performed by the Applicant: *[describe works performed briefly]* Amount of contract: *[insert amount in TSHS equivalent]* Name of Employer: *[indicate full name]* Address: *[indicate street/number/town or city/country]*	*[insert "Contractor" or "Subcontractor" or "Contract Manager"]*

		Contract name*: [insert full name]* Brief Description of the Works performed by the Applicant: *[describe works performed briefly]* Amount of contract: *[insert amount in TSHS equivalent]* Name of Employer: *[indicate full name]* Address: *[indicate street/number/town or city/country]*	*[insert "Contractor" or "Subcontractor" or "Contract Manager"]*

Similar Construction Experience

[The following table shall be filled in for contracts performed by the Applicant, each partner of a Joint Venture, and specialist sub-contractors]

Applicant's/Joint Venture Partner's Legal Name: *[insert full name]*
Date: *[insert day, month, year]*
JV Party Name: *[insert full name]*
EOI No. and title: *[insert ICB number and title]*
Page *[insert page number]* of *[insert total number]* pages

Similar Contract No. *[insert number]* of *[insert numberof similar contracts required]*	**Information**		
Contract Identification	*[insert contract name and number, if applicable]*		
Award Date	*[insert day, month, year, i. e., 15 June, 2015]*		
Completion Date	*[insert day, month, year, i.e., 03 October, 2017]*		
Role in Contract *[check the appropriate box]*	Contractor ☐	Management Contractor ☐	Subcontractor ☐
Total Contract Amount	*[insert total contract amount inlocal currency]*		TSHS *[insert total contract amount in TSHS equivalent]*
If partner in a JV, or subcontractor, specify participation in total contract amount	*¡insert a percentage amount*	*¡insert total contract amount inlocal currency*	*[insert total contract amount in US$ equivalent*
Employer Name: Address: Telephone/fax number: Email:	*[insert full name]* *[indicate street / number / town or city / country]* *[insert telephone/fax numbers, including country and city area codes]* *[insert e-mail address, if available]*		
Description of the similarity in accordance with qualification criteria & Requirements			

1. Amount	*[insert amount in TSHS in words and in Figures]*
2. Physical Size	*[insert physical size of activities]*
3. Complexity	*[insert description of complexity]*
4. Methods/Technology	*[insert specific aspects of the methods/technology involved in the contract]*
5. Other Characteristics	*[insert other characteristics as described in Section V, Scope of Works]*

Construction Experience in Key Activities

Applicant's Legal Name: *[insert full name]*
Date: *[insert day, month, year]*
Applicant's Party Legal Name: *[insert full name]*
Nominated Subcontractor's Legal Name : *[insert full name]*
EOI No. and title: *[insert EOI number and title]*
Page *[insert page number]* of *[insert total number]*pages

All Subcontractors for key activities must complete the information in this form as per Qualification Criteria and Requirements.

1. Key Activity No One: [insert brief description of the Activity,

	Information		
Contract Identification	*[insert contract name and number, if applicable]*		
Award Date	*[insert day, month, year, i. e., 15 June, 2015]*		
Completion Date	*[insert day, month, year, i.e., 03 October, 2017]*		
Role in Contract *[check the appropriate box]*	Contractor ☐	Management Contractor ☐	Subcontractor ☐
Total Contract Amount	*[insert total contract amount in local currency]*		TSHS *[insert Total contract amount in TSHS equivalent]*
If party in a JV, specify participation of total contract amount	*¡insert a percentage amount*	*¡insert total contract amount inlocal currency*	*[insert total contract amount in US$ equivalent*
Employer Name: Address: Telephone/fax number: Email:	*[insert full name]* *[indicate street / number / town or city / country]* *[insert telephone/fax numbers, including country and city area codes]* *[insert e-mail address, if available]*		
Description of the key activities in accordance with qualification criteria and requirements of Specific Experience	*[insert response to inquiry indicated in left column]*		

2. Activity No Two (02)
3. ……..

TENDER DOCUMENT

FOR

PROPOSED CONSTRUCTION AND FURNISHING OF MULTI-SERVICE CENTER

QATAR CHARITY TANZANIA

HOUSE NO. 22 "A" & "B" OYSTERBAY

MSASANI PENINSULA AREA

PO BOX 8504

DAR ES SALAAM, TANZANIA

APRIL 2025

PROPOSED CONSTRUCTION OF MULTI-SERVICE CENTER
TANZANIA

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QATER CHARITY - TANZANIA

PROPOSED CONSTRUCTION OF MULTI-SERVICE CENTER

QATAR CHARITY TANZANIA

HOUSE NO. 22 "A" & "B" OYSTERBAY

MSASANI PENINSULA AREA

PO BOX 8504

DAR ES SALAAM, TANZANIA

Dear Sir,

FORM OF TENDER

1. Having examined the Conditions of contract, Specifications, Drawings, and the Bill of Quantities and Addenda Nos. ……. …… for the execution of the above-named Works we, the undersigned, offer to design and execute and complete such Works and remedy any defects therein in conformity with the Conditions of Contract, Specification, Drawings, Bills of Quantities and Addenda for the fixed sum of TZS……(in words) ……..… …… ……

   ……
   ……

   ……
   ……

2. We undertake, if our bid is accepted, to commence the Works as soon as is reasonably possible after receipt of the Client's notice to commence, and to complete the whole of the Works comprised in the Contract within a period of **…….. Weeks** from the date of possession of the site.

3. We also undertake, if either tender is accepted to execute a formal agreement in terms shown in the tender documents and to obtain the guarantee of a Bank or Fidelity Guarantee Corporation (to be approved in either case by you) to be jointly and severally bound with us in the sum of 10% of the contract sum for due performance of the contract under the terms of a Bond.

4. We proposed the following bona-fide Bank/Fidelity Guarantee Corporation for your approval as sureties to be bound with us in the Bond aforesaid … …… …… …… …… ……

…… …… …… …… …… …… …..
……

5. We declare that we have complied with the Instruction to Tenderers annexed hereto and accept all thereof without reservations

6. We understand that you are not bound to accept the lowest or any tender you may receive.

Dated this ……. day of …… 2025.

Authorised Signature: _____

Name and Title of Signatory: _____

Name of Bidder: _____

Address: _____

_____

_____

INSTRUCTIONS TO TENDERERS

The Tenderer is to read carefully the instructions set out below and no claim will be entertained on the grounds of failure to read or comply with neither the instructions nor any alleged misunderstanding of their import.

1. CURRENCY

The following Bills of quantities and Form of Tender are to be priced in Tanzania Shillings.

2. TENDER DOCUMENTS:

A complete set of tender documents consists of the following: -

i) Form of Tender
ii) Instruction to Tenderers
iii) Articles of Agreement
iv) Conditions of Contract
v) Technical Specifications
v) Bills of Quantities
vi) Drawings

A complete set of tender documents may be examined by appointment during normal office hours throughout the tender period at the office of the Client.

It is the Tenderer's responsibility to examine carefully the whole of the tender documents and to satisfy him that he understands their full import severally and jointly. No claim will be entertained on the grounds that the Tenderer failed to see any of the documents.

3. TENDER INFORMATION:

a) It is the Tenderer's responsibility to obtain all the information he requires to arrive at his tender price and no claim for alteration of the tender amount will be entertained on the grounds of failure to obtain accurate information or of an alleged misrepresentation, misinformation or any verbal or written instructions or promise given by the employer other than what is allowed for in the tender documents.

b) Should there be any doubt or obscurity as to the meaning of any of the tender documents, or as to anything to be done or not to be done by the Contractor, or as to these instructions, or as to any other matter or thing pertaining to the Contract, the Tenderer must submit such doubt or obscurity in writing to the office of the Client not later than one week before the date fixed for delivery of the tender to facilitate the issue of a circular letter to all Tenderers clarifying or amending any item.

Any letter so issued will form part of the contract.

c) Save as above, no alteration whatsoever may be made in any of the tender documents. If any such alterations are made or if the bills of Quantities and/or Details of Tender are incomplete or improperly filled in the tender may be invalidated.

4. TIME FOR STARTING AND COMPLETION:

Possession of the site will be given immediately upon the issue of the letter accepting the tender unless otherwise stated and the works are to commence forthwith. The time for completion stated in the Form of tender will be calculated from the date of the letter accepting the tender unless a later date for possession of the site is given in the letter of acceptance.

5. PRICING:

The rates and prices set down by the Tenderer against the items in the Bills of Quantities are to be the full inclusive value of the finished work described thereunder and are to include for profit and all obligations and liabilities of every kind which under the Contract are to be borne by the Contractor. The Tenderer's attention is particularly drawn to the section in which provision is made for the pricing of the Contractor's general obligations. Any item not priced either in this section or elsewhere in the Bills of Quantities shall be deemed to have been allowed for in the prices inserted against other items in the Bills of Quantities.

6. ASSIGNMENT AND SUB-LETTING:

The Tenderer's attention is drawn to the Clauses in the conditions of contract, which prohibits the assignment or sub-letting of the whole or any portion of the works without the prior consent in writing or the employer or their representative. This requirement will be strictly applied and flagrant disregard of it by the Tenderer will be treated as a ground for determination of the contract. The Tenderer shall submit with his tender a list of all portions of the work he proposes to sub-let, with particulars (as far as possible) of the Sub-Contractors he proposes to employ, but the acceptance of his tender will not be regarded as implying in any way approval of his proposal for sub-letting.

7. CANVASSING:

Any form of canvassing is strictly prohibited. If a Tenderer makes any representation intended to influence the consideration of the tenders either directly or indirectly to any person officially concerned in the condition of the tender, his tender shall be disqualified.

8. FORM OF TENDER

a) The tender must be submitted on the Form of Tender provided. The tender amount is to be inserted in the words and figures in space provided and all other blank spaces elsewhere in the Form of Tender must be filled in with the information required.

b) The Tenderer is asked to state the time he requires to complete the contract and he must insert in words the number of weeks or months he requires.

c) The Tenderer must be signed by the principal of the firm or by a person authorized for the purpose and the registered name and address of the Contractor must be printed in block letters or typed in the space provided. No tender that is incompletely or improperly filled in will be considered.

9. CONDITIONS OF LABOUR

The Tenderer's attention is drawn to the requirement in the conditions of contract to comply with all regulations, rules or instructions concerning conditions and terms of employment of any class of employee.
Also the Tenderer is reminded to comply with all regulations and rules which governing operations with the Plant.

10. LIST OF PC ITEMS FOR WHICH THE CONTRACTOR DESIRES TO TENDER

If the Tenderer in the ordinary course of his business, undertakes works for which prime cost or provisional sums are included in the contract and he desires to tender for the same he must submit with his tender list of such items for which he desires to tender.

11. DELIVERY OF TENDERS:

a) Tenders must be delivered in the envelope properly sealed and with no external instructions or mark of identification except the name of the work.

b) The envelope shall contain all the tender documents supplied to the Tenderers except for any drawings, which are to be returned to the office from which they were issued.

c) Tenders delivered after the time stated will not be considered.

12. VALIDITY OF TENDER

The tender shall remain a valid offer open for acceptance at any time up to four months from the date of submission unless previously withdrawn in writing by a letter to the Employer.

13. THE EMPLOYER ACCEPTS NO OBLIGATIONS

a) The Employer will not reimburse a Tenderer for any costs incurred in the preparation of the tender.

b) The employer does not bind himself to accept the lowest or any tender and will not assign any reason for the rejection of any tender.

14. CONDITIONS OF CONTRACT

The Contract agreement will be executed based on the Agreement and Schedule of Conditions of Building Contract (with Quantities) published by the National Construction Council, 2000 Edition.

15. INSURANCE AND BOND:

The Tenderer's attention is drawn to the requirement of the conditions of contract to comply with Insurance clauses 23 and Performance Guarantee Clause 37.

No payment will be effected without the procurement of the said policies.

Furthermore, in case of the Tenderer's requesting advance payment, no advance payment will be effected without advance recovery bond as per Clause 36.1 of the Conditions of Contract.

16. PAYMENT

The payment shall be made after 14 days from the date Payment Certificate presented to the Employer

17. Correction of Errors

17.1 All Tenders will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:

(a) Where there is a discrepancy between the amounts in figures and in words, the amount in words will govern; and

(b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern, unless in the opinion of the Employer there is an obviously gross misplacement of the decimal point in the

unit rate, in which case the line item total as quoted will govern, and the unit rate will be corrected.

17.2 The amount stated in the Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and, with the concurrence of the Bidder, shall be considered as binding upon the Tenderer. If the Tender does not accept the corrected amount, the Tender will be rejected

SPECIFICATIONS

EXCAVATION AND EARTHWORK
LIST OF CLAUSES

EXCAVATION AND EARTHWORK

DEFINITIONS

A.1 **Removing trees, hedges and the like**

The removal from site of trees, stumps and roots, hedges, bushes, scrub, undergrowth and the like shall be deemed to be included with the items for cutting down and grubbing up roots.

A.2 **Surface level**

The term "Surface level" shall mean the ground level after clearing site.

A.3 **Clearing site**

The description of clearing site shall be deemed to include clearing and removing from the site of all loose debris and rubbish, bushes, scrub, undergrowth, vegetation and small trees (i.e. not exceeding 600mm girth) and grubbing up their roots.

A.4 **Rock**

The term 'rock' shall mean any natural material, which cannot be dislodged by a pick and which can only be removed by the use of compressors or by blasting or wedging. This classification does not include materials such as loose rock, concrete or other materials that can be removed by means reasons of economy in excavating, the Contractor prefers to remove by drilling and wedging.

Unless specifically stated hereafter, the contractor must assume that permission to use explosives to remove rock will be refused and he must therefore price for removing rock by compressors etc. only.

GENERALLY

A.5 **Levels**

The levels shown on the various drawings relate to the ground floor finished floor levels.

The Contractor shall be responsible for setting up and maintaining a site datum level accurately ascertained from this work. Immediately following the issue of the Odder to Commence, the Contractor shall carry out and record a check level grid of the site which shall be agreed between the Architect and the Contractor within one week of the above Order being given; no alteration of levels shall be undertaken until agreement has been reached and the Architect's instructions have been received.

A.6 **Bore holes and nature of the soil**

It will be deemed that the Contractor has inspected the drawings and site and has consulted all available information concerning subsoil conditions before submitting the Tender. In making information available on subsoil conditions, the Employer does not in any way absolve the Contractor from his responsibilities, nor is it guaranteed that similar conditions apply to any specific part of the site.

A.7 **Unauthorized excavations**

The Contractor is prohibited from making excavations other than those approved by the Architect as necessary for the works.

A.8 **Borrow pits**

No borrow pits will be allowed to be opened on the Site.

A.9 **Blinding**

Blinding shall be of the same material as the hardcore bed, crushed and graded from 4mm upwards, free from clay, chemical or other pollution, pests, weed roots and rubbish.

A.10 **Hardcore**

Hardcore shall be good, clean, hard, broken stone broken before placing to pass a 100mm ring and free from all rubbish.

A.11 **Approved filling for filling under floors**

Approved filling for filling under floors shall be clean, dry pit or river sand excavated material or subsoil free from clay, roots and any impurities.

A.12 **Soil for backfilling around foundations**

Soil for backfilling around foundations shall be dry, clean subsoil free from clay, vegetable soil, roots and rubbish.

WORKMANSHIP

A.13 **Generally**

The Contractor shall control the grading around the building so as to prevent water running into excavated areas or into completed sections of the works.

A.14 **Removal of obstructions**

In the event of any derelict foundations, walls, slabs, kerbs, etc., being discovered upon the site of the works, they shall, if below new foundations be completely removed to a level of 150mm below the level of the excavation indicated on the drawings. For graded or planted areas any such obstruction shall be removed to a depth of 600mm below the finished grade.

Filling voids caused by removal of such obstructions shall be executed in accordance with Clauses A.20 herein.

A.15 **Bottoms of excavations to be approved**

The Contractor shall give the Architect at least 48 hours notice (this time shall be doubled if the site of the works is more than 100 kilometres from the nearest permanent office of the Architect or Engineer) when the excavations will be ready for inspection. The bottom of every excavation will be inspected by the Architect and the level thereof agreed between the Architect and the Contractor. If a good bearing bottom is not obtained at the level shown the Architect is to be informed. No concrete is to be laid until the bottom has been approved and the level thereof taken. Any concrete work or other work done before such approval shall, if so directed be removed and new work substitute after excavations have been approved, all at the Contractors expense. Notwithstanding such approval, any bottom, which becomes waterlogged or otherwise spoilt after approval, shall be cleaned out and reformed to the Architect's approval before any concrete is placed.

A.16 **Disposal of excavated material**

Vegetable soil shall be spread and levelled where directed by the Architect on site. Surplus excavated material where directed or required shall be removed from the site to a tip, the location of which shall first be approved by the Architect in writing. All fees and charges in connection there with shall be deemed to be included in the Contract Sum.

A.17 **Excavation below required levels**

Should any excavation be taken below the required levels or the depths necessary to obtain a suitable bottom, the Contractor will be required to fill in the excavation to the proper level with concrete of the same specification for the foundations at his own expense.

A.18 **Timbering, planking and strutting, etc.**

The Contractor shall provide all necessary timbering, planking and strutting, etc., to uphold the faces of excavations, which shall only be removed when it is safe to do so.

A.19 **Timbering, planking, strutting, etc., left in**

Where the Architect instructs or agreed that it is necessary for the safety of the works to leave in certain timbering, planking and strutting, etc., such timber shall be measured and agreed before covering up.

A.20 **Filling**

Return filling around foundations and filling to make up levels under floors and pavings shall not be deposited until the formation level had been approved by the Architect. In no case shall fill be deposited on a muddy formation. Filling shall be deposited in layers not exceeding 250mm in depth before compaction and shall be compacted by rolling, pneumatic tamping or other approved means over the whole of the area. If necessary the filling shall be allowed to dry or be moistened to the correct moisture content before compaction. The finished surface shall be approved by the Architect prior to further construction work thereon.

The Contractor shall afford every assistance to the specialist executing site sterilisation to enable each layer to be treated separately.

Filling around foundations in layers shall not proceed without each layer being so treated.

No excavation or foundation work shall be filled in or covered up until all measurements necessary for the adjustment of variations have been made. Walling shall not be built upon the foundations until four days after depositing of concrete.

A.21 **Consolidation of hardcore**

Hardcore shall be consolidated with a roller, vibrating roller, or mechanical punner to a compaction equivalent to that obtained with a 2.5 to 3 tonne roller, care being taken that no damage is done to the foundation walls.

Hadcore shall be blinded and have the interstices filled to receive concrete beds and the like with blinding as described herein. Before placing concrete hardcore beds shall be well watered though a sprinkler rose, and rolled, to prevent water absorption from the concrete.

Where described as blinded to receive building paper or polythene or any other membrane the blinding shall be finished and compacted with fine material which will not cause the membrane to puncture under wheel or foot traffic or by the placing or concrete thereon.

A.22 **Existing services**

Active existing services shall be adequately protected from damage. Where active services are encountered but not shown on the drawings, the Architect shall be advised, and subsequent protection, support or relocation shall be as directed by him.

A.23 **Protection**

The Contractor shall protect all graded and filled areas from the actions of the elements. Any settlement or washing that occurs prior to acceptance of the works shall be repaired and graded re-established to the required elevations and slopes.

A.24 **Anti termite treatment**

Anti termite treatment shall be carried out using 'Aldrin' or other chemical approved by the Architect in writing, diluted to a water emulsion containing a minimum of 0.50% of the chemical.

The treatment shall be applied to the whole area of the hardcore bed immediately prior to the placing of the concrete floor slab at the rate of 7 litres per square metre, and to the backfilling on both sides of all perimeter walls, at the rate of 80 litres per cubic metre of backfilling. Each compacted layer of backfilling shall be separately treated.

Treatment shall not be applied whilst it is raining or to surfaces of backfilling which are wet.

The Contractor's attention is drawn to the facto that 'Aldrin' is toxic to animal and human life, and he shall prevent contamination of water supply systems, shall cover up and protect treatment areas immediately after treatment and post written notices informing of the treatment at prominent points on the site of the building.

Immediately following treatment, the Contractor shall provide to the Architect for onward transmission to the Employer, a written five year guarantee which guarantees:

(a) That the chemical used complies with this specification and has been used in the concentrations stated herein,

(b) That the guarantee shall be continuous for a period of five years from the date of treatment,

(c) That should infestation by any termites appear before the end of the five year period, the Contractor will return and retreat as necessary to eliminate the infestation entirely and at his own cost on eachoccasion that infestation appears within the five year period,

The Contractor shall carry out annual inspections commencing three months after treatment and continuing to the end of the guarantee period to ascertain the presence be found, the Contractor shall retreat as necessary to eliminate any infestation entirely and at his own cost on each occasion that infestation is found.

A.25 **Method of measurement**

The prices throughout this Document are to include for digging in any type of ground including loose or compacted hardcore, rubble debris and the like, roots, or normal obstructions, with the exception of rock as defined herein and excluding any existing foundations, walls and similar hard substances. The Contractor must give notification to the Architect or his representatives as soon as he considers rock as defined herein or existing foundations are encountered so that its extent can be agreed with the Architect, Clerk of Works, or Quantity Surveyor before the work is carried out or covered up. Payment for such excavation will not be allowed unless this procedure is followed.

The foundation and removal of temporary spoil heaps and multiple handling or excavated material shall be deemed to be included in the prices for returning excavated material around foundations, earth filling and removing surplus excavated material from site.

Excavation for plain concrete foundations has been measured to the nett sizes required by concrete dimensions. Formwork has been measured to the sides of all reinforced concrete foundations or bases, together with the necessary working space allowance required under the provisions of S.M.M. Clause D5(f). Should the Architect direct or approve the pouring of concrete to reinforced foundations or bases against the face of excavations, such adjustment will be measured and valued in accordance with the Conditions of Contract.

Rates for excavation shall be deemed to include for levelling, trimming and compacting bottoms and any additional excavation required for planking and strutting

CONCRETE WORK
LIST OF CLAUSES

QUALIFICATIONS OF THE RULES OF THE S.M.M.

DEFINITIONS

GENERALLY

MATERIALS

WORKMANSHIP

CONCRETE WORK

QUALIFICATIONS OF THE RULES OF THE S.M.M.

B.1 **Beds or the like laid in bays**

Notwithstanding the provisions of S.M.M. Clause B.5(c), the descriptions of work laid in bays shall be deemed to include formwork between the bays.

B.2 **Steel bar reinforcement**

Notwithstanding the provisions of S.M.M. Clause B.16(b) and B.17(a), the descriptions of steel bar and fabric reinforcement shall be deemed to include bends, hooks, tying wire, distance blocks and ordinary spacers, unless otherwise described.

B.3 **Wrought formwork**

Notwithstanding the nomenclature of S.M.M. Clause B.19(f), formwork required to produce fair concrete surfaces is herein qualified by a description of the finish required.

B.4 **Formwork to grooves, chases, chamfers and mouldings**

Notwithstanding the provisions of S.M.M. Clause B.23(b), the descriptions of formwork shall be deemed to include forming chamfers not exceeding 50mm wide and forming splayed internal angles not exceeding 25mm wide.

B.5 **Making good**

Notwithstanding the provisions of S.M.M. Clause B.50 the descriptions of holes and mortices shall be deemed to include making good concrete.

DEFINITIONS

B.6 **Designations of concrete mixes**

The various mixes of concrete are designated in the subsequent measured items by the following criteria:-

Nominal mixes: By the weight proportions of whole bags of ordinary Portland cement to fine and coarse aggregates and by the maximum size of coarse aggregate. The Contractor shall regularly submit details giving specific gravities and moisture content of aggregate.

B.7 **Tamping**

The term "tamping" as used herein in conjuction with the phrase "treating surfaces of unset concrete" shall mean the final compaction and surface finish to be applied to unset concrete beds, or the like, with a steel shod beam tamper, either manually or mechanically operated unless otherwise stated. The resulting surface finish shall have a slightly ribbed appearance.

B.8 **Keying**

The term "keying" as used herein in conjunction with the phrase "treating surfaces of unset concrete" shall mean the preparation of beds, or the like, to receive in-situ pavings by raking with a standard horticultural rake whilst the concrete is still green and when the concrete is set and cured, protecting the raked surfaces with a layer of clean sand and removing the sand immediately before the in-situ paving is laid.

B.9 **Precast concrete units**

Unless otherwise described in the measured items, Precast concrete units are deemed to be basically rectangular in cross section and rough on exposed faces. Reinforcement bars shall have hooked ends. Bedding and pointing mortar shall be either cement-sand or cement-lime mortar, as appropriate, and units shall be deemed to be fixed by hoisting, bedding and building in unless otherwise described.

Nominally non-reinforced units shall contain any reinforcement the Contractor may wish to introduce for handling purposes.

GENERALLY

B.10 **Standards**

The whole of the concrete works and testing thereof shall comply with BS 8110 parts 1, 2 &3 and with the subsequent clauses of this Document and shall be carried out in strict accordance with the working drawings and instructions of the Architect and or the Consultant Structural Engineer.

A competent person shall be employed whose first duty it will be to supervise all stages in the preparation and placing of the concrete. All cubes should be made and site tests carried out under his direct supervision. This person shall also be responsible for keeping an accurate record of the dates on which concrete is poured.

B.11 **Bar bending schedule**

The Consultant Structural Engineer will prepare and provide all necessary bar bending schedules and explanatory details.

MATERIALS

B.12 **Samples**

Samples of all materials are to be submitted for approval of the Architect at least one week before it is desired to commence deliveries. All condemned materials are to be removed from the site within 24 hours.

B.13 **Cement**

Cement shall comply with British Standards as follows:-

Portland cement	-	BS EN 197-1:2011
Rapid hardening cement	-	BS EN 197-1:2011

Except as regards the addition of colorant to BS 1014 which should not exceed 5% of cement by weight.
Sulphate resisting Portland cement shall comply with BS 4027.

Rapid hardening cement may be used inlieu of ordinary Portland cement only with the prior approval of the Architect or Engineer provided that all conditions applying to its use are strictly observed. Any additional expenses in connection with the use of such cement shall be borne by the Contractor.

The use of high alumina cement will not be permitted. All cement shall be delivered to the site in sealed bags bearing the mark of the manufacturer. Re-bagged cement, cement in plain bags and cement in torn bags will not be allowed on the site.

Each consignment of cement shall be accompanied by the manufacturer's certificate showing that a representative sample of the consignment has been tested and complies with the appropriate specification. From time to time as requested by the Architect/Engineer, copies of the cement manufacturer's test certificates shall be delivered to the Architect/Engineer or his representative on the site promptly, but such documents shall not preclude the

Architect/Engineer from rejecting any cement which does not in every way comply with the specification.

Any cement which has failed to pass the tests or has been damaged by water or contaminated in any way on site shall immediately be put into bags and removed from the site.

B.14 **Aggregates**

Aggregates shall comply with British Standards as follows:-

Fine	-	B.S. 882 Table 2 Zones 1 to 3 only
Coarse	-	B.S. 882 Table 1
"All in"	-	B.S. 882 Table 3

Each type of aggregate shall be obtained from one approved source, capable of maintaining adequate supplies of consistently graded material throughout the Contract. Aggregates for exposed concrete shall be free from all impurities likely to cause discoloration and shall be on consistent color throughout the work.

Fine aggregates and sand shall be clean, sharp, coarse, hard material and equal at all times to the samples which shall be deposited with and approved by the Engineer. The caustic soda test for organic impurities shall show a color not deeper than that of the standard solution. The settling test for natural sand shall be made and after being allowed to settle for three hours the layer of silt deposit on the course material shall not exceed 10%.

The Contractor shall supply all necessary equipment for the testing of fine aggregates and sand for the use of the Engineer.

Coarse aggregates shall be hard, clean gravel or broken stone from approved quarries and shall be free from earth, decomposed stone, and extraneous matter. They shall conform to B.S. 882 Table 1 and shall be "Graded Aggregate" 19mm to 5 mm. Thin, elongated, friable, flaky or laminated pieces, mica or shale shall only be present in such small quantities as not to effect adversely the strength and durability of the concrete. The amount of fine particles occurring in a free state or as loose adherent shall not exceed 1% when determined by the laboratory sedimentation test. After twenty-four hours in water, a previously dried sample shall not gain more than 10% in weight.

Each grade of aggregate shall be stored in the works in separate heaps so that there shall be no possibility of any inter-mixing. Any materials which have become inter-mixed shall be removed from the site forthwith by the Contractor.

If, in the opinion of the Engineer, the aggregate is dirty or adulterated in any manner, it shall be washed and/or screened by the Contractor to the satisfaction of the Engineer.
Graded samples of all types of aggregate each weighing 10kg, shall, after approval, be kept on site behind glass for visual checking of subsequent deliveries for grading, shape, and where applicable colour.

B.15 **Reinforcement**

Reinforcement shall comply with the following standards:-

(a) Mild steel rod reinforcement shall be hot rolled grade 250 complying with B.S. 4449.

(b) (i) Hot rolled deformed high tensile bars having a guaranteed minimum yield stress of 410 Newtons/sqmm
and other physical properties complying with BS 4449.

Or

(ii) Cold worked steel bars complying with BS 4461.

(c) Welded steel fabric reinforcement shall comply with B.S. 4483.

All reinforcement shall be in the "diameter" and metric range and the substitution of "square twisted" or imperial range shall be allowed but only at no extra cost to the Employer.

The Contractor will be required to submit at his own expense certified test data of the following characteristics; ultimate tensile stress, yield point stress, elongation, could bend test. Should such certificates not be submitted by the manufacturer, the Contractor shall have the requisite tests made at his own expense at an independent testing laboratory.

B.16 **Expansion joint materials**

Expansion joint materials shall be "Flexcell" or other approved bitumen impregnated fibreboard.

B.17 **Expansion joint sealer**

Expansion joint sealer shall be "Sealastik" or other approved cold, gun or knife-applied mastic, or "Plastijoint", or "Pliastic" grade 88 applied hot. All manufactures by expandite Ltd. All sealers shall be applied strictly in accordance with the manufacturer's instructions.

B.18 **Wall ties**

Where block walls abut columns or solid concrete walls two 6mm diameter steel reinforcement bar ties are to be cast into the concrete at vertical intervals of 450mm. Ties to be 300mm long and project 150mm into blockwork.

B.19 **Water**

Water shall be from the mains and kept free of any impurities and acid or alkaline substances in suspension or in solution, and shall be stored in proper storage tanks to the approval of the Architect.

B.20 **Storage of materials**

Cement shall be kept dry and used in rotation of deliveries. If delivered in bags these shall be stored off the ground in a well ventilated and weatherproof shed used exclusively for this purpose.

The shed is to be sufficiently large to contain a working stock and provided with partitions or such other means as may be necessary, to ensure the effectual separation of the various consignments and type of cement. Stacking of cement in bags over a height of ten bags will not be permitted. Cement may be delivered in bulk containers provided additional suitable arrangements are made for bulk storage on site to the approval of the Architect/Engineer.

Aggregates shall be stored at mixer positions on drained concrete paved areas, with stout dividing wall between different sizes and types of aggregates. It shall be allowed to stand for at least 24 hours before being used.

Reinforcement shall be stored by type, size and length, either off the ground or on clean surfaced areas, and shall be kept free from rust.

B.21 Proportion of concrete mix

The quantity of cement shall be measured by weight and each batch of concrete is to use one or more whole bags. The quantity of fine aggregate and coarse aggregate shall be measured separately by weight batching plant. Volume mixing will not be permitted.

For grading tests the Contractor shall supply and deliver at his own cost to the Nominated Testing Authority, samples of the aggregates which the Contractor proposes to use, consisting of not less than 50 kilograms weight in coarse aggregate and not less than 25 kilograms weighting fine aggregate. It is the Contractor's responsibility to ensure that the subsequent deliveries of aggregate conform to the grading analysis of the approved samples.

The proportions of materials to be used for the preliminary cube tests, and subsequent batching, shall be ascertained by calculation from the results of the aggregate grading tests carried out by the Nominated Testing Authority.

Preliminary concrete cubes shall be made by the Contractor on site, as required by the Engineer, and tested by the Nominated Testing Authority. As a result of these tests definite weights of each material for batching shall be ascertained and agreed with the Engineer. Thereafter these proportions shall be adhered to throughout the works and may be varied only by instructions given by the Engineer.

The weights of damp aggregates must be adjusted to take into account the weight of water in the aggregates, and this in turn will affect the amount of water to be added to the mix.

Throughout the carrying out of the Contract, "Works Cube Tests" are to be made from concrete drawn from newly laid concrete or concrete about to be placed in position, such cubes being made when directed by the Engineer and in his presence. Such cubes shall be made in 150mm cube steel or cast iron moulds and shall be marked and cured strictly in accordance with the Appendices of the Code of Practice, and shall be forwarded carriage paid in time for testing at the required age to a testing laboratory to be nominated by the Engineer.

Four cubes shall be made on each occasion, concrete for each cube being from a different batch. Two cubes shall be forwarded in time for testing at the age of seven days from casting and two cubes in time for testing in twenty eight days. Each cube shall be marked with the date of casting and a distinctive reference number in accordance with a system agreed by the Engineer.

A record shall be kept of the position from which the concrete for each set of cubes was drawn, or to which it was about to be placed.

At least three sets of cubes shall be cast during each week concrete is being cast including sets of cubes for each quality of concrete used during the period.

Concrete is required to have the properties and give the strength in Newtons per square millimetre as follows:-

Class	**Quality**	**Mix size of coarse aggregate**	**Max. water cement ration by weight**	**Min. crushing strength of Works Test Cubes**	
31.5/20	1:1:2	20 mm	0.45	7 days	28 days
26.5/20	1:1.5:3	20 mm	0.50	23	31.5
21/20	1:2:4	20 mm	0.58	19	26.5
21/13	1:2:4	13 mm	0.58	15.5	21
13.5/25	1:3:6	25 mm	0.60	15.5	21
1:4:8	1:4:8	40 mm	0.60	9	13.50
1:10	1:10	"All-in" aggregate		-	-

The above properties and crushing strengths are to be considered as the minimum standard that will be accepted in the finish at works. The average crushing strengths should be least 15% higher than the minimum permissible values given in the above table.

If the strengths required in the table are not attained and maintained throughout the carrying out of the contract, the contractor will be required to increase the proportion of cement or substitute better aggregates at his own cost so as to give concrete which does comply with the

requirements of this clause. The contractor may be required to remove and replace at his own cost any concrete which fails to attain the required strength as ascertained by the Works Cube Tests.

B.22 **Testing of materials generally**

The Contractor shall include in his Tender prices for the execution of his part of operations specified for testing herein and for supply of the requisite equipment; After initial testing and approval of materials, it is the Contractor's responsibility to ensure and to demonstrate by the submission of further similar samples when so required that subsequent deliveries conform to the quality, grading and (where applicable), colour of the approved samples.

B.23 **Testing of cement**

Before work commences and when subsequently directed, the Contractor shall take 6kg samples, in accordance with B.S. 12 procedure, of cement and deliver these in tins approved by the Engineer to an approved Testing Laboratory for testing.

Each consignment of cement to the site, which shall be accompanied by the manufacturer's advice note and forwarded without delay to the Engineer, shall be delivered to the site at least 7 days before it is intended to be use in the works so that the required tests may be carried out without retarding the progress of the works.

B.24 **Testing of aggregate**

Before work commences and when subsequently instructed, the Contractor shall take site samples, by methods given in B.S. 812 and deliver these to the nominated Testing Authority for testing.

B.25 **Testing of reinforcement**

Should the Engineer require reinforcement to be tested, it shall be tested at the Contractor's expense and representative test pieces of such reinforcement to be used in the works are to be sent to an approved laboratory for testing.

Manufacturer's test reports of reinforcement shall be supplied to the Engineer for all reinforcement to be used in the works.

If such tests reveal the steel not meeting the specified standards, the Contractor will carry out the rectifications in the reinforcement to the direction of the Engineer at his own expense.

B.26 **Testing of concrete in the field**

(i) **Trial mixture**
Prior to the commencement of the actual concerning work, a trial mix of the required concrete, as described herein shall be made by the Contractor and tested by an approved laboratory at the Contractor's expense, in order to check and establish the actual working crushing strength of the required concrete mix.

(ii) **Workability**
The total water content in the mixture determines its consistency and once a consistency of a trial mix has been approved it must remain constant throughout the Contract.

In order to help the concrete maintain the desired consistency the slump of an approved trial mix shall be measured, thereafter all mixes must give the slump as the approved trial mix. The slump shall be determined by test as described in B.S. 1881 Parts 102-104,106,107 and DD 83 Part 2. In general the approved slump shall be in the order to 75mm for hand compacted concrete and 35mm for vibrated concrete.

The slump test shall be made on concrete actually being placed in the works at the commencement of each period of concrete placing and at such other times as instructed.

(iii) **Testing specimens**

The moulds for test cubes shall be of metal and true to shape to give a 150mm cube and shall be well oiled before filling. The mould shall be filled with concrete taken from that actually placed in the works, the concerted being selected by the Engineer from a point as near as possible to the position of placing. The filling of the moulds shall be done immediately after the selection of the sample concrete and in such away that the concrete in the moulds be truly representative of that in the works.

The Concrete shall be placed in the moulds in three layers of equal thickness, each layer being rammed with 25 strokes of a steel bar 40mm diameter, (or equivalent), weighing 2kg. If the concrete in the works be consolidated by mechanical vibration, the test cube moulds shall be likewise vibrated after filling. Each cube shall be inscribed with the date of manufacture and identification mark.

A record shall be kept for each batch of cubes showing the position in the works which the concrete represents, the date of manufacture, the mixture and slump of the concrete, particulars of the cement and aggregate used, a statement of whether or not the cubes are vibrated and other information relating to the subsequent history of the cubes.

The moulds containing the test cubes shall be stored for 24 hours on the site in a damp lace free from vibration. At the end of this period the cubes shall be taken from the moulds and stored in damp sand for 20 days if they are to be tested at 28 days or for 4 days if they are to be tested at 7 days.

The Contractor shall be instructed about the despatch of the cubes to an approved laboratory and will pay all costs relating to the tests. A set of four cubes will be required for not more than every 60 cubic metres of concrete placed in the works.

(iv) **Quality of specimens**

The test specimens shall have the compressive strength specified for each quality of cement at the appropriate age as given herein.

If the required strength is not obtained at 28 days, the Contractor will be required to cut out and reconstruct all work represented by the test specimen at his own expense with all despatch, always provided that the Engineer may first permit further tests, at the Contractor's expense, to prove the quality of the deposited concrete.

In the case of seven day Works Cube Tests proving unsatisfactory, the work may be stopped, but shall not be liable to rejection until the result of the twenty eight day test is known.

In the event of the results of the twenty eight day Works Cube Tests proving unsatisfactory, the work represented shall be immediately liable to rejection. The Contractor may, however, be given the option of cutting three specimens from the completed work subject to the direction of the Engineer, and preparing there from test cubes or cores which shall be sent to the Testing Laboratory for testing as for Works Cube Tests.

Should the average strength of these specimens attain the specified minimum twenty eight day strength, the work will, subject to the Engineer's discretion, be accepted. Alternatively, the Engineer may instruct the Contractor to make a loading test as described hereinafter. The cost of all cutting, preparation of specimens, testing and making good the portions of the structure affected shall be borne by the Contractor. The cost of all delays on site due to concrete not attaining the desired strength, or

caused by investigation of defects, cutting away and making good, shall be entirely the Contractor's responsibility.

B.27 **Damaged or unsatisfactory materials**

All materials which have been damaged, contaminated or have deteriorated, or which do not comply in any way with the requirements of the specification, shall be rejected and shall be immediately removed from the site.

No materials shall be stored or stacked on suspended floors without Engineer's prior approval.

Should any of the samples tested be found, in the opinion of the Engineer, in any respect unsatisfactory or likely to produce unsound work, the whole parcel, consignment or load from which samples were taken will be rejected, and the Contractor shall forthwith remove it from the site. Notwithstanding that any sample of the material may have passed the test, the Engineer may later reject such parcels, consignments or loads if he shall decide that the quality has deteriorated.

The Contractor at his own expense shall remove from the site, without delay, all rejected material. Any delay caused by such rejection will not in any way relieve the Contractor from his responsibility with regard to the completion within the time limit(s) specified. Any bag of cement that it opened shall be used on the same day or be discarded from the work.

WORKMANSHIP

B.28 **Plant and method**:

Before the commencement of any work, the Contractor shall submit the following for the Engineer's written approval:-

(i) The concreting method, including the size and type of machines for weighing and mixing concrete and the methods of transporting, placing and compacting.

(ii) Details of formwork proposals, clearly indicating the general method of construction and assembly, the methods of achieving surface finishes required herein, including linings, fixing of linings together with positions of joints and the make and type of mould oil proposed.

(iii) The proposed position and type of every construction joint not already shown on the Engineer's drawings.

Such approval by the Engineer shall not be deemed to relieve the Contractor of his obligations to comply with any of the provisions herein.
Concrete mixing and discharge from mixers shall be under permanent cover to the Engineer's approval.

B.29 **Measurement and mixing**

All cement is to be measured by weight, the 50kg bag of cement being used as a unit.

The amount of water shall be the minimum required to produce a dense cohesive concrete of adequate workability, to be determined by trial mixes. This amount shall be accurately gauged and adjusted from time to time to compensate for variations in moisture content of the aggregate by an approved method.

All concrete shall be mixed in a batch type mechanical mixer of approved type having a drum rotating about a horizontal or include axis. The speed of the drum is to be not more than twenty and not less than fourteen revolutions per minute.

Each mixer is to be fitted with a water measuring device capable of accurate measurement to five litres for one cubic meter mixers and prorate for smaller sizes and so arranged that the accuracy is not affected by variations in the pressure of the water supply line. The fine and coarse aggregate and the cement shall be mixed for at least four turns, after which the required amount of water shall be added gradually while the mixer is in motion and the concrete mixed for not less than one and a half minutes to uniform colour and consistency.

The volume of concrete mixed in any one batch is not to exceed the rated capacity of the mixer.

The whole of the mixed batch is to be removed before materials for a fresh batch enter the drum.

Concrete as mixed in accordance with the foregoing shall not be modified by the addition of further water or in any other manner. On the cessation of work, including all stoppages exceeding twenty minutes, or any change of type of cement used in the mix, the mixers and all handling plant shall be washed out with clean water.

At least one slump test shall be made each day concreting is in progress, under the supervision of the Engineer.

B.30 **Reinforcement**

Reinforcement shall be free from all loose mill scale, loose rust, oil, grease or similar defects, immediately before placing the concrete. It shall be bent cold exactly to detail using an approved bending machine. Hooks, bobs, bends, etc., where not, specifically detailed, are to be in accordance with B.S. 4466. Each bundle of bent bars shall be clearly tagged with the bar list number.

Reinforcement shall be placed in the exact position shown on drawings with all inter-sections tack welded or securely tied with 16 gauge soft iron tying wire. The designated cover shall be maintained by approved spacers, chairs, bolsters or ties fixed to the reinforcement. These shall be dense concrete left with a wire brushed surface or be dipped in grout before fixing. These blocks are particularly important where the surface of the concrete is exposed to the weather or dampness. The Contractor must ensure that the bars are securely fixed so as to maintain their indicated positions during the progress of pouring, tamping or vibration of concrete. Six chairs are to be provided around each column to hold top steel in position and chairs are to be made up of mild steel bars of adequate diameter. The cost of providing and fixing these steel chairs must be allowed for by the Contractor in his rates for reinforcement generally. No laps or splices in bars shall be made except those detailed on the drawings without prior approval of the Engineer.

The size and position of the reinforcing bars or mesh shall be approved by the Engineer before concreting commences. The insertion of reinforcement into concrete already placed, the lengthening of bars by welding and the re-bending of incorrectly bent bars will not be permitted.

For concrete having exposed surfaces, reinforcement shall be assembled and placed in such a manner as to avoid any damage to formwork faces.

Where reinforced concrete slabs or walls are constructed against tanking, care shall be taken in positioning reinforcement to avoid damage to tanking.

Unless otherwise shown upon the Engineer's drawings, or specified in BS 8110, the reinforcement bars shall be given the following cover to concrete.

In floor slabs, walls and similar thin panelling, a cover of 15mm, or the size of the bar, whichever is the greater. In beams and other such members, a cover of concrete of 25mm to the main reinforcement, or the size of the bar, whichever is greater.

In foundations and column bases, a cover of 50mm to main reinforcement, or the size of the bar, whichever is greater.

B.31 **Inspection of reinforcement**

When the placing of the reinforcement for a particular section of the works is completed and before concreting commences, the reinforcement will be inspected by the Engineer and no concrete shall be placed until the Engineer's approval has been given. The Contractor shall give the Engineer 48 hours notice of the time when the reinforcement will be ready for inspection. Where the distance of the site of the Works is more than 100 kilometres from the nearest office of the Engineer, this time shall be increased to 96 hours.

B.32 **Formwork**

Formwork shall be true to line, level, face and profile and be of robust construction adequately framed, braced, strutted, cramped, tied and propped to restrict deformation due to constructional loads to not more than 3mm, and to entirely eliminate deformation of the form faces by warping or buckling. Wire ties will not be permitted. Formwork shall be grout-tight under all conditions including vibration when specified or used.

Formwork shall be designed to allow prefabrication of conveniently sized elements to facilitate ease of handling and assembly, to permit striking without force shock or any damage whatever to the concrete member or formwork face and to permit the removal of sides without disturbing soffits and soffits without disturbing necessary props. Propping shall be carried down to an approved bearing, shall not be supported by timber floors and shall be arranged that formwork may be lowered smoothly.

Re-propping will not be permitted. Provision shall be made for cleaning out and draining.

Formwork shall be constructed of material or lined with material as may be necessary to achieve the finishes specified herein and in such a manner as to eliminate screw or nail imperfections.

Before each use, form faces shall be treated with the minimum amount of an approved mould oil necessary to obtain a clean release. Mould oil shall not come into contact with the reinforcement.

The use of cement retarders will not be permitted except where a key for other finished is required.

Before placing of the concrete, bolts and fixings shall be in position and cores and other devices used for forming openings, holes, pockets, recesses, ducts or other cavities shall be fixed to the shuttering.

Immediately prior to concreting, formwork shall be thoroughly cleaned out and re-checked. No placing shall commence until the Engineer has inspected the formwork and given his consent for concreting to proceed, but such consent shall not relieve the Contractor of his responsibility for its sufficiency. After striking formwork shall be cleaned, stacked and protected and before re-use shall be serviced, made good or replaced with new as may be necessary to maintain the finish and standard specified.

B.33 **Tolerances**

The maximum tolerances within which concrete work shall be constructed and as follows:-

1.	All setting out dimensions, and dimensions, and dimensions horizontally and vertically	+/-	5mm
2.	Sections of concrete membes	+/-	3mm
3.	Levels of floor slabs, beams, lintels etc. (top and bottom)	+/-	5mm
4.	Plumb of columns and walls in storey height	+/-	5mm

5.	Plumb of columns and walls in full building height	+/-	20mm
6.	Inside faces of lift shafts in storey height	+/-	5mm
7.	Inside faces of lift shafts in full building height	+/-	15mm
8.	Concrete cover to reinforcement	+/-	3mm

No surface intended to be horizontal or vertical shall slope more than 2mm in 1metre.

Any rectification of work not constructed within the tolerance set out above, shall be entirely at the responsibility and expense of Contractor.

B.34 **Placing and compaction**

No traffic whatsoever, wheeled or foot, shall take place over reinforcement or placed concrete and the Contractor shall provide all necessary stools, walkways, platforms and barrow runs. Concrete shall be placed in its final position as rapidly as practicable by methods which preclude segregation or loss of ingredients and in any case, without 30 minutes from the time that water is added to the mix; compaction shall be completed before initial set commences. Partially set concrete shall not be re-worked or used. "Flowing" in formwork shall be avoided by placing and compacting in shallow layers in quick succession.

Concrete shall be placed into the forms as less a height as possible and shall in no case be dropped from a height of more than 1500mm except with the approval of the Engineer.

When chuting is used, the inclination of the chute must be such as to allow the concrete to flow without the use of excessive water and without segregation or loss of the ingredients. Details of nay proposed chuting plant must be approved by the Engineer before the plaint in delivered to the site.

If the Contractor wished to distribute concrete by means of pumps, full details of the system must be made available to the Engineer for approval. Concrete shall be thoroughly compacted and carefully worked, with suitable tools, into formwork and round reinforcement and fixtures so as to avoid displacement. A competent steel fixer shall attend throughout concreting to correct any unavoidable displacement.

Compaction shall be by means of vibrators, these shall be of an approved pattern, of the immersion type, clamp-on external vibrators in adequate numbers shall be used only where the density of reinforcement precludes immersion.

Attachment to reinforcement is expressly forbidden and accidental contact with reinforcement shall be avoided. Vibration shall be executed by a competent operative and shall not be carried out to the detriment of adjacent partly hardened concrete.

An accurate record is to be kept by the Contractor showing dates and times when various portions of the work were concreted. The concrete foreman must not vary the approved mix or water content without the permission f the representative of the Engineer. It may occasionally be found that in constricted structural members or where the proportion of reinforcement to concrete is high, the workability of the concrete must be increased locally in order to effect full compaction. Such increase in workability shall be achieved by an increase in the mortar content of not more than 10% of the concrete by weight in any single batch and must be made only with the approval of the representative of the Engineer.

The workability of the concrete must never be altered by the use of additional water or sand alone.

Foundations shall be placed their full depth in one operation and the top surface carefully levelled. Concrete placed in timbered excavations shall be well rammed close against the excavation face as the timber is withdrawn.

When the design of the work demands the placing of reinforced concrete against the sides of excavations without the use of formwork, the earth face in such locations shall be prevented

from crumbling or washing into the concrete during placing and compaction by any efficient means, and care shall be taken to maintain the correct cover to the reinforcement.

All concreting shall be continuous to completion or to an approved construction joint.

Methods of placing and vibration generally are to comply with the specifications for vibrated concrete as laid down by the Cement and Concrete Association or the manufacturer of the vibrators used on the works.

During placing of all concrete a workman shall be in constant attendance with a hose pipe to wash off any cement slurry which appears on the face of any previously poured concrete immediately it occurs.

Concrete shall not be poured informs to a depth exceeding 1500mm without the prior approval of the Engineer.

B.35 **Column Plinths**

Column kicker plinths not cast monolithically with the beam or slab will be allowed only at the discretion of the Engineer and special precautions must be taken if permission is granted especially in regard to the quality of the mix used, and the curing of the concrete.

B.36 **Blinding concrete**

No casting of any concrete on the ground shall take place until the ground has been passed as satisfactory by the Architect. All ground to carry reinforced concrete shall be covered with a blinding layer of concrete 1:10 of the thickness shown on the drawings, or if not so shown, a minimum of 50mm.

B.37 **Waterproof concrete**

Wherever waterproof concrete is shown on the drawings it shall be mix 1:1.5:3 nominal and it shall be compacted by mechanical vibration so that a dense and homogenous mass of concrete is obtained throughout every pour of the structure.

The Contractor shall be allowed at his own cost to add an approved waterproofing additive to the mix using it strictly according to makers' instructions.

All permanent and construction joints shall be constructed in accordance with the drawings and specifications to achieve complete water tightness.

It shall be the Contractor's responsibility to ensure that all structures required to be constructed in waterproof concrete are completely watertight and any work found to be defective shall be made good to the Architect's satisfaction at the Contractor' expense.

Where waterproof concrete forms a water retaining structure it is to be tested by filling with water for a period of not less than four days. Any percolation or porous concrete or leaking joint is to be made good at the Contractor's expense. Tanks and pools constructed below ground level are not to be backfilled prior to the satisfactory completion of this test.

B.38 **Construction joints**

All construction joints shall be straight, truly vertical or level, as the cast may be, of the profile shown and formed in the exact positions shown on drawings if not shown on the drawings, with prior approval of the Engineer. Vertical joints shall be formed against adequately secured rigid stop boards having splayed fillets, designed to pass the continuos steel reinforcement without temporary bending or displacement.

The rate and method of placing concrete and the arrangement of construction joint bulkheads shall be such that the concrete between construction joints shall be placed in a continuous operation.

Joints in reinforced slabs, joints and beams, shall be perpendicular to the axis or surface of the member jointed and at the centre of the span. If an intersection member occurs at that point, the joint shall be located at a point of minimum shear.

Construction joints in columns shall be as shown on the drawings. Whenever it becomes necessary to stop work, such stops shall be located at centre of slabs and of beams or as directed by the Engineer.

An adequate and acceptable key for succeeding work shall be formed by using stop boards which shall be constructed tightly to prevent any grout leak. As early as possible boards shall be removed and the surface thoroughly hacked ad brushed to remove all laitence. Any leakage past stop boards shall be hacked off as soon as the concrete has set. The surface shall be left clean and dry. Immediately prior to further concreting the joint face shall be socked with water and covered with sand cement mortar of proportions identical to that in the concrete to be placed, punned into the body of the set concrete.

For exposed finishes, care shall be exercised to preserve an unbroken line at the exposed edge of the joint.

In no circumstances shall the concrete be allowed to finish at a break running down a rough slope. Such cases, if found, will be treated as contrary to the specification and the Contractor will be required to cut out the member and re-cast. In the case of horizontal joints, any excess water and laitence shall be removed from the surface after the concrete is deposited and before it has set.

Before casting slabs the haunching or seatings for the slab shall be thoroughly hacked, scorched and washed and covered with at least 5mm of mortar immediately before the slab is cast.

Any necessary construction joints in foundations shall be stepped and lapped 600mm. Joint faces shall be prepared and treated as described above.

B.39 **Striking times**

It shall be the Contractor's responsibility that no distortion, damage, overloading or undue deflection is caused to the structure by the striking of formwork, but the Engineer reserves the right to delay the time of striking in the interest of the work. Formwork shall not be struck until the concrete has sufficiently hardened. Approval of the Engineer shall not relieve the Contractor of his liability to make good any concrete damaged by premature removal or collapse of forms. In no circumstances shall forms be struck until the concrete reaches a cube strength of at least twice the stress to which the concrete may be subjected at the time of striking. The following striking times given in (24 hours) are the absolute minimum that will be permitted:-

Forms	**Ordinary Portland Cement**	**Rapid Hardening Portland Cement**
Wall Columns (unloaded) Beam sides	2	2
Slabs - props left under	4	2
Beam soffits - props left under	7	5
Slab – props	10	5
Beam – props	18	8

The time for removal of foams as set out shall not apply to slabs and beams spanning more

than 10 metres. For such spans appropriate times shall be recommended or advised by the Engineer.

B.40 **Curing**

The curing of the concrete must receive particularly careful attention. The concrete shall be covered with a layer of sacking, canvas hessian or suitable absorbent material, and concrete, formwork and covering kept constantly wet for the first seven days after casting.

B.41 **Holes and chases and casting in**

No holes or chases shall be cut in reinforced concrete works. The Contractor shall ensure that all necessary holes and chases, including fixing holes for railings and balustrades etc., are carefully formed in the correct position by requisite measures prior to the placing of concrete.

All conduits, pipes, tubes and the like shall unless otherwise detailed, be run on top of the bottom reinforcement of the concrete work. It shall be the Contractor's responsibility to ensure full co-ordination with Sub-Contractors in the setting out for this purpose.

Generally conduits, pipes and special fixtures shall be concreted in where required and in the exact positions demanded.

Concrete fixing blocks shall not effect the strength or cover of the structure nor effect finished work due to movement or other cause.

Details of the positions of all holes, chases and fixing blocks shall be submitted to the Engineer of his approval prior to putting the work in hand.

B.42 **Tests of completed structural members**

The Engineer shall instruct that a loading test be made on the works, or any part thereof, if in his opinion such a test be deemed necessary for one or more of the following reasons:-

(a) The site-made concrete test cubes failing to attain the specified strength.

(b) The shuttering being prematurely removed.

(c) Overloading during construction of the works, or part thereof.

(d) Concrete improperly cured.

(e) Any other circumstances attributable to alleged negligence on the part of the Contractor which, in the opinion of the Engineer, may result in the works, or part thereof, being less than the required strength.

If the loading test be instructed to be made solely, or in part, for one or more of the reasons mentioned above, the test shall be made at the Contractor's own cost. If a test be instructed to be made for any other reason than specifically stated above, the Contractor shall make the test and shall be reimburses for all cost relating thereto.

Leading tests are to be in conformity with Clause 605 of British Standard Code of practice CP11/2969.

If the result of the loading test be not satisfactory, the Engineer shall instruct that the part of the works concerned shall be taken down or removed and reconstructed to comply with this specification, or that such other remedial measures shall be taken as to make the works secure.

If the test be instructed to be made for one or more of the reasons (a) to (e) inclusive as herein before specified, the Contractor shall take down or remove and reconstruct the defective work, or shall take the remedial measure instructed, all at his own cost.

B.43 **Protection**

All in-situ and precast concrete shall be protected from rain and during hot, dry and windy weather approved hessian covering kept constantly damp shall be used to prevent premature drying out.

All in-situ and precast concrete shall be protected from damage by disturbance, shock vibrations, early loading or overloading. In addition, all exposed finishes shall be constantly protected from mechanical damage to arises or face and damage due to dropping, splashing and staining from any source including rusty scaffolding or reinforcement.

No materials or equipment of any kind shall be stored or stacked on suspended floors without the Engineer's prior approval.

B.44 **Precast Concrete**

Concrete shall all be cast in properly made strong moulds to form shapes required. For work described as "finished fair" the mould shall be lined with sheet iron or other approved material.

The coarse aggregate for precast concrete shall be of the sizes described.

The Concrete shall be of the mixes described and shall be thoroughly tamped in the moulds and shall not be removed from them until seven days after placing the concrete, but the sides may be removed after three days providing the moulds are such that the sides are easily removable without damaging the concrete.

The precast work shall be cast under sheds and shall remain under it for seven days in the moulds and a further seven days after removal from the moulds. During the whole of this period the concrete shall be shielded by sacking or other approved material kept wet. It shall then be removed from the sheds and stacked in the open for the least seven days to season.

Precast units shall be true and smooth on all faces (except where a key is required for applied finishes) all arises shall be true and clean with no broken edges.

All units shall be marked during manufacture to indicate
(a) The date of casting
(b) Identification lettering in accordance with the drawings
(c) Where necessary, the way up for building in

Ends of bar reinforcement shall be 25mm from internal faces and 40mm from external faces. Nominally non reinforced units may contain reinforcement at the Contractors option for handling purposes, the cost of which shall be deemed to be included in the Contract Sum.

B.45 **Surface finishes**

After removal of shuttering, unless instructed to the contrary, the face of exposed concrete is to be rubbed down immediately to remove fins or other irregularities. In the event of parts of the concrete being honeycombed, such portions are to be cut to a depth and shape required by the Architect and made up with fine concrete of equal quality in such a manner as shall be directed. The faces of concrete for which shuttering is not provided, other than slabs are to be smoothed with a wooden float to given a finish equal to that of the rubbed-down surface where shuttering is provided.

The top face of a slab which it is not intended to cover with other materials is to be levelled and floated before setting to a smooth finish at the levels or fails shown on the drawings or elsewhere. The floating must be carried out in such a way as well prevents an excess of mortar being brought to the surface of the concrete. The top of a slab intended to be surfaced with mortar, granolithic, or similar materials is to be brushed with a stiff broom while still green to remove any laitence and to provide a roughened surface.

(a) **Samples**

Before the execution of any specified finish, the Contractor shall prepare 1200mm square samples for the Architect's approval. No concreting in finish shall be attempted until the approval of a sample. Approved samples shall be retained until the completion of all such work and closely adhered to throughout the work. Rejected samples shall be demolished and removed.

(b) **Rendered or plastered surfaces**

Concrete surfaces to be rendered or plastered shall be thoroughly hacked to form a good key.

(c) **Fair faced surfaces**

Fair faced surfaces shall be free from honeycombing, stains, fins, lippings, nail hole or excessive air holes and shall be of a uniform colour and texture. This surface shall be obtained by the use of:-

(i) Writ forms, i.e. timber forms planed smooth on the surfaces in contact with concrete.

(ii) Forms lined with hardboard or plywood or other approved material: or

(iii) Smooth steel forms.

All imperfections shall be cut out, made good in cement mortar and rubbed down with Carborundum stone and finally bag rubbed with cement slurry to finish to a high standard without trace of shuttering marks, joints or other disfigurements.

(d) **Board marked finish**

Where so described or measured, faces of concrete shall be finished fair by means of 100m or 150mm (nominal) width tongued and grooved boarding of 25mm (minimum) thickness. The edges to all boards shall have a nominal 2mm chamfer to form controlled fins.
Such formwork to column faces shall be continuous length boards between construction joints.

End joints will be permitted to beam faces, etc. and shall be tongued, staggered and well distributed.

All imperfections shall be clearly show grain and individual board marks, be free from honey-combing and excessive air holes, of uniform colour and to the entire satisfaction of the Architect.

B.46 **Method of measurement**

Prices are to include for working concrete around pipes and electric conduits or cable, including provision for support of same while concrete is placed.

The prices for in-situ work are to include for filling into, or on to, formwork where necessary, and where concrete is described as reinforced for well tamping around reinforcement. Unless otherwise described, all formwork and reinforcement are measured separately.

Prices for precast concrete work; including items described as precast or in-situ, shall include for all moulds, for hoisting and for placing in position, bedding, jointing or building in with cement mortar.

All reinforcing bars are of round section unless otherwise stated and no allowance has, or will be, made for rolling margin.

Prices for holes shall include for them being on rake where so required and shall included the necessary holes through formwork.

The cost of all construction joints, as described herein and not specifically shown on the drawings and measured separately in this Document, shall be deemed to be included in the rates set against the other items in this Document.

The cost of providing all samples described herein shall be deemed to be included in the Contract Sum.

The cost of performing all tests described herein shall be deemed to be included in the Contract Sum except the nett invoiced cost of testing items or samples at authorised testing laboratories as instructed by the Architect or Engineer, which costs will be reimbursed from the Provisional Sum included elsewhere in this document.

Timber purchased for the fabrication of formwork will be regarded as construction plant and will not be paid for as materials on site.

WALLING

LIST OF CLAUSES

WALLING

GENERALLY

C.1 **Testing:**

The Contractor shall, as and when required by the Architect, submit and deliver samples of any materials for testing in accordance with the relevant current B.S.Specification. Samples of mortars, when required, are to be delivered in watertight boxes provided by the Contractor.

C.2 **Samples and sample panels:**

Samples of all types of blocks, bricks and stone required for the works shall be produced to the architect for his prior written approval before any orders are placed. After approval of samples, the Contractor shall erect a 1200mm x 1200mm sample panel of any brickwork, stone work or fair face block work required by the Architect. No work shall be commenced until written approval has been given to sample panels, which shall be maintained for the duration of the execution of the works to which the sample applies. The work executed shall not be inferior in any respect to the approved sample. Inferior works shall be taken down and removed if required by the Architect. The cost of providing samples and sample panels shall be deemed to be included in the Contract Sum.

MATERIALS

C.3 **Cement:**

Cement shall be as described in Concrete Work.

C.4 **Fine aggregate**

Fine Aggregate for concrete blocks shall be as described in Concrete Work

C.5 **Coarse aggregate**

Coarse Aggregate for concrete blocks shall be good, hard, clean aggregate from approved quarries. It shall be free from all decomposed materials and shall be graded up to 10mm and all as described for coarse aggregate in Concrete Works.

C.6 **Limes**

Hydrated limes for cement/lime mortar shall comply with B.S. 8481:2006, semi hydraulic type 3 calcium limes.

Lime for lime/sand mortar shall comply with B.S. 8481:2006 and shall be eminently hydraulic.

C.7 **Sand for mortar**

Sand for mortar shall comply with BS EN 13139:2002

C.8 **Concrete blocks:**

Concrete blocks for walling shall be provided by the Contractor complying with B.S. 6073-2:2008 Type A, and made in approved block making machine of a composition as follows:-

Portland cement	1 cubic metre
Fine Aggregate (graded up to 5mm)	3 cubic metres
Coarse aggregate (graded up to 10mm)	6 cubic metres

Blocks shall be solid or hollow tow-hole type as specified and are to be made under sheds erected by the Contractor to the directions and approval of the Architect. Samples shall be approved by the Architect before any walling work is commenced.

The compressive strength of Type 'A' blocks (non-loading bearing) shall be not less than:-

Average of 10 blocks	3.5 Nsq mm gross area
Lowest individual blocks	2.8 N/sq mm gross area

When load bearing, the compressive strength of blocks shall be:-

Average of 10 blocks	7.0 N/sq mm gross area
Lowest individual block	5.6 N/sq mm gross area

All testing shall be in accordance with B.S. 6073-2:2008.

The concrete is to be put into the machine's moulds in thin layers and all properly tamped therein. On removal from the machines the blocks are to be carefully deposited on racks under sheds erected by he Contractor to the direction and approval of the Architect and there left for three days and kept thoroughly wet the whole time, after which they shall be put out in the open on racks and protected with approved matting, sacking or straw and kept wet for a further five days, then kept in the same position and under same mat cover, but without wetting, for a further two days and then left in the open without matting or wetting for a further seven days to season.

The blocks must be left with good sharp edges. The blocks for use in the works shall be 225mm high and may vary in length from 300mm to 45omm and no variation above or below these lengths will be allowed except where required to form proper bonding at corners, around openings, sills, lintels, beams, etc., and the like positions and the Contractor must make or cut blocks to all the varying sizes required for these purposes and include this in his price.

Blocks to be subsequently covered with an in-situ finishing may be slightly rough in texture. Fair face blocks shall be perfectly smooth.

C.9 **Load bearing hollow concrete blocks**

All load-bearing hollow concrete blocks shall be 225mm thick x 450mm long of the two-hole type of approved manufacture. The blocks are to have a minimum resistance to crushing at twenty eight days of 4 newtons per square millimetre on their nett area.

The volume of the cavities shall be not less than 45% and not more than 50% of the gross volume and the dimensions of the cavities arranged so that each cavity is vertically continuous when the blocks are bonded.

C.10 **Precast concrete louvre of screen blocks:**

Precast concrete louvre or screen blocks shall comply in all respects with the specification for precast items contained in the preambles to 'Concrete Work'', and shall be constructed to the dimensions and form shown in the drawings.

C.11 **Clay Bricks:**

All clay bricks shall be obtained from a manufacturing source specified by the Architect in writing, or where not so specified, approved by him in writing, and complying with BS EN 771-1:2003,

All bricks incorporated into the works shall be properly burnt, clean, hard, of well defined arris, uniform in shape and as near uniform in colour as possible. Bricks to be used for face work shall be selected to the Architect's approval.

C.12 **Hollow clay screen blocks:**

Hollow clay screen blocks shall be from an approved manufacturer to the pattern and dimensions described, free from flaws, chips etc., with completely clean arrises when incorporated into the finished work.

C.13 **Stone for pitching**
Stone for pitching shall be hard clean sound local stone to the approval of the Architect, of size and shape to give a 230mm x 230mm bearing surface when placed.

C.14 **Stone for walling**
Stone for walling shall be hard clean and sound local stone to the approval of the Architect.

WORKMANSHIP

C.15 **Storage of materials**

Cements and limes shall be stored off the ground, under cover and away from damp, and in such manner to enable them to be used in rotation in order of delivery.

Sands shall be stored separately according to type on clean, hard dry standing and protected from contamination.

Sands for pointing shall be stored separately, away from other sands and shall be obtained in sufficient quantity at one time to enable materials of the approved colour to be used for the whole of the work.

Precast concrete blocks and louvre or grille blocks and clay bricks and blocks shall be open stacked to permit ventilation and protected from the sun, rain and rising damp.

C.16 **Wetting blocks and bricks:**

Concrete blocks and louvre or grille blocks and clay bricks and blocks shall be wetted as necessary before and after laying. Walls shall be kept wetted for three days after building.

C.17 **Bonding walling:**

The blocks shall be properly bonded together and in such manner that no vertical joint in any one course shall be within 115mm of a similar joint in courses immediately above or below. Sufficient through bonders shall be provided as directed by the Architect. Alternative courses of walling at all angle and intersections shall be carried through the full thickness of the adjoining walls. All walling shall be built up entirely solid in blocks, without voids, allowance being made for joints 10mm thick only. All perpends, reveals and other angles of the walling shall be built strictly true and square.

C.18 **Generally:**
The Contractor shall provide all setting out rods.

All surfaces on which blockwork or brickwork is to be built shall be clean. All blockwork and brickwork shall be built uniform, true and level, with all perpends vertical and in line. No work shall rise more than 1 metre above adjoining works and all such risings are to be properly racked back in long steps to prevent cracks arising, and all walls shall be levelled around at each floor.

Joints generally are not to exceed 10mm in thickness. Cutting of blockwork against concrete soffits, etc., shall include for cutting to give normal 10mm joints and complete filling thereof with mortar.

All walls built in hollow concrete blocks, where finishing with an open top edge, (i.e. not against ceiling, beam, etc.), or at the underside of sills, shall be finished with a solid concrete block too course.

Where walling is to be fair faced in blocks, the blocks shall be selected and shall all have clean arrises.

C.19 **Wall reinforcement:**

Where so specified hollow block walls shall be reinforced vertically with 19mm diameter mild steel bars or 6mm square twisted bars at 450mm centres unless otherwise specified, the bars being tied in with the reinforcement of the floors at the top and bottom in an approved manner.

No scheduled for steel in walls will be provided.

C.20 **Mortar mixing:**

All materials shall be accurately gauged by gauge boxes and mechanically mixed and used within 30 minutes of first mixing. Proportions shall be cement and sand (1:6) by volume.

Re-tempering of mortar will not be permitted. Gauge boxes and mixers shall be kept clean.

C.21 **Bedding and pointing:**

All blocks shall be bedded on a solid bed of mortar; vertical faces of all blocks shall be well buttered before being laid and the whole well grouted at each course. Joints to blockwork to the plastered shall be roughly raked out to form a key. Joints to fair face blockwork shall be either finished flush or finished recessed 6mm as hereafter specified.

C.22 **Laying louvre or screen blocks:**

Louvre or screen blocks shall be built in mortar with all joints flushed up, surplus mortar wiped from the face of the blocks and finished fair.

C.23 **Filling of blockwork cavities:**

All cavities were specified and shown above ground and all cavities below ground level shall be filled in solid with concrete of the mix described and placed and consolidated in sections not exceeding 1125mm in height.

C.24 **Stone pitching:**

The ground to receive pitching shall be well compacted and the stone; which shall be flat bedded and not less than 230mm either way along the bearing surface, shall be punned to the required falls and inclinations so that neither wedges nor spalls are required to keep the pitching rigidly in place. The joints shall be no more than 13mm thick solidly filled with 1:3 cement mortar and pointed.

C.25 **Stone walling**

The stone shall be well bonded with a minimum of one good bond or through stone evenly spaced to each square metre. All cavities and joints in stonework are to be filled in and flushed up solid with mortar.

Jointing and pointing is a detailed or instructed.

C.26 **Putlog holes:**

Putlog holes shall be carefully, properly and completely filled up on completion of walling work.

C.27 **Chases:**

Where walling is cut, holed or chased for conduits, pipes or the like, all such chases shall be filled in solid with cement mortar mix (1:4) prior to the application of finishes. In no case shall the vertical chase be deeper than one-third the thickness of the wall and in no case shall the horizontal chase be deeper than one-sixth the thickness of the wall.

C.28 **Method of measurement:**

Prices for holes and chases shall include for cutting or leaving such holes or chases as may be required and the prices shall include for holes being on rake where necessary.

ROOFING

LIST OF CLAUSES

CORRUGATED OR TROUGHED SHEET ROOFING

BITUMINOUS FELT ROOFING

ROOFING

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CORRUGATED OR TROUGHED SHEET ROOFING

D.1 **Sheet roofing generally:**

All sheet coverings shall be laid away from the prevailing weather i.e. the exposed edge of the top most sheet to be on its leeward side.

D.2 Profiled aluminium sheet roofing:

(i) Profiled aluminium sheets are to comply with BS 4868:1972 and are to be colour coated by the manufacturer after formation and of the gauges specified, laid with one and a half corrugation side laps and 150mm end, laps. Sheets are to be properly stacked on battens and if kept in the open are to be stacked inclined to facilitate run- off of rainwater.

(ii) Fixing corrugated steel sheeting is to be by means of 14 gauge drive screws in the case of a timber roof supporting structure, and 6mm galvanised hook bolts in the case of a steel supporting structure.

Both types of fixing to incorporate a bituminous felt washer backed by a cranked diamond shaped aluminium washer immediately below the screw head or nut whichever the case may be.
Each sheet is to have a minimum of two fixings and the holes for the bolts or screws are to be drilled through the crown of the corrugation and be of such size so as to give a 0.80mm clearance on the bolt or screw.

(iii) Colour coated roofing sheets are to be finished to an approved colour by spraying and oven curing at the manufacturer's works. Care is to be taken to avoid damage to the finish and small scratches and blemishes are to be touched up on site with paint supplied by he manufacturer of the sheets. Sheets with large scratches are to be returned to the supplier for refinishing or are to be replaced.

(iv) Accessories are to be obtained from the same supplier as the roof sheeting and are to properly match the colour of the roof sheeting.

BITUMINOUS FELT ROOFING

D.3 **Approved Subcontractor:**

The Contractor is required to arrange for the work to be executed complete and to the entire satisfaction of the Architect but an approved Subcontractor.

D.4 **Guarantee:**

The Contractor shall obtain from the approved Subcontractor for roofing work and deposit with the Architect, a written guarantee and undertaking to the effect that during a period of twelve calendar months from and after the certified date of completion of the whole of the works such Subcontractor shall at his own expense make good to the satisfaction of the Architect all and any defects in the work which shall be attributed to improper materials or faulty workmanship and shall bear the cost of any consequential damage as shall be provided for in such guarantee.

D.5 **Samples:**

The Contractor shall, when required by the Architect, submit samples of any materials for testing.

D.6 **Preparation of surface:**

All surfaces to receive roofing are to be dry, rough and finished to the requirements and to the entire satisfaction of the Subcontractor from whom statement that such finish is satisfactory.

D.7 **Pipes to be laid beforehand:**

The Contractor must ensure that all necessary plumbing, outlets, etc., and pipes, passing through roofs are fixed in position before laying is commenced.

D.8 **Built-up roofing:**

(i) The built-up felt roofing shall applied to a screeded base and shall comprise the following applications laid strictly in accordance with the manufacturer's printed instructions .

(ii) Rolls must be transported and stored on end one roll high and adequately protected from the sun.

(iii)	**One layer finish:**	
	(a) Priming	Prime screed with P.F.4 primer.
	(b) Finishing Coat (Class 1C)	One layer of heavy duty self finished felt weighing not less than 25 kgs. per 10 S.M.
	(c) Jointing	One application of hot bituminous compound weighing not less than 30kgs/per 10 S.M.
(iv)	**Two layer finish:** (a) Priming	Prime screed with P.F.4 primer.
	(b) First layer (Class 1B)	One layer of heavy duty self finished felt weighing not less than 14 kgs per 10 S.M. laid loose on prepared screed.
	(c) Jointing Compound	One application of hot bituminous compound weighing not less than 30 kgs per S.M.
	(d) Second Layer (Class 1C)	One layer of heavy duty self finished felt weighing not less than 25 kgs per 10 S.M.
(v)	**Three layer finish:** (a) Priming	Priming screed with P.F.4 primer.
	(b) First Layer (Class 1B)	One layer of heavy duty self finished felt weighing not less that 14kgs per 10 S.M. laid loose on prepared screed.
	(c) Jointing Compound	One application of hot bituminous compound weighing not less than 30kgs. per 10 S.M.
	(d) Second Layer (Class 1B)	One layer of heavy duty self finished felt weighing not less than 14 kgs. per 10 S.M.
	(e) Jointint Compound	As described in (c) above.
	(f) Third Layer (Class 1C)	One layer of heavy duty self finished felt weighing not less than 25 kgs. per 10 S.M.

(vi) Stone chipping finish. The entire surface to be mopped with hot bituminous compound and left overnight and followed with a layer of 6 - 12mm white stone chippings bedded in mastic applied to the entire area and lightly rolled.

(vii) Flashings, skirtings etc., are to be painted two coats bituminised aluminium paint on completion.

D.9 **Air pockets and stains:**

Air pockets and stains will not be permitted and the finished work shall not ring hollow over any part of its surfaces.

D.10 **Test for falls:**

To ensure that the finish has been truly laid to falls, (minimum 1:200), the Contractor shall arrange for the roof areas to be flushed with water in the presence of the Architect. Any defects or depressions shall be rectified and re-tested for approval.

D.11 **Protection:**

The Contractor shall take all necessary precautions to ensure that no damage is caused to the roofing after completion of laying by further building operations, storage of heavy objects, raffic or any cause whatsoever.

CARPENTRY AND JOINERY

LIST OF CLAUSES

QUALIFICATIONS OF THE RULES OF THE S.M.M.

DEFINITION

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IRONMONGERY

CARPENTRY AND JOINERY

QUALIFICATIONS OF THE RULES OF THE S.M.M.

E.1 **Holes in timber**

Notwithstanding the provisions of S.M.M. Clause E.38 (a), where work is described as fixed with screws, holes in timber shall be deemed to be included.

E.2 **Fixing by bolting, etc.**

Notwithstanding the provisions of S.M.M. Clause A.3 (b) (iii), the term 'fixing up' used in conjuction with any method of fixing shall not be deemed to include any fixing materials but shall be interpreted as a definition of fixing method only.

E.3 **Fixing ironmongery**

Notwithstanding the provisions of S.M.M. Clause E.39 (a), fixing with bolts or other devices shall be deemed to be included where these are normally supplied with the ironmongery concerned.

DEFINITION

E.4 **Plugging**

The term 'plugging' shall mean the provision and fixing of approved proprietary plugs of the correct grade, hardwood pugs cut to twist, or dovetailed pugs morticed into the walls.

E.5 **Finished sizes**

All members shall be finished to the sizes stated or shown on the drawing. The prices inserted by the Contractor shall be deemed to include for the nominal sizes necessary to produce the finished sizes stated.

E.6 **Selected**

The term 'selected' shall be deemed to include keeping the material so described clean for staining, polishing, or any similar finish.

E.7 **Hardwood or the like**

The term 'hardwood or the like', which is used as a statement of background to which ironmongery is to be fixed, shall be deemed to include plywood and other manufactured materials are faced with metal, laminated plastics or the like.

MATERIALS

E.8 **Terminology**

All technical terms shall be as defined in the relevant timber Ordinances.

E.9 **Timber generally**

Timber shall be from an approved sawmill, be sound, well conditioned, properly seasoned to suit the particular use, straight grained, and free from defects or combination of defects rendering it unsuitable for the purpose intended, and containing not more than 15% moisture for joinery work or 18% moisture for carpentry work.

Structural timber is to be approved local softwood or hardwood as specified of strength grade tow supplied in long lengths, with a tolerance of 5mm on scantlings, but of uniform width and

thickness. Boards and scantlings which are specified as 25mm or less in thickness are to hold up to the full size. Structural timber shall be deemed to be sawn on all faces unless otherwise state as wrot.

Joinery timber shall be approved prime select grade local hardwood as specified and shall be held to be wrote by machine dressing unless otherwise stated.

All timber for the Works is to be purchases immediately the Contract is signed and is to be open stacked for as long as possible before use or kiln drying.

All timber and assembled woodwork shall be protected from weather and stored in such a way as to prevent attack by terminate, insects or decayed fungi.

E.10 **Approval**

Any timber brought to the site and rejected by the Architect, shall be removed from the site at the Contractor's expense.

Should any timber be found to contain disease, pest, borers, termites, or any other defect after incorporation in the work, and until the expiration of the maintenance period, notwithstanding that the timber may have been approved by the Architect when brought to the site, such timber shall be removed and replaced, together with all works disturbed, at the Contractor's expense.

No timber is to be incorporated in the building which has been used for formwork, planking, strutting, scaffolding, or any other form of plant.

E.11 **Species of timber**

The following timbers shall be used where specified and the common names used throughout this document correspond to the botanical names as follows:

Common Name	**Botanical Name**
Pine	Pinus Patula
Cypress	Cypressus lusitican
Podocarpus	Podocarpus spp.
African Mahogany	Khaya nyasica
Mninga	Pterocarpus Anglolensis
Mvule	Chlorophora excels

The following may also be used where "hardwood" or "local hardwood" is specified, with the Architects prior written approval; Adina, East African Afromosia, East African Afzelia, Mgando, Banga Wanga, Muhuhu, Camphor and Burkea.

E.12 **Plywood**

The plywood shall be from a manufacturing source approved by the Architect and shall comply in all respects.
Grade 1 veneer plywood shall be use visible surface is to be wax polished, varnished, plastic lacquered or left untreated.

Grade 2 veneer plywood shall be used where subsequent painting is intended.

All plywood shall be WBP bonded, and of marine quality when specified.

Routine tests will be required from time to time to check the quality of plywood manufacture.

E.13 **Chipboard**

Chipboard shall comply with B.S. 7916

E.14 **Blockboard**

Blockboard shall be from a manufacturing source approved by the Architect and shall comply in all respects with B.S. 3444:1972. The grade of the veneer shall be as described in the measured items.

E.15 **Fibreboard**

Fibreboard shall be Celotex or other equal and approve make, of the thickness specified.

E.16 **Hardboard**

Hardboard shall comply with B.S. 1142:1989 Part 2 and be tempered.

E.17 Laminated plastic sheet
Laminated plastic sheet shall be from an approved manufacturer. Prior to fixing laminate plastic sheet the Contractor shall obtain the Architects written approval to a sample..

E.18 **Pressure impregnated treatment**

All timber used in carpentry, grounds for fixing joinery, etc., is to be vacuum pressure impregnated with Tanalith C preservative to a dry salt nett retention of 10kg of Tanalith C per cubic metre of timber and stacked until be moisture content returns to 18% or 15% as above described.

Timber to be treated shall be machined to finished sections and cut to component lengths before impregnation.

Cut ends, notching, boring, and faces of timber sawn after treatment are to be swabbed liberally with Wolmanol end grain preservative, allowed to dry, and them applied in a similar manner a second time. The Contractor's prices for such timber must allow for this treatment.

E.19 **Screws, nails, bolts,etc.**

Screws, shall comply with B.S. 1210 and nails with B.S. 1202-1:2002. Bolts shall be generally cup square with large washers and nuts.

Other fixing accessories are to comply with BS EN 1494:2000+A1:2008

E.20 **Adhesive**

Adhesive shall be synthetic resin type complying with B.S. 1203:2001
WORKMANSHIP

E.21 **Generally**

Workmanship shall comply with BS EN 942:2007

E.22 **Contractor to check discrepancies**

The Contractor shall be responsible for ascertaining from the site and for checking all dimensions before the joinery is put in hand. Any discrepancies between site dimensions and those shown on the Architect's drawings shall be reported immediately to the Architect for rectification.

E.23 **Storage**

Joinery shall be protected from the weather during transit and shall be stored under cover, clear of the ground, in clean, dry ventilated structures, before and after priming.

E.24 **Priming**

All joinery shall be delivered to the site unprimed and shall be primed, (as measured in Painting and Decorating), immediately after inspection, and before fixing.

E.25 **Arrises**

All arrises exposed in the finished work shall be runned down with glass paper.

E.26 **Fabrication**

All joinery is to be purpose made and constructed to detail drawings, in a workmanlike manner, morticed and tenoned, dovetailed, tongued and grooved, glued, pinned, screwed, etc., as best suited to the particular part. All mortice and tenon joints are to be pinned with hardwood dowels or with brass pins in addition to wedging and gluing. All joinery shall be put together with waterproof adhesive.

All carpenter's work shall be accurately set out in strict accordance with he drawings and shall be framed together and securely fixed in the best possible manner with properly made joints. All necessary brads, nails and screws, etc, shall be provided as directed and approved.

E.27 **Fixing fibreboard, hardboard and chipboard**

Unless otherwise specified fibreboard hardboard and chipboard, shall be pinned to its backing, hands punched below the surface and puttied flush.

E.28 **Fixing laminated plastic**

Laminated plastic shall be fixed with an adhesive recommended by the manufacturers, and in accordance with their instructions.

E.29 **Plugs**

The centres of fixing plugs shall not exceed 600mm and shall be closer if the work so requires.

E.30 **Nailing and screwing**

Where items are described as 'fixed with screws' hey shall be brass screws of the appropriate gauge and length, countersunk and pelleted where applicable. In all other instances wrot timber shall be fixed with oval brads, round lost heads or cut clasp nails punched and puttied; carcassing timber shall be spiked, well driven and clenched.

E.31 **Joints in structural timbers**

Structural timbers shall as far as in practicable be in single lengths. Where joints are unavoidable they shall be scarfed, spiked and bolted as required. Generally scarfs shall be 450mm long.

Bolt holes should be drilled to diameters as close as possible to the nominal diameter of the bolt and in no case more then 1.6mm larger than the bolt diameter. Care should be taken to avoid placing a bolt in nay end split. A minimum of one complete thread should protrude from the nut. The minimum sizes of washers are given below:-

Diameter of bolt	Minimum thickness of washer	Minimum size of square or diameter of washer

10 to 12mm	3mm	50mm
16 to 22mm	5mm	65mm
25 to 32mm	6mm	75mm

E.32 **Lipping to blockboard**

All exposed edges of blockboard, including those to be covered with formica, shall be lipped with a hardwood lipping to the size specified for the full thickness of the board to match the veneer of the general face. Lippings shall be fixed with pins of the appropriate gauge and length, punched and puttied. Where described as 'tongued', the edge of the blockboard shall be grooved to receive the lipping with shall be rebated twice to form the tongue.

E.33 **Fixing panels with bead**

Where glass or other panels are fixed with beads, and may be required to be removed or replaced in the event of breakage, the beads shall, where fixed to one side only, be fixed with brass screws and cups, and where fixed to both sides, be bradded one size and fixed with brass screws and cups on the other side. Brass screws and cups shall only be used internally.

E.34 **Flush doors**

Flush doors shall be of the sizes and thickness indicated on the drawings.

The doors, unless otherwise described, shall be semi-solid core having stiles, top and bottom rails, filled in with core slats at approximately 50mm centres, or slats to an egg crate pattern.

Doors intended for interior or exterior use shall be faced on both sides with 6mm exterior marine quality plywood with the grade of veneer as specified in the measured items.

All flush doors shall have lipped edges. The members of all doors shall be bonded with the same adhesive as is required for the bonding of the plywood with which they are faced.

No flush doors shall be incorporated in the works without first obtaining the Architect's approval of a sample.

E.35 **Inspection and testing**

The Architect shall be given facilities for inspection of all works in progress whether in workshops or on site. All timber as it arrives on the site may be inspected by he Architect and any timber brought on to the site and not approve by him must be removed forthwith, failing which he may arrange for the removal of the rejects and dispose of them as he may consider advisable at the Contractor's expense.

Notwithstanding approval having been given as above, any timber incorporated in the Works found to be in any way defective before the expiry of the maintenance period shall be removed and renewed at the Contractor's expense. The Contractor is to allow for testing of prototypes or special construction units and the Architect shall be at liberty to select any samples he may require for the purpose of testing, i.e. for moisture content, or identification of species, strength, etc. Where timbers need to be extended into a wall, they shall be thoroughly "brush treated" with "Tanalith" in addition to preservative treatment as already described above, and as much clear air space maintained around the timber where it adjoins the wall as possible.

E.36 **Casings and Protection**

All fixed joinery which is liable to become bruised or damaged in any way, shall be properly cased and protected by the Contractor until the completion of the Works.

E.37 **Clearing up**

The Contractor is to clear out and destroy or remove all cut ends shavings and other wood waste from all parts of the building and the Site generally, as the work progresses and at the conclusion of the works.

IRONMONGERY

E.38 **Generally**

The rates of r ironmongery shall include the cost of all fixing screws.

E.39. **References**

Where items of ironmongery are not specified by manufacturers catalogue reference, the Contractor shall submit for the Architects approval within one month of the date of possession of site, specifications including manufacturers catalogue reference numbers of the items he proposes to purchase.

Prior to fixing any item of ironmongery, he Contractor shall obtain the Architects approval of a sample.

E.40 **Fixing**

Joinery is to be countersunk for ironmongery and screws. Where woodwork is painted the ironmongery shall be fixed while the joinery is primed but before painting. All lock handles and the like shall be removed until after painting is complete when they will be fitted and adjusted and left in perfect working order.

E.41 **Keys and labels**

All locks are to be provided with two keys and no key is to pass the wards of any but its own lock. All keys are to be provided with a key ring and plastic tag on which is firmly written the position of the door.

E.42 **Method of measurement**

Fixing shall include all fitting, cutting, sinking, boring and morticing, easing and adjusting.

METALWORK

LIST OF CLAUSES

QUALIFICATIONS OF THE RULES OF THE S.M.M.

DEFINITIONS

GENERALLY

MATERIALS

WORKMANSHIP

METALWORK

QUALIFICATION OF THE RULES OF THE S.M.M.

F.1 **Backgrounds**

Notwithstanding the provisions of S.M.M. Clause F.1 (a) (iii) the background or support to which metalwork is fixed shall be deemed to be any background compatible with the method of fixing given in the descriptions.

F.2 **Preparation for welding**

Notwithstanding the provisions of S.M.M. Clause F.1 (d) (iii), description of work required to be welded and ground to smooth finish shall be deemed to include the preparation of the members.

F.3 **Fixing by bolting, etc.,**

Notwithstanding the provisions of S.M.M. Clause A.3 (b) (iii), the term 'fixing by' used in conjunction with any method of fixing shall not be deemed to include any fixing materials but shall be interpreted as a definition of fixing method only.

DEFINITIONS

F.4 **Holes for attachments**

Where lugs or other subsidiary members are given in the description of main members of plates, bars, sections or tubes, holes required for the screws, bolts or rivets by which the subsidiary members are attached to the main members shall be deemed to be included.

F.5 **Welding**

In the absence of specific requirements the techniques and materials employed in welding shall be selected with due regard to the character of the work and the metals being connected.

GENERALLY

F.6 **Shop drawings**

The Contractor shall submit complete shop drawings as and when required by the Architect for his approval.

F.7 **Standard of construction for structural work**

Structural metalwork and testing shall comply with the British Standards.

F.8 **Fabrication of structural metalwork**

Structural metalwork shall be fabricated by a specialist firms and, before an order is placed by the Contractor such specialist firm shall be approved in writing by the Architect.

F.9 **Shop details for structural work**

The Contractor shall include for the preparation of all shop details for structural work from the drawings supplied by the Architect. All such details shall be approved in writing, by the Architect before the work is put in hand. Every drawing shall show the number and sizes of all rivets and bolts, complete details of welds, type of electrodes, welding procedure, whether the welds are to be made in the shop or elsewhere and any other relevant information.

F.10 **Accuracy of drawings**

The Contractor shall be responsible for the correctness of his shop details and for shop fittings and site connections.

F.11 **Dimensions to be verified**

The Contractor shall take the dimensions from the site or buildings and he shall verify all dimensions given on the drawings before the work is put in hand.

MATERIALS

F.12 **Steel for general metalwork**

Mild steel shall comply with B.S. EN 10025-1:2004. Hot rolled sections shall comply with BS EN 10365:2017. Tubes (other than circular hot rolled hollow sections) shall comply with B.S. EN 10025-1:2004 and shall be of the type of steel and method of manufacture described.

F.13 Steel for structural metalwork

(i) All structural and rivet mild steel shall comply with B.S. 449 and B.S. 4360: Part 2.,

(ii) All structural steel tubes shall comply with B.S. 6323 and B.S. 449 Part 2.

(iii) Mild steel and medium tensile steel electrodes for metal-arc welding shall comply with the requirements of B.S. 639.

(iv) All mild steel bolts and nuts shall have a tensile strength of not less than 432 N/ per sq. mm (28 tons per sq. in) and a minimum elongation of 17 per cent as defined in Clause 2 of B.S. 916.

(v) All high tensile steel bolts, nuts and washers shall have a minimum tensile strength of 570 N/ per sq. mm (37 tons per sq. in).

(vi) High strength friction grip bolts and washers shall comply with B.S. 4395 Part 1.

(vii) All plain washers shall be of steel. Tapered or other specially shaped washers shall be made of steel or malleable cast iron complying with B.S. 3410.

F.14 **Cast iron**

Cast iron shall comply with B.S. 1452.

F.15 **Galvanised work**

Iron and steel, where galvanised, shall comply with B.S. 729 entirely coated with zinc after fabrication by complete immersion in a zinc bath in one operation and all excess carefully removed. The finished surfaces shall be clean and uniform.

Zinc sprayed iron and steel shall comply with B.S. 2569. The nominal thickness of zinc coating shall be not less than 0.102mm and at no point less than 0.070mm.

F.16 **Bolts and nuts**

Bolts and nuts shall comply with B.S. 1494 and 4190 and have Whitworth threads.

F.17 **Aluminium**

Wrought aluminium shall be of the alloys described and shall comply with the following:-

Plate, sheet and strip	-	BS EN 485-2:2016
drawn tube	-	BS EN 754-7:2016

extruded round tube and hollow sections, bars and rods	-	BS EN 755-9:2016

WORKMANSHIP

F.18 **Smithing, etc.**

All smithing and bending shall be soundly and neatly executed, care being taken not to overheat.

F.19 **Forging**

All straps, bolts and similar work shall be forged neat and clean from the anvil.

F.20 **Welding**

The work 'welded' is to be understood to include the normal trade methods of jointing metals using an oxyacetylene torch, rod and flux. The joints shall be made so that they will transmit the loads and resist the stresses to which they will be subjected. All excess metal is to be filed down and smoothed off to a workmanlike finish to the approval of the Architect. The materials employed in welding shall be selected with due regard to the character of the work and the metals being connected.

F.21 **Structural work generally**

The whole of the fabrication and erection of the structural metalwork shall be carried out in accordance with B.S. EN 10210-1:2006 The welding of steel to B.S. EN 10210-1:2006 must conform to:-

B.S. 1140 - "resistance spot welding of uncoated and coated low carbon steel"

or

B.S. 5135 – "metal arc welding of carbon and carbon manganese steels"
as applicable.

For welding any particular type of joints the Contractor shall provide evidence acceptable to the Architect that the welder has satisfactorily completed the appropriate tests as described in B.S. 449, Part 2, Chapter 6. Any welder's tests shall be made at the Contractor's expenses and shall include the cost of any fees incurred by the Employer for witnessing of, or marking such tests.

F.22 **Rejection**

Any portion of the work which, in the opinion of the Architect is not in accordance with the drawings or specification shall be rejected whether before or after delivery and must be removed from the site if delivered, within 24 hours from receipt of such notice of rejection at the Contractor's expense. Any delay caused by such rejection will not in any way relieve the Contractor from his responsibility with regard to the provisions of the Contract.

F.23 **Fabrication**

As much of the work fabrication of the structural metalwork as is reasonably practicable shall be completed in the manufacturer's works. Field connections shall be made in accordance with the approved drawings. The Contractor shall give four days' clear notice of structural metalwork ready for inspection at the manufacturer's works, to facilitate inspection before delivery.

F.24 **Joints and connections**

No variation of the number, type or position of the joints or connections shown on the drawings of structural metalwork shall be made without the consent of Architect. If such consent is desired the Contractor shall submit detailed drawings of the proposed joints for the approval of the Architect and no extra cost incurred by reason of such additions or alterations will be allowed to the Contractor.

F.25 **Painting at works**

Where described as primed at works, structural metalwork shall be freed of rust, millscale, welding slag and flux residue and shall be dry immediately prior to painting with primer.

For joints with high strength friction grip bolts the contact surface shall be left unpainted but special care shall be taken after assembly to paint all edges and corners near the joints together with bolt heads, nuts and washers to prevent the ingress of moisture. For joints made with other bolts and rivets the contact surfaces shall each be given a coat of priming paint and for shop connections the contact surfaces shall be brought together while the paint is still wet.

For welded connections where the contact surfaces are not completely sealed the contact surfaces shall be painted to within 50mm of the edges that are to be welded. The primer shall be touched up with similar primer if damaged by subsequent handling.

F.26 **Welded members to be galvanised**

All welded members which are to be galvanised shall be galvanised only after all fabrication and welding is complete.

F.27 **Metalwork to be painted**

All metalwork which is to be painted shall be painted with one coat of primer before fixing.

F.28 **Fixing windows**

Windows shall be fixed entirely in accordance with the manufacturer's instructions. They shall be properly stored at the site off the ground under weatherproof cover.

F.29 **Method of measurement**

Joints in the running length of memnbers of balustrades, etc., required by the fabricator for ease of transporting and fixing, shall be deemed to be included in the prices for such work

Except where otherwise described, holes, bolts, and cutting and pinning have been measured separately.

PLUMBING INSTALLATIONS

LIST OF CLAUSES

QUALIFICATIONS OF THE RULES OF THE S.M.M.

DEFINITIONS

GENERALLY

RAINWATER INSTALLATION

SANITARY INSTALLATION

HOT AND COLD WATER INSTALLATIONS

PLUMBING INSTALLATIONS

QUALIFICATIONS OF THE RULES OF THE S.M.M.

G.1 **Jointing pipes**

Notwithstanding the provisions of S.M.M. Clause G.9 (b), the prices for all galvanised steel screwed pipes shall be deemed to include for jointing with hemp and red lead or 'Boss' white unless otherwise described and the prices for all cast iron pipes shall be deemed to include for jointing with a gasket of hemp and cold caulking compound unless otherwise described.

G.2 **Provision of holes**

Notwithstanding the provisions of S.M.M. Clause Q.1(g), the provision of holes shall be deemed to be included in the description of fixing.

DEFINITIONS

G.3 **Painting**

The preparation of surfaces shall be deemed to be included with the description for painting. Specific requirements relating to the preparation of surfaces are given in the WORKMANSHIP section of these Preambles. In the absence of specific requirement surfaces shall be prepared in the manner recommended by the manufacturer of the paint being used.

G.4 **Welding**

In the absence of specific requirements the techniques and material employed in welding shall be selected with due regarding to the character of the work and the metals being connected.

G.5 **Backgrounds requiring plugging**

The term 'backgrounds requiring plugging' shall mean any or all of the backgrounds described in S.M.M. Clause Q.1 (h) (iv), and shall be deemed to include the associated plugging.

G.6 **Plugging**

The term 'plugging' shall mean provision and fixing of hardwood or approved proprietary plugs, or, at the Contractor's option, fixing by means of a cartridge operated rivet gun or other approved mechanical means.

G.7 **Surface finishes**

In the absence of specific requirements, the treatment and finish of pipe fittings shall be appropriate to the finish of the pipes with which they are associated.

G.8 **Pipe sizes**

The size of the pipe shall be the diameter of the bore.

GENERALLY

G.9 **Execution of plumbing work**

All plumbing work shall be executed in accordance with the best principles of modern practice by a firm of fully qualified and registered plumbers. The Contractor shall obtain the Architects written approval to the firm he proposes to employ before the plumbing work are commenced.

The Contractor shall obtain the Architects prior written approval to the position of all pipe runs, valve positions, control points, access points and the like for all plumbing installations.

At the time of practical completion the Contractor shall prepare and hand to the Architect four copies of plans and diagrams showing the positions of all pipe runs, valve positions, control points, access points and the like for all plumbing installations. Such plans and diagrams shall be to the Architects approval, and practical completion of the plumbing installation shall be deemed to have taken place only after receipt by the Architect of such approved plans and diagrams.

All plumbing and drainage works shall be executed in accordance with the Regulations of the Local Authorities and Water Supply Companies. The Contractor shall give all notices and pay all fees required thereunder. The amount of such fees shall be deemed to be included in the Contract Sum, unless they are expressly included in these documents by way of a Provisional Sum or PC Sum.

RAINWATER INSTALLATIONS

G.10 Plastic pipes and fittings

Plastic pipes, fittings and accessories shall be obtained from a manufacturing source approved by the Architect in writing to comply with B.S. 607: 2004 , heavy grade PVC, colour to be selected by the Architect, fixed true to line with straps, supplied by the manufacturer screwed to hardwood plugs with galvanised screws, and jointed all in accordance with the manufacturer's instructions. Rubber sealing rings shall comply with B.S. EN 681-2:2000

G.11 Galvanised steel tubes and fittings

Galvanised steel tubes and fittings shall comply with B.S. EN 10255:2004 with galvanised reinforced malleable cast iron fittings complying with B.S. 143 and 1256, with B.S. EN 10266-3;2005 threads.

Jointing -Tubing and fittings shall be seam-jointed using hemp and red lead putty or "Boss' white.

Fixing -Tubes shall be fixed clear of walls or soffits, with galvanised malleable iron brackets complying with B.S. 1494, (or with hangers or special fixing where so described), spaced at not more than 3 metre centres.

G.12 Rainwater outlets

PVC rainwater outlets shall be manufactured to the sizes and profiles measured herein from heavy grade PVC, with a minimum 75mm wide flange all round the top for fixing to roof surfaces; fully bedded in hot bitumen and jointed to the PVC rainwater pipes.

G.13 Testing

Rainwater installations shall be subjected to a water test and proved capable of withstanding a pressure of 1.05m head of water to he satisfaction of the Architect. Any defects are to be made good by the Contractor and the whole system left sound and perfect.

SANITARY INSTALLATION

G.14 Bye-laws

All the work shall comply with the requirements of the Local Council Bye-laws and the drainage regulations, and shall be executed to the satisfaction of the Architect and the Local Authority.

G.15 Settling-out

The position of all pipe runs, including joints and connections, holes and the like, shall be agreed with the Architect before work is commenced.

G.16 Spun cast iron pipes, cast iron fittings and accessories

Spun cast iron pipes and sand cast iron fittings shall comply with B.S. 416-1:1990 for medium grade coated pipes and fittings. Sockets and spigots shall be type B on pipes type A on fittings.

Access -doors shall be oval type with asbestos washers and manganese bronze bolts.

Jointing -Pipes and fittings shall be jointed with a gasket of hemp and tightly caulked cold caulking compound.

Fixing -Except where adequately restrained and supported by being built in, all pipes and fittings shall be fixed with one holderbat to each socket.
Pipes less than 75mm diameter shall be fixed 25mm clear of walls and those 75mm diameter and over, 40mm clear of walls. Holder bats shall comply with B.S. 416-1:1990 Table 21.

G.17 **Galvanised steel tubes and fittings**

Galvanised steel tubing shall comply with B.S. EN 10255:2004 with galvanised reinforced malleable cast iron fittings complying with B.S. 143 and 1256, with B.S. EN 10266-3;2005 threads.

Jointing -Tubing and fittings shall be seam-jointed using hemp and red lead putty or 'Boss' white.

Fixing -Tubes shall be fixed clear of walls or soffits, with galvanised malleable iron brackets. (or with hangers or special fixing where so described), spaced at not more than 3 metre centres.

G.18 **Plastic pipes and fittings**

Soil, waste and ventilating pipes, fittings and accessories shall be obtained from a manufacturing source approved by the Architect in writing to comply with B.S. 4514 in unplasticised PVC, fixed with brackets or hangers supplied by the manufacturer screwed to hardwood pugs with galvanised screws and jointed in accordance with the manufacturer's instructions.

Waste and anti-syphonage pipes below 54mm in diameter shall comply with B.S. 5255.

G.19 **Sleeves**

All drains passing through walls or foundations shall have sleeves of cast iron pipe of sufficient size to allow a 3mm clearance round the drain.

G.20 **Brackets and hangers**

Brackets for supporting horizontal drains from walls or beams, shall be of 75mm x 75mm x 10mm coated steel tee with one end rounded up and of sufficient length for the other end to be built in for a depth of 225mm.

Hangers for suspending drains from soffits shall consist of a pair of forget 50mm x 10mm coated steel half pipe saddles bolted together around the pipe and to a 20mm diameter coated steel bar of the required length with one end forged into an eye to receive the bolt. The top of the bar shall either be fanged for casting in, or shall be threaded with nut and plate washer. Where fixed through floors the projecting end of the bar shall be cut off flush with the nut.

G.21 **Wire balloons**

Wire balloons shall be of copper; mosquito proofed and shall comply with B.S. 416 Table 22.

G.22 **Appliances**

Appliances shall be as specified. In the even that the appliances specified are unavailable, the supply of alternatives which are at least equal in every respect in quality and specification to these specified will be permitted with the prior written approval of the Architect. The Contractor shall order the appliances immediately on commencing of the works, with a copy of the order being provided to the Architect.

G.23 **Testing**

The Contractor shall, from time to time as required to suit the progress of the building, air-test the plumbing and internal drainage in sections, to the satisfaction of the Architect, before any such work is covered. At the completion of the works all soil pipes and branches and waste pipes and other parts of the internal drainage works connected directly with any sewerage drain or sewerage drain ventilating pipe or soil pipes, shall be subjected to a water test and be proved capable of resisting a pressure of 1.5 metre head of water and the Architect may also direct that a sample or any other test be applied to any other parts of the drainage or ventilating system as he thinks desirable, and everything necessary for these tests shall be supplied by the Contractor.

G.24 **Cleansing**

On completion of the works, immediately before handing over, the Contractor shall cleanse thoroughly the whole of the system and prove that it is functioning freely to the satisfaction of the Architect.

G.25 **Habitation certificate**

On completion, the Contractor shall obtain a 'Habitation' certificate from the Local Council and forward it to the Architect.

HOT AND COLD WATER INSTALLATIONS

G.26 **Galvanised steel tubes and fittings**

Galvanised steel tubes shall comply with B.S. 1387 heavy grade for rising mains and branches off rising mains, and medium grade for distributing pipes; except where the latter are in contact with the ground when they shall be heavy grade. Fittings shall be galvanised reinforced malleable cast iron fittings complying with B.S. 143 and 1256, with B.S. EN 10266-3;2005 threads.

Jointing -Tubes and fittings shall be screw-jointed using hemp and red lead putty or 'Boss' white. Connections to flushing cisterns, bit taps and the like, shall be made with copper connectors to facilitate removal.

Fixing -Unless described as being fixed in chases, tubes shall be fixed clear of walls and soffits with galvanised malleable iron brackets complying with B.S. 1494, Table 6a (or with hangers or special fixing where so described), spaced at not more than the distance in the following tables:-

Spacing of fixings

Size of pipe	**Maximum spacing in metres**
13mm	2.00
19mm	2.50
25mm to 50mm	3.00
over 50mm	3.50

G.27 **Pipework generally**

Pipes shall be in the maximum lengths possible to avoid unnecessary jointing. Pipes shall be fixed to sufficient falls to prevent air locks and to enable the system to be drained.

G.28 **Sleeves**

Where sleeves are required for pipes passing through concrete, or blockwork, they shall be of galvanised steel tube of sufficient diameter to give at least 3mm clearance around the pipe.

G.29 **Pipework ancillaries**

Drainage taps with loose keys shall comply with B.S. 2879.

Ball valves shall be 'Portsmouth' type complying with B.S. 1212 for high or low pressure as described fitted with a silencer tube drilled with a 6mm hole above the level of the overflow warning pipe. Floats not exceeding 150mm diameter shall be plastic type complying with B.S. 2456, larger floats shall be copper type complying with B.S. 1968 Class C.

Bin-taps shall comply with B.S. 1010 and shall be of brass with fixed jumpers and where so described shall be chromium plated or shall have nozzle screwed for hose union and locking arm.

Stop valves shall comply with B.S. 1010 and shall be of brass with crutch handles or loose key where as described. These in exposed positions shall have polished brass bodies.

Gate, check and globe valves shall comply with B.S. 5154 and shall be of copper alloy unless otherwise described. Cast iron gate valves shall be parallel slide pattern valves to comply with B.S. 5151.

G.30 **Tanks and cisterns**

Storage tanks shall be sectional pressed galvanised steel tanks of 4.5mm plate of approved manufacture complete with cover with inspection manhole. Tanks shall be assembled entirely in accordance with the manufacturer's written instructions.

Storage cisterns shall comply with B.S. 417, Part 2, Grade A, galvanised with one piece galvanised covers.

G.31 **Testing**

Clean out storage cisterns and tanks, including removal of all swarf, fill and test the whole of the hot and cold water installations, rectify all defects, drain and leave in a clean, serviceable condition.

FLOOR, WALL AND CEILING FINISHINGS

LIST OF CLAUSES

FLOOR, WALL AND CEILING FINISHING

PLASTERWORK

H.1 Generally

Render, both internal and external shall be cement and sand in the proportions 1:4 finished to thickness specified.

Plaster shall consist of an undercoat of 1 par cement to 4 part sand by volume and 5% lime putty, and a finishing coat of 1 part cement to 1 part sand to 5 parts lime putty. Each coat shall be finished to the thickness specified.

H.2 Cement

Cement shall be ordinary Portland cement and shall comply with B.S. 8481. White and coloured cements shall comply with B.S. 8481 and be obtained from an approved manufacturer.

H.3 Lime putty

Lime putty shall be prepared from hydrated lime complying with BS EN 459-1:2010

Hydrated lime shall be added to water, stirred to a creamy consistency and left to mature for at least 16 hours before use.

Alternatively, ready slaked lime may be obtained from an approved source.

The lime putty shall be protected from drying out.

H.4 Sands

Sand for cement and lime mixes shall comply with B.S. 1199 and 1200:1976.

Sand for use with White Portland cement shall be silver sand and that for use in coloured cement mixes shall be of a suitable colour.

H.5 Water

Water shall be clean and kept free from all impurities.

H.6 Storage of materials

All plasters, lime and cement, shall be stored in a properly roofed, weatherproof, dry, well ventilated shed, used exclusively for this purpose, with a wood floor not less than 150mm clear above the ground. All sands shall be stored separately, according to type, on clean, hard dry standing and shall be protected from contamination.

H.7 Testing

Samples of all materials, as directed, shall be taken from time to time as required by the Architect.

All defective materials shall be removed from the site without delay, at the Contractor's expense.

H.8 Preparation of surfaces

Surfaces to receive plastering shall be dry brushed to remove all loose particles, dust, laitence, efflorescence, etc., and any projecting fins on concrete surfaces shall be hacked off. All

trances of mould oil shall be removed from concrete surfaces by scrubbing with water containing detergent and rinsing with fresh water.

Concrete surfaces shall be hacked over to provide adequate key.

Surfaces shall be wetted and re-wetted as required to equalise suction before the plaster costs are applied. In particular, dense hard concrete surfaces shall be wetted and re-wetted as required before bonding plaster is applied.

H.9 **Dubbing out**

Dubbing out shall be in the same mix as subsequent coats and shall not exceed 10mm in thickness in one particular application.

H.10 **Mixing of materials**

All materials shall be thoroughly mixed in the proportions described. No mixes of plasters, other than those described, shall be used.

Bunkers and gauge boxes shall be thoroughly cleaned after each mix and due care and attention shall be given at all times to their cleanliness.

Cement - lime - sand plasters shall be used within two hours of the gauging with cement.

All tools shall be kept clean and fresh plaster shall not be contaminated with set plaster.

H.11 **Period between coats**

Cement - lime - sand undercoats shall be allowed to dry out thoroughly before a further coat is applied.

H.12 **Finish**

All undercoats shall be scratched to provide an adequate key for the next coat. Unless otherwise described, all rendering shall be finished with a wood float, as shall all undercoats. All finishing coats shall be finished with a steel trowel.

H.13 **Junctions of wall and ceiling**

A neat definite cut shall be made with the edge of the trowel through all coats of the wall plaster at the junctions with ceilings.

H.14 **Arrises**

All arrises shall be pencil rounded unless otherwise specified.

BEDS AND BACKINGS

H.15 **Materials, storage, testing and mixing of materials**

Cement, sand, water, etc., storage, testing and mixing of materials shall be as described for plasterwork.

H.16 **Light weight roof screed**

Light weight roof screed shall consist of one part cement to eight parts vermiculite aggregate, laid to falls as necessary and shall be covered with a minimum of 12mm cement and said (1:4) screed finished to suit the requirements of the particular finishings.

All junctions between horizontal and vertical surfaces to roofs shall be finished with a triangular angle fillet of the sizes described.

Light weight roof screed shall be cured properly for 7 days, and shall be thoroughly and completely dry before any finishings are applied.

H.17 **Cement and sand proportions**

Cement and sand shall be in the proportions of 1:3 or 1:4, as specified, by volume.

H.18 **Preparation of surfaces**

Walls shall be prepared as described for 'Plasterwork' Concrete floors or roofs to receive screeds or pavings shall be hacked where necessary to remove concrete mortar or plaster dropping and to expose the course aggregate and well brushed to remove all loose particles and dirt.

Concrete floors and roofs shall be wetted before screeds or pavings are laid, with a cement sand slurry (1:1) being scrubbed into the surface in front of the screed or paving laying.

H.19 **Laying**

Beds and backings shall be laid in bays of suitable lengths and widths and to falls where so shown with proper screeds and shall be kept wet and protected until set hard.

H.20 **Surface of beds and backings**

Screeded beds for in-situ floor finishings or floor finishings bedded in mortar, shall be left rough from the screeding board.

Floated beds for inflexible floor finishings bedded in mastic, shall be left with a plain untextured surface.

Trowelled beds for flexible finishings shall be finished smooth and free from score marks, grooves or depressions.

Screeded backings for in-situ wall finishings or wall finishings bedded in mortar, shall be scratched for key.

Floated backings for inflexible wall finishings fixed with adhesive shall be left with a plain surface.

Trowelled backings for flexible wall finishings shall be finished smooth and free from score marks or depressions.

Beds and backings for finishings by specialists shall be to he approval of the specialist Sub-Contractor.

OTHER INSITU FINISHINGS

H.21 **Materials, storage, testing and mixing of materials**

Cement, sand, water, etc., storage, testing and mixing of materials, shall be as described for 'Plasterwork'.

H.22 **Waterproofers**

Waterproofers shall be 'Sealocrete' double strength premix, or other approve integral waterproofer, used in accordance with the manufacturers instructions.

H.23 **Integral hardeners**

Integral hardener shall be "Febspeed Plus' or other approved, used in accordance with the manufacturers instructions.

H.24 **Preparation of surfaces**

Concrete surfaces to receive paving without screeds, shall be prepared as described herein.

H.25 **Cement and sand paving**

Cement and sand paving shall be in the proportions and to the thickness described, and shall be finished with a steel trowel unless otherwise specified and shall be protected and kept wet until hard.

H.26 **Granolithic paving**

Granolithic paving shall consist of 1 volume of cement to 1 volume of sand mixed with 2.5 volumes of approved local stone aggregate laid to he thickness described.

The base shall be kept wet for 12 hours before laying granolithic unless the paving is being laid monolithically with the base.

Immediately after laying the granolithic shall be protected and kept damp until thoroughly hard. It shall then be ground and polished by machine. Any holes or pores which become apparent after grinding shall be filled with the same mix as the paving, well worked into the surface and left proud. The portions so treated shall be protected and kept damp until hard when they shall be polished.

H.27 **In-situ terrazzo paving**

Terrazzo finish shall be carried out by a firm approve by the Architect in writing. It shall be composed of a screeded underbed of cement and sand (1:3) and the terrazzo which shall be a minimum of 16mm thick. Before terrazzo work is commenced, the Contractor shall submit sample pieces to the Architect for approval.

The terrazzo shall consist of coloured cement and approve local marble aggregate free from dust in the proportion 1:2. The colour of the cement and the colour and grading of the aggregate shall be as selected by the Architect.

The terrazzo shall be laid while the underbed is still plastic and shall be well compacted and trowelled to produce a non-absorbent surface. It shall be divided into bays 1 metre by 1 metre with 3mm aluminium strips for the fully depth of the terrazzo and underbed. Immediately after laying the terrazzo shall be protected and kept damp until thoroughly hard. It shall then be ground and polished by machine. Any holes or pores which become apparent after grinding shall be filled with neat coloured cement well worked into the surface and left proud. The portions so treated shall be protected and kept damp until hard when they shall be polished. Dry polishing shall only be carried out with the agreement of the Contractor.

H.28 **Washed terrazzo wall finishings**

Washed terrazzo finish shall be carried out by a firm approve by the Architect in writing and shall be guaranteed for six months from the date of completion of the work. It shall be composed of a screeded underbed of cement and sand (1:4), and terrazzo with both layers of the thicknesses specified.

The terrazzo shall consist of cement and local marble aggregate free from dust in the proportions 1:1:5. The colour and grading of the cement and aggregate shall be as selected by the Architect.

The terrazzo shall be laid whilst the underbed is still plastic and shall be compacted and trowelled to produce a non-absorbent surface. Before the final set takes place the terrazzo surface shall be lightly brushed, with just a sufficient amount of water to expose the surface aggregate to produce an even appearance. Adjoining areas and finishings shall be remedied to the satisfaction of the Architect at the Contractor's expense. The whole surface when hard shall be covered with one coat of approved silicone solution.

H.29 **Tyrolean finish**

Tyrolean finish shall be applied by machine in accordance with the instructions issued by the Cement Marketing Company. The colour of the cement shall be as selected by the Architect. If required to do so by the Architect, the Contractor shall provide a sample panel or panels of Tyrolean finish the cost of which shall be deemed to be included in the Contract Sum. All adjoining areas and finishings shall be masked and protected so as to prevent staining whilst applying the Tyrolean finish.

TILE, SLAB AND BLOCK FINISHINGS

H.30 **Mortar for bedding and pointing**

All meterials for mortar, their storage, testing and mixing shall be as described in 'Plasterwork'.

H.31 **Preparation of surfaces**

All surfaces to receive the finishings in this section shall be thoroughly cleaned, screeds to receive finishings bedded in mortar shall be well wetted before laying is commenced.

H.32 **Glazed ceramic wall tiles**

Glazed ceramic wall tiles shall be of the sizes and colours described, and having cushion edges. The tiles shall be socked in clean water for at least half an hour before fixing, stacked on edge tightly together and end tiles turned glaze outwards and fixed as soon as the surface water has gone. The tiles shall be bedded in cement and sand, (1:3), with straight joints 1.5mm wide pined in white cement, after scratching the surface of the backing screed to form a key.

Alternatively, tiles shall be wiped clean and fixed dry with 'Richafix', or other approved adhesive, all in accordance with the manufacturers recommendations with straight joints 1.5mm wide pointed in white cement.

H.33 **Porcelain Floor tiles**

Porcelain floor tiles shall be of the sizes and colours described, and having cushion edges. The tiles shall be bedded in cement and sand, (1:3), with straight joints 1.5mm wide pined in white cement, after scratching the surface of the backing screed to form a key.

Alternatively, tiles shall be wiped clean and fixed with 'Richafix', or other approved adhesive, all in accordance with the manufacturers recommendations with straight joints 1.5mm wide pointed in white cement.

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PLAIN SHEET FINISHINGS

H.34 **Generally**

Plywood, blockboard, chipboard, fibreboard etc., and their fixing shall be as described in Joinery.

H.35 **Method of measurement**

The work 'wall' in the descriptions of plasterwork shall include walls and partitions of concrete, concrete blockwork, brickwork or clay tile blockwork.

Prices for in-situ finishings and beds or backings shall include hacking concrete or raking out blockwork or brickwork joints to form keys.

Prices for all finishings and beds and backings shall include for the following:-

(1) Working behind pipes, and around flush electrical boxes.
(2) All dubbing out required on new work to reduce irregularities or cambers, and to form flat surfaces in the appropriate undercoat.
(3) Any footwork required.
(4) Trowel cuts between ceiling and wall plaster.

GLAZING

LIST OF CLAUSES

GLAZING

DEFINITIONS

I.1 **Method of glazing**

Notwithstanding reference in the descriptions of glazing method to glazing beads, or the like, with associated fixings, and insulating strips, such components will be measured separately in accordance with the appropriate rules of the S.M.M.
The provision of glazing compounds and putties and springs, clips and other sundry fixing, shall be deemed to be included with all items of glazing.

Distance pieces and setting blocks, in appropriate materials, shall be provided in accordance with good glazing practice and they shall be deemed to be included with all items of glazing.

MATERIALS

I.2 **Glass generally**

All glass shall comply in all respects with the appropriate section of B.S. 6262-4:2005. Plain sheet clear glass shall be O.Q.; plate glass shall be GG; float glass shall be as manufactured by Pilkington Brothers Limited.

I.3 **Putty for glazing to wood**

Putty for glazing to wood shall comply with manufacturers standards.

I.4 **Putty for glazing to metal**

Putty for glazing to metal shall be approved mastic manufactured for that purpose, used in accordance with the manufacturer's instructions.

I.5 **Samples**

Samples not less than 150mm square, are to be submitted to the Architect for approval before any glass is cut.

I.6 **Glass to be kept free from moisture**

All glass surfaces shall be kept dry during transit and storage. Glass becoming moist from condensation or other causes, shall be thoroughly dried and aired.

I.7 **Rebates and beads**

All glazing beads in wood shall be primed, (as measured in Painting and Decorating), before glazing is commenced.

I.8 **Edges of glass**

All glass shall have clean cut edges. The edges of louvres shall be rounded and polished.

I.9 **Bead glazing**

Glazing fixed by beads shall have both glass and beads bedded and back puttied, and the putty trimmed off flush. Where sealing strip is used, it shall pass round both faces of the glass and be trimmed off on both sides. Metal surfaces to receive sealing strip shall be treated with mineral oil before glazing.

I.10 **Putty glazing**

Glazing in putty shall be executed in proper bed and back putties, springs, clips and splayed and mitred front putties. The back putties shall be trimmed off flush with the top of the rebate and the splayed from putties shall be finished 3mm back from site line to allow for sealing between glass and putty with paint.

I.11 **Wired glass**

The wire in wired glass shall extend to the edges and be free from rust, and be parallel to the framing.

I.12 **Method of measurement**

Beads and sealing strips have been measured separately. Prices for glazing with beads are to include for taking out and refixing beads as required, which shall be deemed to be bradded unless otherwise described.

PAINTING AND DECORATING

LIST OF CLAUSES

MATERIALS

PREPARATION OF SURFACES

WORKMANSHIP

PAINTING AND DECORATING

MATERIALS

J.1 **Colour range**

Painting and decorative schemes shall be carried out in colours selected by the Architect from the approved range of colours.

J.2 **Approval of brands**

The Contractor shall seek, in writing, approval from the Architect for all brands of paint he wishes to use.

J.3 **Quality of products**

Where a type of paint is produced by the manufacturer in more than one quality, only paints and materials of the first or best quality shall be used in the works. The container label shall indicate clearly the quality of the paint being used.

Where it is not evident that the first or best quality of paint is being used, the Architect will order the removal of such materials from site and rectification of any work executed with those materials, all at the Contractors expense.

J.4 **Delivery**

All paints, varnishes, distempers and other surface coatings shall be delivered in sound, sealed containers, labelled clearly by the manufacturer, the label or decorated container stating:-

(a) The type of products
(b) The brand name, if any
(c) The use for which it is intended
(d) The manufacturers batch number
(e) The quality of the contents where more than one quality is available

The label shall be a printed label; typewritten labels will not be accepted.

The batch deliveries shall be dated and used strictly in order of delivery.

No paints, other than water based paints and bituminous paint, shall be delivered in containers exceeding 5 litres capacity.

J.5 **Same maker's materials used for coatings**

While materials for the works may be obtained from several makers, undercoats and finishing coast for a particular surface must be obtained from the same maker, (i.e. one maker's finishing coat must not be applied over another maker's undercoat).

J.6 **Information and facilities to supplies**

The Contractor shall supply the paint manufacturers with all relevant details of the materials required to comply with the descriptions in this Document and the manufacturers shall be given every facility for inspecting the work during progress in order to ascertain that the materials are being used in accordance with their instructions, and they are to be allowed to take samples of their products from the site if they so desire.

J.7 **Storage**

All materials shall be kept in a dry, clean store, protected from the elements.

J.8 **Remedying defects due to defective materials**

All materials, which in the opinion of the Architect are unsatisfactory, shall be immediately removed from the site, and any work executed with such defective materials shall be made good by the Contractor, at his own expense, to the satisfaction of the Architect.

J.9 **Knotting**

Knotting shall be as Architect's proposal.

J.10 **Stopping**

Stopping for:

(a) Plasterwork shall be plaster-based filler

(b) Concrete, rendering or blockwork, shall be of similar material to be background and shall be finished with a similar texture

(c) Asbestos cement and asbestos based insulating board, shall be a composition of asbestos filler and cement

(d) Internal woodwork, hardboard, fibreboard and plywood, and shall be tinted to match the colour of the undercoat

(e) External woodwork, shall be white lead paste with or without the addition of red lead, and gold size, and shall be tinted to match the colour of the undercoat

(f) Clear finished woodwork, shall be a stopping tinted to match the surrounding woodwork.

J.11 **Linseed oil**

Refined linseed oil shall comply with manufacturers.

Raw linseed oil shall comply with manufacturers.

Boiled linseed oil shall comply with manufacturers.

J.12 **White spirit**

White spirit shall comply with manufacturers.

J.13 **Size**

Size shall comply with manufacturers.

J.14 **Cement paint**

Cement paint shall be 'Snowcem', 'Cempexo', or other approved.

J.15 **Emulsion paint**

Emulsion paint (interior and/or exterior), shall have a P.V.A. base and shall be of an approved brand. The first coat shall be thinned in accordance with the manufacturer's instructions. Where described as applied externally, the paint shall incorporate an approved fungicide to prevent fungus growth.

J.16 **Black bituminous paint**

Black bituminous paint shall comply with manufacturers as well as drinking water tanks.

J.17 **Primer for alkaline surfaces**

Primer for alkaline surfaces shall be a special primer obtained from the maker of the undercoat and finishing coat.

J.18 **Primer for aluminium**

Primer for new or weathered aluminium shall be zinc chromate priming paint in accordance with DEF 1039.

J.19 **Primer for bituminous surfaces**

Primer for bituminous surfaces to be finished with oil paint shall contain leafing aluminium flake.

J.20 **Primer for iron and steelwork**

Primer for iron and steelwork shall be:-
(a) Lead based priming paint complying with manufacturers.
(b) Calcium plumbate priming paint complying with manufacturers.

J.21 **Primer for zinc or galvanised steel**

Primer for weathered or new zinc and galvanised surfaces shall be calcium plumbate paint complying with B.S. 3698 Type A.

J.22 **Creosote type preservative**

Creosote type preservative shall comply with B.S. 144 or 3051

J.23 **Non creosote type preservative**

Non creosote type preservative shall be "Brunophen No.2", "Rentokil QD" or other approved.

J.24 **Primer for hardboard**

Primer for hardboard, not factory primed or sealed, shall be a suitable primer obtained from the maker of the undercoat and finishing coat.

J.25 **Primer for woodwork**

Primer for woodwork, other than the internal surfaces of external doors, windows and their frames and the backs of frames and linings, etc., in contact with masonry concrete or plaster, shall be leadless white or light grey priming paint not darker than colour 0-093 of B.S. 4800F which shall be compatible with the subsequent coats and obtained from the same maker.

J.26 **Oil paints**

Hard gloss, semi-gloss matt and flat oil paints, and respective undercoats, shall be of approve brands.

J.27 **Polyurethane lacquer**

Polyurethane lacquer shall be an approved single or two pack lacquer as described of interior or exterior quality, as appropriate.

J.28 **Decorative wood stain**

Decorative wood stain shall be Pinotex as manufactured by Sadolins Paints (T) Ltd, or other equal and approved.

PREPARATION OF SURFACES

J.29 **Approval**

The preparation of all surfaces must be seen and approved by the Architect before any coatings are applied.

J.30 **Stopping**

Stopping referred to in the following clauses shall be the appropriate stopping herein before described.

J.31 **Plaster, rendering, concrete, blockwork and brickwork**

All plaster or mortar splashes, etc., shall be removed from plaster, rendering, concrete, blockwork and brickwork by careful scraping; all holes, cracks, etc., shall be stopped and the whole of the surfaces shall be brushed down to remove dust and loose materials. In addition, all traces of mould oil shall be removed from concrete surfaces by scrubbing with water and detergent and rinsing with clean water to remove all detergent.

When efflorescence has occurred, or is suspected, painting shall be deferred for a period as required by the Architect.

J.32 **Asbestos cement**

All plaster or mortar splashes, etc., shall be removed from asbestos cement by careful scraping; all oil and grease spots shall be removed with white spirit; all holes shall be stopped and the whole of the surfaces brushed down to remove dust and loose material.

J.33 **Lead and copper**

Lead and copper surfaces shall be washed with soap and water, roughed with abrasive paper and washed with white spirit.

J.34 **Aluminium**

Aluminium surfaces shall be washed with white spirit and either carefully roughed with abrasive paper and washed with white spirit.

J.35 **Iron or steel**

Before fixing, all rust and scale shall be removed from iron and steel surfaces by wire- brushing, scraping, hammering, flame cleaning etc.

J.36 **Zinc and galvanised surfaces**

Zinc and galvanised surfaces shall be washed with white spirit.

J.37 **Hardboard**

All dirt and grease shall be removed from hardboard surfaces. After priming, all nail holes and other imperfections shall be stopped.

J.38 **Fibreboard**

All dust shall be brushed off from fibreboard surfaces, after priming, all nail holes and other imperfections shall be stopped.

J.39 **Plywood**

Surfaces of plywood to be painted shall be filled as required with a plaster based filler for internal work, and a filler, as described in Clause J.10(e), for external work, and then rubbed down and all dust and loose materials brushed off.

After priming, all imperfections shall be stopped rubbed down and brushed off.

J.40 **Woodwork to be painted**

Before fixing woodwork, a;; surfaces which will be visible after fixing, shall be rubbed down and all knots and resin pockets shall be scorched back and coated with knotting.

After priming and fixing, all nail holes and other imperfections shall be stopped and the whole surface shall be rubbed down and all dust brushed off.

J.41 **Woodwork to receive clear finish**

All holes and other imperfections in surfaces to receive a clear finish, shall be stopped and the whole surface be rubbed down and all dust brushed off.

WORKMANSHIP

J.42 **Standard of workmanship**

Prior to the commencement of internal decoration, areas not exceeding 50 square metres in total area, and designated by the Architect, shall be completely decorated, and after approval shall be used as a standard for the whole of the works. Any additional cost involved in carrying out such decoration in advance of the general work shall be deemed to be included in the Contract Sum. Such decorated surfaces shall be made good and touched up as necessary prior to the handling over of the works.

J.43 **Stirring of materials**

The contents of all cans and containers of all materials must be properly and thoroughly stirred before and during use and shall be suitably strained as and when necessary.

J.44 **Manufacturers instructions**

All materials shall be used strictly in accordance with instructions, issued by the manufacturers concerned. The additions of thinners, driers or other materials will only be permitted when specially required by the maker and the procedure approved by the Architect.

J.45 **Brush work**

Unless otherwise described, all coatings shall be applied by brush.

Written permission must be obtained from the Architect for the application of coatings by spray or roller where not so described, and if permission is granted, such application shall not result in extra cost to the Employer.

J.46 **Priming of joinery**

Joinery shall be delivered to the site unprimed and is to be protected from rain and damp during transit. It is to be stored in clean, dry, ventilated structures and no primer shall be applied while the timber is in any way damp. The stores and drying room shall be of adequate size to allow for proper coating and storage of primed work. Primers shall be applied as soon as possible after inspection and acceptance of the joinery by the Architect.

J.47 **Condition of priming**

If, by the time that the work is to receive the first undercoat, the priming coat has in any way deteriorated, or has been damaged, the affected portions or the whole, if necessary, shall be rubbed down and re-primed.

In the case of articles primed at works, the priming shall be touched up where required with a similar primer.

J.48 **Coatings to be dry**

All coating shall be allowed to dry thoroughly before succeeding coats are applied.

J.49 **Rubbing down**

All undercoats for oil paints and clear finishes shall be rubbed down to a smooth surface with abrasive paper, and all dust removed before the succeeding coat is applied.

J.50 **Differing colours of undercoats**

Each succeeding coat of priming and undercoating paint shall be sufficiently different in colour as to be readily distinguishable.

J.51 **Painting in unsuitable conditions**
No coatings shall be applied to surfaces affected by wet, damp, or other unsuitable conditions, or to any surface damp with moisture.

J.52 **Protection of wet surfaces**

Adequate care must be taken to protect surfaces while still we, by the use of screens and 'wet paint' signs, where necessary.

J.53 **Damage to adjoining surfaces**

Care must be taken when storing materials, preparing surfaces or painting, etc., not to damage or stain other work. The Contractor shall remove all such stains, make good, and touch up.

J.54 **Cleanliness**

All brushes, tools and equipment shall be kept in a clean condition and surfaces shall be clean and free from dust during painting.
Painting shall not be carried out in the vicinity of other operations which might cause dust.

The Contractor shall provide a suitable moveable receptacle, into which are to be placed all the liquids, slop washings, etc., which are on no account to be thrown down any of the gullies, manholes, sinks, lavatories, W.C.'s or any other sanitary fittings. All solid refuse or inflammable residues must be removed from the site, or burned.

J.55 **Removal of ironmongery, etc.**

All surface fixed ironmongery fittings, etc., except hinges, shall be removed before painting and refixed on completion.

J.56 **Method of measurement**

One coat of lead based pink primer has been measured to the backs of all timber frames, etc., which will ultimately be fixed in contact with concrete, blockwork, rendered or plastered surfaces.

DRAINAGE

LIST OF CLAUSES

GENERALLY

MATERIALS

WORKMANSHIP

DRAINAGE

GENERALLY

K.1 **Preambles to other sections**

The preambles contained in other sections of this Document shall apply equally hereto where applicable, so far as is consistent with the clauses following.

K.2 **Notices**

The Contractor shall give all requisite notice. Uncoloured plans will be supplied by the Architect at the Contractor's request.

K.3 **Drainage Bye-laws**

All of the works shall comply with he requirements of the drainage Bye-laws made by the Local Authority and shall be executed to the satisfaction of the Architect and the Local Authority.

K.4 **Inspections**

The Contractor shall give written notice to the Architect for the purpose of inspection and measurement, whenever sections of:-

(a) excavations are completed
(b) concrete beds are laid
(c) drains are completed

and no further work shall be executed until each stage of the work has been inspected.

K.5 **Levels of existing drains**

The Contractor shall check the invert levels of existing drains, sewers, and manholes before laying new drains, and shall notify the Architect immediately if the declared invert levels are found to be inaccurate.

MATERIALS

K.6 **Plastic pipes and fittings**

Plastic pipes and fittings shall be obtained from a manufacturing source approved by the Architect in writing to comply with B.S. 5481 in unplasticized PVC with spigot and socket and/or loose socket joints. All bends are to be long radius easy bends. Branches shall be infection moulded. Fittings fabricated on site will not, under any circumstances, be permitted.

K.7 **Spun cast iron drain pipes and cast iron fittings, gullies, etc.**

Spun cast iron drain pipes shall be coated centrifugally cast (spun) iron pipes complying with B.S. 4622.

Fittings, gullies, etc. shall be of coated cast iron and shall comply with B.S. 598:2007+A1

K.8 **Concrete pipes and fittings**

Concrete pipes and fittings shall comply with B.S. 5911-3:2010+A1. They shall be reinforced, and of sulphate resisting cement if specified.

K.9 **Manhole covers and road gratings**

Manhole covers and road gratings and frames shall comply with BS EN 124:2005

K.10 **Step irons**

Step iron shall be galvanised malleable cast iron complying with BS EN 13101

WORKMANSHIP

K.11 **Setting out**

The Contractor shall set out all drains in accordance with the drawings, and provide all profiles, etc., necessary for the execution of the work.

K.12 **Excavation**

The bottoms of all excavations shall be trimmed and consolidated to the correct levels. Unauthorised excavations below the required levels shall be filled with concrete of the same composition as for drain beds, at the Contractor's expense.

Where the bottoms is insufficiently firm, the Contractor shall excavate until, in the Architect's opinion a firm bottom is obtained and the level shall be made up with concrete of the same composition as for drain beds. Particulars of such additional work shall be agreed with the Architect's representative before the work is covered up, otherwise no claim in this respect will be entertained.

K.13 **Planking and strutting**

Care shall be taken not to undermine the foundations of the buildings and, if so directed by the Architects, planking and strutting shall be left in, or other means adopted to protect the foundations. Details of such additional items shall be agreed with the Architect's representative before the work is covered up, otherwise no claim in this respect will be entertained.

K.14 **Backfilling**

Trenches for plastic pipes shall first be filled with selected screened excavated material carefully hand-tamped between the pipe and sides of the trench, followed by 150mm - 200mm of similar material before the general filling is carried out.

Trenches for concrete or cast iron drains shall first be filled to a depth of 300mm with selected fine material carefully hand-packed around the pipe. On the account shall materials be tipped into the trench until the first 300mm has been completed.

Filling shall be continued in layers not exceeding 300mm thick well rammed and, if necessary, watered.

K.15 **Laying drains**

Drains shall be laid truly straight on line and gradient with sockets upstream and the full bore shall be unobstructed.

K.16 **Plastic drains**

Plastic drain pipes shall be laid and jointed with solvent welded joints entirely in accordance with the manufacturers instructions.

Pipes shall be bedded in sand after all hard obstructions have been removed from trench bottoms.

K.17 **Cast iron drains**

Cast iron drains shall be laid on concrete beds where specified or shown on the drawings and shall be jointed with a gasket of hemp, well caulked, to a depth of 30mm for 100mm pipes and 40mm for larger pipes, and remainder of the socket shall be filled with molten lead or lead fibre solidly caulked.

Connection of iron to concrete drains shall be jointed as described for concrete drains.

Cast iron drains fixed to wall or beams shall be supported on brackets at 1,350mm centres.

Gullies, outlets, etc., on drains under concrete floors shall be set in position at correct levels before the floors are laid.

K.18 **Concrete drains**

Concrete drains shall be jointed with one turn of tarred gasket, well caulked and the remainder of the socket filled with cement and sand, caulked and the remainder of the socket filled with cement and sand, (1:3), finished with an angle filled around the pipe. All surplus mortar shall be removed from the inside of the pipe with a badger. Where pipes are sulphate resisting, the jointing mortar shall contain sulphate resisting cement.

K.19 **Concrete beds, haunches and coverings**

Where specified or shown on drawings, drains shall be laid on concrete, (13.5 N/sq mm 25mm aggregate), beds 100mm thick, 400mm wide for 100mm diameter drains and 450mm wide for 150mm diameter drains. The concrete shall be haunched up both sides of the barrel to give lateral support.

Where drains, other than cast iron drains, are laid under buildings or pavings carrying vehicular traffic, they shall be completely surrounded in concrete, (13.5N/sqmm 25mm aggregate) 150mm thick, (i.e. 400mm x 400mm overall for 100mm pipes and 450mm x 450mm overall for 150mm pipes). Where directed, drain beds shall be reinforced.

Gullied shall be bedded and surrounded in concrete 13.5N/sqmm - 25mm aggregate minimum 150mm all round.

K.20 **Sleeves**

All drains passing through walls or foundations shall have sleeves of cast iron pipes of sufficient size to allow a clearance round the drain.

K.21 **Benching**

Benching in bottom of manholes shall be concrete (13.5N/sqmm - 25mm aggregate) to falls of not less than 10% to channels finished with cement and sand (1:2), 25mm thick, trowelled hard and smooth with all angles rounded.

K.22 **Bedding and sealing covers and frames**

Frames to manhole covers shall be bedded in cement mortar (1:3), and the covers in grease and sand.

K.23 **Testing**

All drains and manholes shall be tested for water-tightness and straightness to the satisfaction, and in the presence of, the Architect and the Local Authority. Drains shall be filled with water to a head of 1.50 metre and are to be tested in sections agreed with the Architect:-

(i) after jointing
(ii) after haunching and backfilling

(iii) after completion of the works

The Contractor shall provide all necessary testing apparatus and shall carry out such other tests as are required by the Architect and the Local Authority.

K.24 **Clean and flush all drains**

All drains, gullies, manholes, etc., shall be cored, cleaned and flushed on completion.

K.25 **Method of measurement**

Where not otherwise stated, the starting level for trench and manhole excavation shall be:-

(i) the formation level in areas where the site is excavated to reduce levels.

(ii) existing ground level in areas where no excavation is required, or where filling is required.

The depths of all the trenches in the following description lie within the same 1.50 metre stages as the average depths stated.

Princes for excavating pipe trenches shall be deemed to include keeping the free from general water (i.e. all water except spring or running water).

Notwithstanding the provisions of S.M.M. Clause K.7 (a) to (c) the descriptions of excavating manholes, yard gullies, septic tanks and soakpits shall be deemed to include grading bottoms, planking and strutting, return filling and compacting, disposal of surplus solid and keeping excavations free from water.

Prices for building pipes into manholes shall include for building-in on rake where necessary.

Prices for concrete beds, benchings and coverings for pipes laid in trenches, shall be deemed to include for any necessary formwork. Formwork required for beds, etc., for pipes above ground, and for casing to vertical pipes, is referred to in the descriptions of such items.

Prices for all gullies shall be deemed to include for all necessary excavation, return filling, disposal or surplus excavated material, planking and strutting, and trimming and ramming bottoms.

EXTERNAL WORKS

LIST OF CLAUSES

GENERALLY

MATERIALS

WORKMANSHIP

EXTERNAL WORKS

GENERALLY

L.1 **Preambles to other bills**

Preambles contained in other sections of this Document shall apply equally to this section so far as is consistent with the following clauses.

L.2 **Inspections**

The Contractor shall give written notice to the Architect for the purpose of inspection and measurement, whenever sections of:

(a) excavations and preparations of sub-grade are completed
(b) sub-grade drainage is complete
(c) sub-base course is complete
(d) base course is complete

MATERIALS

L.3 **Soil for planted areas**

Soil for planted areas shall be vegetable soil free from roots and rubbish and treated with weed killer to prevent the growth of weeds.

L.4 **Sand for filling under footpaths**

Sand for filling under footpaths, shall be clean, dry pit or river sand, free from vegetable soil, roots and rubbish.

L.5 **Granular materials for sub-base, base and surfacing**

and Sub-base Base, Sub-base and Surfacing

B.S. Sieve Size	**Percentage passing Normina mximum size**				
	75 mm	**38 mm**	**19 mm**	**9.5 mm**	**4.75 mm**
75 mm	100	-	-	-	-
38 mm	80-100	100	-	-	-
19 mm	60-80	80-100	100		
9.5 mm	30-65	40-75	80-100	100	
4.75 mm	25-55	30-60	50-85	80-100	100
2.36 mm	20-45	25-50	35-70	50-80	80-100
0.425 mm	10-30	15-30	15-35	25-50	25-55
0.075 mm	5-15	5-15	5-15	10-25	10-25

The 9.5mm and 4.75mm nominal size materials may have up to 35% of stones not larger than 38mm (1:5 in) provided that the materials passing the 4.75mm (3/16 in) sieve is within the limits specified.

Not less than 10% should be retained between each pair of successive sieves, excepting the largest pair.

Furthermore the materials shall fulfil the following requirements.

K.6 **Base**

The CBR value shall not be less that 80% when tested at B.S. Heavy Compaction (unsoaked condition).,

Plasticity index : 0-6%
Liquid limit : 0-25%
Linear Shrinkage : 0-4%

K.7 **Sub-base**

The CBR value shall not be less than 35% when tested at B.S. Heavy Vompaction after 48 hours soaking.

Plasticity index : 0-15%
Liquid limit : 0-35%
Linear Shrinkage : 0-8%

K.8 **Surfacing**

Climate	**Plasticity Index**	**Liquid Limit**	**Linear Shrinkage**
Wet	4 - 9%	0 - 35%	2 - 4%
Seasonal wet	6 - 15%	0 - 40%	3 - 7%

This specification shall also apply to materials for shoulders.
In case the gravel surfacing is a temporary surface only, and the layer at a later stage shall constitute sub-base in a bitumen surfaced road, then the material shall meet the CBR requirement to sub-base material.

K.9 **Macadam**

The material shall consist of coarse and fine aggregate derived from crushed hard rock of approved quality.

The coarse aggregate for macadam shall comply with the 50mm or 40mm nominal sizes of B.S. EN 13043. The fine aggregate shall all pass the 5mm sieve.

The coarse aggregate shall be of approximately cubic shape, have at least one fractured face and with an insignificant amount of elongated or flaky particles.

The flakiness index must not exceed 40. The aggregate crushing value must not exceed 35%.

K.10 **Aggregate for premix macadam surfacing**

Aggregate for premix bitumen macadam surfacing shall consist of natural rock aggregate complying with B.S. 594987:2015.

K.11 **Chippings**

Chippings for blinding 1st and 2nd seal-coat shall be single sized road stones conforming with B.S. EN 13043- single sized Road Stones and Chippings. Samples of all grades of stones and chippings shall be submitted to the Architect for approval before any is delivered to the site.

1st Wearing Coat : 14mm nominal size chippings
2nd Wearing Coat : 10mm nominal size chippings

K.12 **Blinding**

Blinding shall be 4mm gauge hard stone chippings, free from clay dust or other deleterious matter.

K.13 **Precast concrete paving slabs**

Precast paving slabs shall comply with manufacturers except for sizes.

K.14 **Kerbs**

Precast concrete kerbs shall be finished true and smooth on all exposed faces.

K.15 **Prime coat**

The prime coat for macadam paving shall be bitumen grade M.C.I. The temperature at application shall be 55-80 SYMBOL 176 \f "Symbol" C.

K.16 **Bitumen**

Bitumen for first and second wearing coats shall be cutback bitumen grade R.C. 800. The temperature at application shall be

Bitumen for premix bitumen macadam shall be grade 500/700 bitumen.

WORKMANSHIP

K.17 **Generally**

The sub-grade, sub-base and base course for roads and parking areas shall be prepared and laid at a convenient time before completion of the contract, as shall be agreed between the Architect and the Contractor, together with their kerbs and foundations.

The wearing course shall be applied at a later date, and prior to laying, the base course shall be made good in accordance with the requirements specified herein. The Contractor shall make good at his own expense, any damage to kerbs.

K.18 **Surveying**

The Contractor shall verify all dimensions and levels prior to the commencement of the work.

All surveying necessary for the accomplishment of the work shall be done by the Contractor at his own expense, and he shall give notice of his intention to carry out such work in order that arrangements can be made for supervision and checking. The Contractor shall also provide without extra charge all necessary instruments, appliances, labour and any other materials required for checking the survey work.

The Contractor shall make all necessary surveys using given bench marks as reference points. These bench marks he shall carefully preserve.

The Contractor shall draft, in accordance with these surveys, all plans and drawings which are necessary for the completion of the work, and shall submit these plans and drawings to the Architect for approval in writing.

K.19 **Levels, falls crossfalls and cambers**

The works shall be executed to the levels, falls, crossfalls and cambers shown on the drawings.

K.20 **Tolerances**

The finished sub-grade and shoulder levels shall at no place vary more than 15mm above or below the levels shown on the Drawings. Deviations shall not be one sided.

Sub-grade that does not conform to the above requirements shall be reshaped to conform to the specified tolerances and recompacted, at the Contractor's expense.

Invert levels to ditches shall not vary more then 50mm from the levels shown on the drawings. The deviation from the gradient specified on the drawings shall not exceed 0.2 times the gradient specified.

On slope irregularities shall not exceed 100mm.

The Contractor shall establish 25mm x 25mm x 100mm timber pegs outside the carriageway each 20mm on both sides painted with the chainage, and giving the level to the finished road surface. The pegs shall be preserved until the Architect has approved the completion of the road.

The Contractor shall provide one accurate straight-edge. The straight-edge shall be constructed of stout timber, angle iron or metal tubes so as to span 3 metres without deflection. If of timber, the edge shall be shod with steel plate in the width of the timber and at least 5mm thick.

K.21 **Preparing ground surfaces under embankments**

The Contractor shall ensure that the natural ground is cleared of vegetation rubbish and soft and wet materials unsuitable for embankment construction.

All necessary work to drain the natural ground shall be executed. Slopes greater than 1 in 3 shall be formed into horizontal terraces not less than 2m wide.

K.22 **Construction of embankments**

Embankment material shall be placed in successive layers not exceeding 150mm after compaction unless the Contractor proves by testing to the Engineer's satisfaction that his compaction equipment is able to compact in greater layers. Each layer shall extend over the full width of the embankment and shall be compacted according to requirements before the next layer is placed.

It is the Contractor's responsibility that only approved materials are incorporated in the embankments. If any unsuitable or oversize materials is included it shall be removed and replaced with suitable material.

In forming embankments, the Contractor shall make due allowance in height and width for consolidation and shrinkage. On the completion of the Contract, the levels, widths and dimensions of the finished surface of the carriageway or embankment shall correspond to the levels and dimensions shown on the Drawings.

Where the CBR value of the fill material obtained from general excavation is less that 8% at B.S. Compaction after 48 hours soaking then the Engineer shall instruct the Contractor to provide selected fill in the upper layer or layers of the embankment. The thickness of the selected fill material shall be determined by the Architects Representative.

In cutting where the soaked CBR value of the sub-grade is lower than 8% the Architect shall similarly instruct the Contractor to replace the upper layer or layers with selected fill material.

The ill material shall preferably conform to the following requirements:-

Liquid Limit	:	0-45%
Plasticity Index	:	0-20%
Linear Shrinkage	:	0-10%

K.23 **Compaction**

All fill and sub-grade shall be compacted to at least 100% of the maximum dry density obtained in the B.S. Standard Compaction as follows:-

top 150mm of natural ground before filling all fill in embankments
top 300mm of formation in both cut and fill

The Contractor shall when deeded for proper compaction distribute and incorporate water in the layer of fill to be compacted.

When the moisture content in some material is in excess of that for proper compaction the wet material shall be allowed to dry before compaction is commenced.

K.24 **Diversion of water**

Excavation and filling operations shall be carried out with side slopes so that water can run off the surface. The Contractor shall at his own expense maintain sufficient drainage of the works to prevent ponding and scour.

K.25 **Testing**

All testing shall comply with the requirements of B.S. 1377-4.
The Contractor shall determine the dry density of compacted earthwork at the following minimum frequencies. The result of the Contractor's findings shall be submitted to the Architect who may approve or reject a volume of compacted earthwork on the evidence of the Contractor's tests or he may carry out tests himself in addition:

(i) The top 150mm of the compacted original ground under embankments in areas where compaction is specified or has been ordered by the Architect: 1 density test per 1000 sq m.

(ii) All fill in embankments except the top layer: 1 density test per 1000 sq m.

(iii) Formation in cutting and fill: 1 density test per 400 sq m.

The Contractor shall carry out a B.S. Standard Compaction test including CBR TEST AND A SET OF Atterberg Limit tests on soil samples from at least every tenth dry density determination test carried out as above. He shall also carry out a B.S. Standard Compaction test on soil sample from any dry density determination which failed to reach the specified percentage of the soil in which it is related in the above mentioned 1:10 representative grouping.

K.26 **Soiling on slopes or verges**

Where it is directed and/or shown on the Drawings that the slopes of embankments, back slopes of cuttings and verges shall be covered with a layer of top soil, such top soil shall be laid to a compacted thickness of 100mm or as specified by the Architect.

K.27 **Base, Sub-base and surfacing of granular materials**

The spreading and compaction of material must be carried out in such a manner that segregation is avoided. The layer must be uniformly compacted to at least 100% of the maximum dry density obtained at the B.S. Heavy Compaction Test.

Compaction should be done with a vibrating roller having a mass of at least 1800kg per metre width of vibrating roll and finished to a smooth even surface with a static smooth-wheel roller.

The Contractor shall set our sufficient levelling points, each 20m on both sides of the road for the control of the thickness of the layer.

Simultaneously with compaction the layer must be made true to shape and level so that no point of the finished layer deviates more than 15mm from the stipulated levels. Deviations shall not be considered.

Deviations of the surface when tested with a 3m straight edge shall be smaller than 10mm.

Filling in of depressions must only be done through previous scarification and recompaction to a homogeneous layer.

K.28 **Macadam**

The coarse aggregate shall be laid by mechanical plaint to a thickness within the range 75-100mm and given two passes by a smooth-wheeled roller having a mass per metre width of at least 2500kg on at least one roll. The fine aggregate shall then be spread on it to a thickness of approximately 25mm by a suitable spreading machine and vibrated into the voids of the coarse aggregate by a vibrating plate compactor having a mass per unit area of the base plate of at least 1400kg/sq m or a vibrating roller having a mass per metre width of vibrating roll of at least 1800kg.

The operations of spreading and vibrating the fine aggregate shall be repeated as necessary until no more will penetrate into the layer of coarse aggregate and no hungry patches are visible on the surface, when it shall be brushed to remove the excess fines and leave the coarse aggregate standing 3-6mm proud. The layer shall then be rolled with a smooth-wheeled roller having a mass per metre width of at least 5000kg on at least one roll.

The whole operation shall be repeated as necessary to provide the full specified thickness of roadbase.

K.29 **Prime coat**

Before application of bitumen prime coat, the base course shall be inspected and approve by the Architect. Any discrepancies shall be made good to the Engineer's approval before any work on the wearing course may start.

Prior to the application of the prime coat the surface of the base shall be swept clean of loose sand and dust and other foreign matter.

Bitumen for the prime coat shall be applied at a rate of approximately 0.8 litres/sq m in one even layer. After the prime coat has been applied the stretch of road shall be closed to traffic for 24 hours to allow the primer to soak into the surface.

In case it is not possible to close the primed stretch of road the prime coat shall be blinded with sand or cursher fines at a rate of approximately 5kg/sq m.

K.30 **First seal-coat**

Prior to application of the first wearing coat the primed surface of the base-course must be carefully inspected, all areas found to be holding an excess of bitumen shall be blotted with sand or crusher fines, and all areas found to be deficient in bitumen shall be made good, all to the satisfaction of the Architect.

Bitumen for the first wearing coat shall be applied at a rate of approximately 1.1 litre/sq m and blinded with 14mm chippings at a rate of 13-15 kg.sq m. The bitumen temperature at

application shall be 95-110 SYMBOL 176 \f "Symbol" C and the chipping shall be completely dry, clean and free of dust.

The chippings shall be uniformly spread over the binder film by a mechanical spreader, except where is use is impracticable. Any thinly chipped areas left by the spreading machine shall have additional chippings spread by hand to ensure complete cover.

The chippings shall be pressed into the binder by an approve pneumatic tyred mult-wheel roller moving slowly. The surfacing shall if possible be closed for traffic for 24 hors after finishing the first wearing-coat. The Contractor shall thereafter make arrangement, e.g. by erecting signposts or the like, to prevent excessive speeding, not more than 40km/h for 48 hours after the surfacing has been opened for traffic.

K.31 **Second seal-coat**

When the surfacing has been opened to traffic for the a period to be agreed between the Architect and the Contractor the second wearing-coat shall be applied. Before application the first coat shall be made good. Excessive and loose chippings shall be brushed off so that the road surface appears with a firm even and clean texture to the satisfaction of the Architect.

Bitumen for the second wearing-coat shall be applied at a rate of approximately 1.0 litre/sq m an blinded with 10mm single sized chippings at a rate of 10-12 kg/sq m. The bitumen temperature at application shall be 95-100 SYMBOL 176 \f "Symbol" C and the chippings shall be completely dry, clean and free of dust.

The chippings shall be uniformly spread over the binder film by a mechanical spreader, except where its use is impracticable. Any thinly chipped areas left by the spreading machine shall have additional chippings spread by hand to ensure complete cover.

The chippings shall be pressed into the binder by an approved pneumatic tyred multi-weel roller moving slowly. Surplus chippings shall be afterwards removed.

The surfacing can be opened to traffic when the second wearing-coat is finished, but the Contractor shall make arrangements, e.g. by erecting sign posts or the like, to preven excessive speeding of not more than 40km/h for 48 hours after finishing.

K32 **Premix bitumen macadam surfacing**

Premix bitumen macadam surfacing shall consist of a premix macadam carpet of 500/700 grade bitumen and approved quality aggregate graded and mixed together prior to laying in the proprtions and by the methods given in B.S. 594987, laid to finish to the thicknesses shown after compaction. The compaction shall be achieved with six to eight passes of a six to eight tonne roller.

K.33 **General remarks on surfacing**

The plant used by the Contractor for transporting, heating and spreading bitumen shall be an approved rubber tyred unit fitted with an efficient thermometer and heating control. The distributors shall be equipped to provide a constant rate of bitumen per square metre of surface at the full width of the work and there shall be a visible speedometer indicating the speed of th vehicle in metre per minute.

Application of bitumen for prime coat or earing coats must not take place when the road is wet after rain, while it is raining or when rain is likely to be expected shortly after the surface dressing is finished.

Measures shall be taken to prevent overlapping of surface dressing at both transversal and longitudinal joints. At longitudinal joints either blinding off the already treated surface or by

blocking off the distribution aggregate to the required width. At transversal joints the already treated surface shall be blinded off so that the spreading of bitumen can be started at the exact right moment, and when the spreading unit operates at the correct speed.

Hand spreading of bitumen shall be employed to touch up areas unavoidably missed by distributor.

K.34 **Tolerances for thickness of pavements**

The nominal thickness of surface dressing is for practical purposes assumed to be zero.

No layer in the pavement shall deviate more than 10% from the nominal thickness. The total pavement thickness shall not deviate more than 5% from that specified.

Deviations shall not be onesided.

K.35 **Laying precast paving slabs**

Precast paving slabs shall be bedded on a sand bed compacted to the thickness specified with 6mm wide joints, filled and pointed with cement mortar coloured to match the colour or the slabs and recessed 5mm deep. The paving shall finish true and even to the falls shown on the drawings with no surface irregularities.

K.36 **Grassing**

Grassing shall be carried out by a Specialist using approved local grass. Prices for grass shall include for tending, watering, cutting and keeping weed free for a period of six months, to produce a dense and healthy "weed" free grass carpet.

GENERAL SPECIFICATION FOR PLUMBING AND FIRE FIGHTING INSTALLATION

1. GENERAL

1.1 Execution of the works

The works shall be carried out strictly in accordance with:

(a) "British Standard Code of Practice" BS 8558:2015: Water supply.

(b) "British Standard Code of Practice" BS EN 12056-2:2000 Sanitary pipework underground.

(c) All other relevant British Standard specification and Codes of Practice (hereinafter referred to as B.S. and C.P. respectively.

(d) By-Laws of the Local Authority.

(e) The working drawings.

(f) The Engineer's or Architect's instructions.

The drawings and specifications are to be read as a whole and are to explain each other. Work shown on the drawings and not described in the specifications or vice versa shall be dully executed under the contract.

It is the Contractors duty, before starting the work, carefully to examine the drawings and read the specifications and if necessary consult the Engineer in order to ensure himself that he fully understands the drawings and specifications. The drawings do not purport to show minor details of equipment or pipework, etc. but are intended to indicate the extent of the installation as designed, together with sufficient information for the Contractor to prepare his own details for fitting and erection in accordance with the design.

1.2 Extent of the Works

The works include, unless otherwise specified, supply, installation, testing and commissioning and delivering up clean and in working order the installations shown on the drawings and specified in the specifications including all details such as:

Cold and hot water pipes, discharge (the term discharge pipe is in this specification used as a comprehensive all embracing description in place of the traditional soil and waster terms), drain and ventilating pipes, water meters, water heaters, valves, sanitary appliances including all necessary tapes and discharge fittings, fire fighting installations and equipment, thermal insulation etc. and all labour, materials, tools, instruments and scaffolding necessary to execute the work in a first class manner, even such labour or materials which are not specially mentioned in the project but are necessary for a satisfactory completion of the work.

Excluded from the work are, if nothing else is specified:

All building works such as accesses in concrete structures, plinths for machinery, ducts and chambers made from concrete blocks or concrete.

All cutting away and all making good will, if nothing else is specified, be carried out by the Contractor, but it will be the responsibility of the Contractor, to ensure that this work is kept to a minimum; he will also be responsible for the correct marking out of all chases and holes.

The Contractor shall also be responsible for ensuring that runs for floor or wall chases, holes to be cut or left will be marked out at the appropriate stage of the structural work.

The Contractor shall undertake all modifications demanded by the Authority in order to comply with current regulations, and produce all certificates, if any, from the Authorities without extra charge.

1.3 Extent of the Contractor's Duties:

At the commencement of the work, the Contractor shall investigate and report to the Engineer if all materials and equipment to be used in the work and not specified as supplied by others are available locally. If not available, the Contractor shall at this stage place orders for the materials in question and copy the orders to the Architect and/or the Engineer. Failure to do so shall in no way relieve the Contractor from supplying the specified materials and equipment in time.

Materials supplied by others for installation and/or connection by the Contractor shall be carefully examined before installation and connection. Any defects noted shall immediately be reported to the Engineer.

After the completion of the work the Contractor shall on a set of drawings indicate all alterations and/or modifications carried out during the construction period.

2. QUALIFICATION OF MATERIALS AND WORKMANSHIP

2.1 Materials and Workmanship generally.

All materials, equipment and accessories are to be new and in accordance with the requirements of the current rules and regulations where such exist, or in their absence with the relevant BS

Uniformity of type and manufacture of equipment or accessories is to be preserved as far as practicable throughout the whole work.

The Contractor shall, if required by the Architect or the Engineer, submit samples of materials to the Engineer for his approval before placing an order.

If in this specification the practice is adopted of specifying a particular item as "similar" to that of particular firm's product, it is to be clearly understood that this is to indicate the type and quality of the equipment required. No attempt is being made to give preference to the

equipment supplied by the firm whose name or products is quoted. Alternate brands of equal and approved quality will be acceptable.

The Contractor will be entirely responsible for all materials, apparatus, equipment, etc. furnished by him in connection with his work, and shall take all special care to protect all parts of finished work from damage until handed over to the Employer.

The work shall be carried out by competent a workmen under skilled supervision. The Engineer shall have the authority to have any of the work taken down or changed, which is executed in an unsatisfactory manner.

2.2 Pipework and fittings

2.2.1 Tubing generally

All tubing exposed on faces of walls shall, unless otherwise specified, be fixed at least 25mm clear of adjacent surface with approved holder bate built into walls, cut and pinned to walls in cement mortar; where fixed to woodwork, suitable clips shall be used.

All tubing specified as fixed to ceilings, roofs or roof structures shall be fixed with approved mild steel hangers cut and pinned to ceilings, roofs or roof structures. Where 3 or more tubes are fixed to ceilings, roofs or roof structures close to each other, they shall be fixed in positions which leaves the lower surface at the same horizontal level, unless otherwise specified.

Tubes shall be fixed to true lines parallel to adjacent lines of the building unless otherwise specified.

Where insulated, tubing shall be fixed with the insulation at least 25mm clear of adjacent surfaces.

Tube fixings and supports shall, if nothing else is specified, be arranged at intervals not greater than those given in the following tables:-

Mild steel tubing (galvanized):

Nominal Diameter of pipe in mm	Maximum spacing of fixing in mm	
	Horizontal runs	Vertical runs
15	**1,800**	**2,400**
20	**2,400**	**3,000**
25	**2,400**	**3,000**
32	**2,700**	**3,000**
40	**3,000**	**3,600**
50	**3,000**	**3,600**
65	**3,600**	**4,600**

75	**3,600**	**4,600**
100	**4,000**	**4,600**
150	**4,600**	**5,500**

Cast iron pipes:

Diameter of pipe in mm	Maximum spacing of fixing in mm	
	Horizontal runs	Vertical runs
All sizes	**1,800**	**3,000**

Unplasticized PVC Pipes

Diameter of pipe in mm	Maximum spacing of fixing in mm	
	Horizontal runs	Vertical runs
12	**300**	**900**
19	**400**	**900**
25	**400**	**900**
32	**500**	**1,200**
38	**500**	**1,200**
50	**600**	**1,200**
63	**600**	**1,500**
76	**900**	**1,800**
102	**900**	**1,800**
152	**1,200**	**1,800**

Each support shall take its due proportion of the weight of the tube or pipe and shall allow free movement for expansion and contraction.

All tubing specified as chased into walls shall have the wall face neatly cut and chased, the tubing wedged and fixed and plastered over.

Where tubing is laid in trench, care shall be taken to ensure that fittings are not strained.

All formed bends shall be made so as to retain the full diameter of the pipe.

Sleeves shall be provided where tubes pass through walls and solid floors to allow movement of the tubes without damage to the structure. The overall length of the sleeve shall be such that it projects at least 2mm beyond the finished thickness of the wall or partition.

Tubing shall be cut by hacksaw or other method, which does not reduce the diameter of the tube or form a bead or feather, which might restrict the flow.

2.2.2 Galvanized mild steel tubing:

Galvanized mild steel tubing shall be in accordance with BS 1387:1990 with screwed and socketed joints.

Fittings for the same shall be galvanized malleable iron to BS EN 10242

Joints shall be made with fine hemp and an approved jointing compound or tape. Compound containing red lead must not be used.

Long screw connectors and flat-faced unions shall not be used, unless otherwise specified.

Where laid underground, galvanized mild steel tubing shall be protected by "Densotape" or similar wound or at least two layers thick or given two coats of approved bitumen. Minimum earth cover to underground tubing shall be 450mm.

Where chased into walls or cast in concrete, galvanized mild steel tubing carrying hot water shall be wrapped with hair felt secured by copper wire.

The fixing of galvanized mild steel tubing shall be done by using:-

(a) Malleable iron "schoolboard" pattern brackets for building in or for screwing to structure.

Or

(b) Malleable iron pipe rings, with either back plate, plugs or girder clips.

Or

(c) Purpose made straps to the Engineer's approval

2.2.3 Unplasticized PVC pipe

Unplasticized PVC pipes (hereinafter referred to as uPVC pipes) and fittings for cold water supply shall be to BS EN 13598-1:2000

Joints for small diameter uPVC pipes for cold water supply shall be done by using special jointing solvents provided by the pipe maker. Joints shall be of the spigot and socket type, having the socket formed integral with the pipe or, alternatively, separate sleeves shall be used. Joints for sizes of 76mm bore and upwards shall be of the spigot
and socket type made with jointing solvent; flanged joints can also be used.

Joints of small diameter uPVC pipes for water supply to metal tubing shall be by means of union adapters. Joints for sizes of 76mm and upwards shall be flexible or flanged joints.

Unplasticized PVC discharge and ventilating pipes and fittings shall be to BS 2A 25:1962

Joints for uPVC discharge and ventilating pipes shall be spigot and socket joints, which incorporate synthetic rubber rings, or they shall be closely fitting spigots and sockets jointed together by means of a solvent solution provided by the pipe maker.

Joints of uPVC discharge and ventilating pipes to stoneware drain pipes shall be by means of purpose made metal sleeves jointed with tarred yarn and cement/sand mortar 1:3, joints to cast iron drain pipes shall be by means of purpose made cast iron sleeves jointed with tarred yarn and fibrous lead yarn properly caulked into the wetted sockets. Joints to pitch fiber drain pipes shall be made with approved adapters.

The fixing of uPVC pipes shall be done by using holderbats of metal, or plastic coated metal, care being taken that they do not image the pipe when tightened. Where anchor points are specified to control thermal movement, the holderbats shall be fitted on the pipe sockets. Intermediate holderbats fitted to the pipe barrel shall be such as to allow thermal movement to take place.

2.2.4 Valves, cocks, taps, etc:

Draw-off taps and stop valves shall comply with B.S.1873:1975.

Copper alloy gate valves shall comply with B.S.5154:1991.

Copper alloy check valves shall comply with B.S. 5154:1991.

Brass ball valves shall comply with BS EN ISO 17292:2015, copper floats for ball valves shall comply with B.S.1968:1953 and plastic floats for same shall comply with B.S.2456:1990.
Sluice valves shall comply with B.S.1218:1946.

Manually operated mixing valves for ablutionary and domestic purposes shall comply with B.S.1415:1955.

Draining taps shall comply with B.S.2879: 1980.

Copper alloy screw-down stop valves shall comply with BS 341-1:1991

Safety valves, stop valves and other safety fittings for air receivers and compressed air installations shall comply with B.S. 1123:1961.

Safety valves for thermal storage water heaters shall comply with B.S.759:1955.

All valves and cocks shall have the same flow area as the corresponding pipes and shall be accessible for operation and maintenance and suitably labeled by an approved method.
Stop valves shall be fixed in positions shown on the drawings, to all branch services for group control, or where else specified.

All valves, cocks and taps shall be of the correct pressure ratting according to the recommendations of the relevant B.S. or the Local Authority. At commencement of the contract, the Contractor shall if necessary ask the Engineer for guidance on this point.

Horizontal waste runs shall be installed to provide a natural "fall to the pipe. Obviously such a fall is dictated to some extent by the particular installation. 2/3 is an ideal fall, but in any event it should never be less than 2" or in other terms 51mm per 3,000mm.

2.3 Waste/Foulwater Pipe Falls:

Waste or Foulwater pipe shall be uPVC class B

2.4 Thermal Insulation:

Thermal insulating material for hot and cold water supply installations shall conform to B.S.5970:2012, unless otherwise specified. The Contractor shall ensure that the thermal insulating materials used are conforming to the requirements of the Local Fire Authority.

All thermal insulating materials shall be delivered to the site in a dry condition and housed in a store until drawn upon for use.

All surfaces to be insulated shall be cleaned carefully before fixing the insulating material.

The installation of insulating materials shall be entrusted only to operatives skilled in the work. All insulating material, however fixed, shall be in close contact with the surface to which it is applied and all joints shall be sealed after ensuring that edges or ends of any section built up close to one another. Edges or ends shall be cut or sharpened on site as necessary. Supporting bands shall be either of non-corrodable material or adequately protected against rust.

Each pipe or item shall be insulated separately.

Fixing of insulating material shall suit the progress of other installation works in the building.

Insulation, where pipes are fixed exposed, shall be pre-formed rigid sections with approved finish. Where pipes are fixed in closed ducts, above false ceilings etc. Matts cut in suitable sections on the site shall be used, well secured with copper or galvanized wire finally covered with asphalt roofing paper.

Where subject to outside weather or other potentially damp or wet conditions, the insulation shall be adequately protected against moisture pick-up.

If nothing else is specified, the minimum thickness of insulating material for cold and hot water pipes shall be as specified in B.S.5970:2012.

2.5 Sanitary Appliances:

Sanitary appliances shall be of first class quality to a Standard not less than the appropriate B.S.

The glazing to ceramic and fireclay shall be hard and smooth and without scratches, high spots, etc;

The installation of sanitary appliances shall be in accordance with C.P.305 (1952).

The appliances shall be fixed in the positions shown on the drawings or as directed by the Architect or the Engineer.

For all sanitary appliances, the necessary number of support, brackets, plugs, screws, washers, jointing material, etc; shall be provided.

Where supports, brackets, etc; are screwed to wall or structure rawl plugs or similar shall be used.

No trap for any appliance whatsoever shall be with less seal than 75mm.

Fixing shall, if required by the Architect or the Engineer, include for temporarily erecting appliances in the required position of service and discharge pipes, taking down, storing and permanently fixing after completion of wall finishing and connecting to service and discharge pipes.

Care shall be taken at all times and particularly after fixing, to protect appliances from damage.

Upon completion of the work, all appliances shall be cleaned for plaster, paint, etc. and carefully examined for defects.

2.6 Water Meters:

If the water supply is shown metered, the meter shall, if nothing else is specified, be provided and fixed by the Water Supply Authority on the request of the Contractor.

2.9 Fire Fighting Equipment.

The specified fire fighting equipment shall, if nothing else is specified, be supplied and installed by the Contractor in the positions shown on the drawings.

Portable fire extinguishers shall comply with the following B.S:-

(a) Water type (Soda acid) :
(b) Foam type (chemical)
(c) Foam type (gas pressure) :
(d) Water type (gas pressure) :
(e) Carbon tetrachloride and Chlorobromomethane
(f) Carbon dioxide type
(g) Dry Powder Type
(h) Water type (Storey pressure) :

Fire hose reels and ancillary equipment should be of swinging automatic as comply with Manufacturers; rubber reel hoses shall comply with manufactures

Underground fire hydrants and surface box openings for it shall comply with all manufactured by approved manufacturer**.**

Pressure gauges, valves and Test cocks

Pressure gauges fitted to sprinkler installation shall to approve manufacturers. The scale subdivision shall not exceed 0.2 bars for a minimum scale value up to and including 10 bar. A pressure gauge shall be fitted at each of the following points.

(a) Immediately downstream of the alarm valve.

(b) Immediately upstream of the main control valve

The installation of hydrants, sprinkler systems and fire extinguishers shall be in accordance with C.P.402, 101:1952, C.P.402.201:1952 and C.P.402: Part 3:1964 respectively.

In nothing else is specified, fire extinguishers and hose reels shall be supplied in the colour “fire red” and be similar to manufacture “**NAFFCO**”.

2.10 Testing

The whole of the water and discharge installations shall be tested to the satisfaction of the Engineer and the Local Authority. The Contractor shall provide all necessary testing apparatus and facilities for testing the installations and any defective work shall be replaced immediately and shall be the subject of re-testing until found satisfactory.

Where pipes are to be lagged, chased into walls or otherwise concealed, the work shall be tested prior to lagging, making good chases, etc.

All hot and cold water installations, shall, if nothing else is specified, be tested to a cold water pressure of 7kg/cm².

The test pressure shall be applied by means of a manually operated test pump or, in the case of long mains or mains of large diameter, by a power-driven test pump. Pressure gauges shall be recalibrate before the test.

The test pressure shall be maintained by the pump for about on hour and a leakage as

specified in C.P. 310, Section 502 (j) shall be approved, but any visible individual leak shall be repaired.

Valves, cocks and taps shall be absolutely tight under the test pressure for the corresponding pipes as well as under a small pressure.

All discharge pipes shall be tested with air or smoke to a pressure equal to 40mm water gauge and the pressure remain constant for a period not less than 3 minutes. The water seals of all sanitary appliances which are installed shall be fully charged and test

plugs inserted into the open ends of the pipework to be tested. With the pressure applied, every trap shall retain not less than 25mm of seal.

All tests shall be repeated three times; the taps being recharged before each test and the maximum loss of seal in any one test, measured by a dipstick, should be taken as the significant result.

Tests shall, if necessary, be done in sections as work proceeds.

All tests shall be carried out in the presence of representative of the Local Authority and/or the Engineer or his representative.

Upon completion of the work, including re-testing if necessary, the installations shall be thoroughly flushed out and water pipes refilled with clean water ready for use.

2.11 Commissioning

Before handing over, the Contractor shall confirm that the installation has been examined, tested, is ready for use, that it will operate and can be maintained efficiently.

When handing over, the Contractor shall demonstrate to the Employer the methods of operation, limitations, the maintenance requirements and the safety precautions to be observed and shall also hand over any tools for operating, cleaning, testing and maintenance of the installation.

On acceptance the Contractor shall provide the Employer with operation and maintenance instructions and any other documents or information appropriate to the installation.

3.0 SERVICE AND MAINTENANCE

The Contractor shall include in the tender one copy of a proposal for a service and maintenance contract.

The service and maintenance contract shall include regular inspection of the plumbing equipment installations, any adjustment and replacements of worn out or damaged materials and cleaning.

4.0 FINAL DRAWINGS AND MANUALS

Upon completion of the air conditioning equipment installation works the Contractor shall prepare four (4) sets of as – built drawings. The Contractor shall also prepare four (4) sets of Operation manuals and 4 sets of Maintenance Manuals.

Electrical Specifications

Introduction

This document contains information relating to the electrical services installations associated with the works to be carried out to form the proposed refurbishment of the NMB Liwale branch in Lindi.

This specification should be read in conjunction with the bills of quantity and tender drawings. Where discrepancies occur these should be brought to the attention of the engineer at the earliest opportunity.

Standards

Reference should be made to the standard specifications and tender drawings for information relating to standards of materials, manufacture, and workmanship.

The electrical services installations shall meet the requirements of:

- The Chartered Institute of Building Services Engineers (CIBSE) Design Guides A, B, C, D and E
- CIBSE Commissioning Codes A, B, C, R and W
- Relevant British Standards and Codes of Practice
- IEE Regulations 17th Edition
- Dar es Salaam Municipal Commission Regulations
- The Laws of the United Republic of Tanzania

Drawings

Working Drawings

The drawings issued with this tender contain sufficient information for the contractor to accurately price the works. The contractor shall include within his tender for the production of working drawings for all installations. The working drawings shall be of sufficient detail to indicate the precise nature of the installations and include such details as typical bracketing arrangements and details of major structural penetrations. Working drawings shall also include all necessary work to be carried out by the main contractor, concrete bases for Distribution Boards, etc. The working drawings shall be submitted to the engineer for approval in sufficient time before commencement of the works.

Record Drawings

During the execution of the works the contractor shall maintain a record of the progress of the works at the site by continuously updating the working drawings. These record drawings shall be up-dated to include any changes to the installations as the work progresses. The engineer may request a copy of these drawings at any stage of the works.

As Installed Drawings

Upon completion of the works the contractor shall submit 'As Installed' drawings of the installations showing accurately the completed installations. These drawings shall be submitted to the engineer for approval before incorporation into the operating and maintenance documentation.

Operating and Maintenance Manuals

Prior to handover the contractor shall submit Operating and Maintenance Manuals for each electrical installation, system and individual piece equipment forming part of the Works to the Engineer for review.

These manuals should include:

A copy of the inspection certificate and all the test records;
A copy of any certificates of compliance with relevant standards or schemes.
Comprehensive instructions for the switching on, operation, switching off and shut down and for dealing with emergency conditions;
Instructions for any precautionary measures necessary.
Instructions for servicing, including frequency and materials to be used, to maintain the equipment in good and safe condition;
Recommended service record and sheets
The names and addresses of suppliers of all major components together with the type and model reference, serial number, duty rating and the order number and date.
'As Installed' drawings of the installations showing accurately the completed installations.
A description of the extent and manner of operation, including duration periods of standby systems.

Copies of manufacturer's data may be incorporated to supplement the descriptions and instructions but *shall not* replace them. Only data relevant to the Works shall be included; where non-relevant data appears on the same sheet it shall be included; where non-relevant data appears on the same sheet it shall be clearly marked to show that it is not applicable. The data shall be cross-referenced within the text and included in the index; if possible, it shall be contained in the ring binders, but where this is not possible suitably protected box files or folder shall be provided.

Maintenance and operating instructions shall be indexed and contained in ring binders with stiff covers. The name of the site shall be printed on the front and spine with, where more than one volume is necessary, a suitable identification title. The date of completion of the Works shall be included on a flyleaf.

A draft of the maintenance and operating instruction shall be submitted to the Engineer at least two weeks before the handover of the relevant works.

Quality of Materials and Workmanship

The contractor shall install the system as per the approved design including all necessary tools, labour, instruments, scaffolding, etc. required to execute the works to the satisfaction of the engineer.

All materials, equipment, tools and accessories used in the execution of the works must be new and in accordance with the specifications, schedules and drawings. Any broken and/or defective materials shall be removed and replaced at the earliest opportunity so as to prevent delay to the works.

All materials used shall be purchased solely for this project and shall be manufactured to the local Codes of Practice or, in the event of no code existing, to the relevant British Standard.

The contractor shall include for the production of a comprehensive schedule of materials and equipment to be used I the works within seven working days of signing a contract. Certain manufacturers are specified for the manufacture of plant and equipment associated with the installations. Should the contractor wish to substitute another manufacturer to those specified this must be highlighted in the tender documentation.

Power Installations

General

The descriptions of the power installations are given in the bills of quantities specification.

Power Supply

Power shall be supplied from the existing power supplies.

Generator

The existing installed generator shall be used to provide power in the event of failure of the mains supply.

Mains Cables

The main cables on the LV side of the transformer and generator shall be multicore 600/1000V PVC/SWA/PVC with copper conductors. These cables shall be tested by the electrical contractor to the requirements of section 21 of the standard specification.

Moulded Case Circuit Breakers (MCCB's)

Where used they shall be able to switch loads in normal conditions and switch off automatically in the case of fault currents beyond the specified range. They shall withstand electrical dynamic forces that happen during abnormal conditions.

Sub Main Cables

Sub main cables shall be of 600/1000V PVC/SWA/PVC type with copper conductor. Cables shall be properly supported on cable trays.

Distribution Boards

Distribution boards shall be provided with integral RCD's or MCCB as indicated in the drawings. All boards shall be provided with suitably rated MCB's for protection of the outgoing circuits. All MCB's shall be as approved manufacturers.

Final Sub Circuits

Internal wiring shall be carried out using PVC insulated single core copper conductors. The conductors shall be drawn into conduits. The sizes of the cables shall be as per respective circuit shown on the schematic diagrams. The cables shall be installed in accordance with IEE regulations and codes of practice. Flexible cables shall be used between DP switches and air conditioning units.

Conduits

Conduits shall be of heavy gauge PVC construction. Conduits shall be concealed within the structure or above suspended ceilings. Conduits of 20mm diameter shall be used for lighting circuits and 25mm diameter conduits for power circuits.

Purpose made accessories shall be used for all connections and for fixing conduits to structures. All joints shall be made using a propriety fixing cement.

Bending of conduits shall be performed using propriety bending springs.

Conduit boxes shall be fixed to structures independent of the conduit.

Boxes for Power Points

All boxes shall be of galvanised steel construction with an earth connection. The boxes shall be installed flush and square to the structure. Where boxes are mounted on PVC trunking systems they shall be of PVC construction.

Earthing System

Best earthing system shall be installed for the whole installation. All earth conductors and exposed metal parts shall be connected to the system. All boxes and equipment shall be bonded to the earthing system. Separate earth to be provided to the clean power supply.

Double Pole Switches

DP switches shall have a neon indicator. DP switches shall be provided the air conditioning units, water heaters, fans, etc., where indicated on the drawings.

Switch Socket Outlets

All switch socket outlets shall 13A, square pin type and 15A American standard and shall be mounted as specified. Socket outlets shall be wired on a ring circuit. Sockets shall be manufactured to BS 1363.

Socket outlets connected to clean power circuits shall be red in colour and be provided with special earth pin.

General Lighting Installations

General

The descriptions of the lighting installations are given in the particular specification.

Lighting Fittings

All light fittings shall be supplied with tubes and lamps. All tubes and lamps shall be of the size and type specified in the bills of quantities.

Final Sub Circuits

Internal wiring shall be carried out using PVC insulated single core copper conductors. The conductors shall be drawn into conduits. The sizes of the cables shall be as per respective circuit shown on the schematic diagrams. The cables shall be installed in accordance with IEE regulations and codes of practice.

Conduits

Conduits shall be of heavy gauge PVC construction. Conduits shall be concealed within the structure or above suspended ceilings. Conduits of 20mm diameter shall be used for lighting circuits and 25mm diameter conduits for power circuits.

Purpose made accessories shall be used for all connections and for fixing conduits to structures. All joints shall be made using a propriety fixing cement.

Bending of conduits shall be performed using propriety bending springs.

Conduit boxes shall be fixed to structures independent of the conduit.

Boxes for Lighting Switches
All boxes shall be of galvanised steel construction with an earth connection. The boxes shall be installed flush and square to the structure.

Lighting Switches
All light switches shall be rated to suit the loads imposed. In most cases light switches shall be rated for a maximum of 10A.

External Lighting Installations

General
The descriptions of the external lighting installations are given in the particular specification.

Lighting Fittings
All light fittings shall be supplied with tubes and lamps. All tubes and lamps shall be of the size and type specified in the legends.

Wiring
Internal wiring shall be carried out using PVC insulated single core copper conductors. The conductors shall be drawn into conduits. The sizes of the cables shall be as per respective circuit shown on the schematic diagrams. The cables shall be installed in accordance with IEE regulations and codes of practice.

Conduits
Conduits shall be of heavy gauge PVC construction. Conduits shall be concealed within the structure or above suspended ceilings. Conduits of 20mm diameter shall be used for lighting circuits and 25mm diameter conduits for power circuits.

Purpose made accessories shall be used for all connections and for fixing conduits to structures. All joints shall be made using a propriety fixing cement.

Bending of conduits shall be performed using propriety bending springs.

Conduit boxes shall be fixed to structures independent of the conduit.

Boxes for Lighting Switches
All boxes shall be of galvanised steel construction with an earth connection. The boxes shall be installed flush and square to the structure.

Lighting Switches
All light switches shall be rated to suit the loads imposed. In most cases light switches shall be rated for a maximum of 10A.

Final Sub Circuits
Internal wiring shall be carried out using PVC insulated single core copper conductors. The conductors shall be drawn into conduits and trunking. The sizes of the cables shall be as per respective circuit shown on the schematic diagrams. The cables shall be installed in accordance with IEE regulations and codes of practice.

Conduits
Conduits shall be of heavy gauge PVC construction. Conduits shall be concealed within the structure or above suspended ceilings. Conduits of 20mm diameter shall be used for lighting circuits and 25mm diameter conduits for power circuits.

Purpose made accessories shall be used for all connections and for fixing conduits to structures. All joints shall be made using a propriety fixing cement.

Bending of conduits shall be performed using propriety bending springs.

Conduit boxes shall be fixed to structures independent of the conduit.

Data and Telephone Installations

General
The descriptions of the data and telephone installations are given in the particular specification.

Wire ways shall be provided for the installation of data and telephone cabling by a specialist contractor.

Fire Detection Installations

General
The descriptions of the fire detection systems are given in the particular specification.

Fire alarm installations shall be provided to all areas.

Detectors
Detectors shall be installed in the specified locations.

Sounders
Electronic sounders shall be installed in the existing locations.

Cabling
The cabling shall be as specified in the Bills of quantities.

GENERAL SPECIFICATIONS FOR ELECTRICAL INSTALLATIONS

1. GENERAL

1.1 REGULATIONS

The specification covers the requirements of power and lighting installations in Tanzania. All apparatus, materials, fixtures and fittings supplied and work carried out shall comply with the existing and current International Electrical standard specifications and Local Statutory Regulations.

Regulations for Electrical installation shall be in accordance with BS 7671 [British Standard IEE (The Institution of Engineering and Technology) Wiring Regulations] which should be used as the code of practice except where they conflict with Tanzania Government Legislation and statutory requirements stipulated by:

1. Tanzania Bureau of Standards (TBS)
2. Tanzania Energy Water and Utility Regulatory Authority (EWURA)
3. Tanzania Electric Supply Company Limited (TANESCO)

1.2 TENDERING

The tenderer shall indicate all major item in the Data Schedule included with the Bill of Quantities. Failure to submit may lead to disqualification.

2. SCOPE OF WORK

The work to be carried out under this contract include the supply, delivery, installation, connection, testing, energizing and leaving in service condition to the satisfaction of the Engineer and Employer the complete installation as herein described in the specification and related specification and / or on the attached drawings. The installations shall include the following but not limited to the following items:

1. Main Switchboard and Distribution Boards
2. Lighting
3. Emergency lighting
4. Power circuits and accessories for single and three phase power
5. Cable trays, metal trunkings, PVC conduits and PVC trunking
6. Cabling infrastructure for the ICT system
7. Fire Detection and Alarm system
8. Earthing
9. Cabling system

NO MATERIAL SHALL BE PROCURED AND SUBMITTED TO SITE WITHOUT PRIOR APPROVAL BY THE ENGINEER. Request for approval shall be in serial numbered form listing the applicable material(s). Physical samples MUST be accompanied by technical documents.

3. EXCLUSION

The Main Contractor will do the following work in connection with the carrying out of the Electrical installation:

1. Builders' work in connection with the Electrical installation
2. Excavation and backfilling of cable ducts, cable trenches and road crossings for underground services

4. INCOMING SUPPLY

Power supply to premises shall be through a dedicated and metered TANESCO supply and backup generator shall be used in case of power failure. The size and capacity of the incoming supply shall be as per designed drawings.

5. STANDARDS

Table 1: General Standards

Itm	Description	BS Standard	Make or Equal and Approved
1.	Transformer, 11kV 400V 3-phase Oil-immersed, outdoor	BS 60076	TROPICAL TRONIC AFRICAB
2.	LV Switchgear and Control Gear	BS 60947 BS 60439	TROPICAL TRONIC AFRICAB
3.	Circuit Breakers	BS 60947	
4.	Residual Current Operated Circuit Breakers (RCCBs)	BS 61008	
5.	Specification of degrees of protection provided by enclosures (IP code)	BS 60529	
6.	Uninterruptible Power Supply System (UPS)	BS 62040	TROPICAL TRONIC AFRICAB
7.	13A plugs, socket outlets, connection units and adaptors	BS 1363	TROPICAL TRONIC AFRICAB
8.	Switches for household and similar fixed electrical installations	BS 3676 BS 60669	
9.	Plugs, socket outlets and couplers for industrial purposes	BS 60309	
10.	Boxes for flush mounting of electrical accessories	BS 4662 BS 60670	Locally manufactured, samples to be submitted for approval prior to ordering
11.	General requirements for electrical accessories	BS 5733	
12.	Electrical cable. PVC insulated, non-armoured 450/750V	BS 6004	
13.	Electrical cable. Single core unsheathed heat resisting 450/750V	BS 6007	
14.	Electrical cable. Single core PVC insulated flexible 600/1000V	BS 6220 BS 6231	
15.	Electrical cable. PVC insulated, armoured 600/1000V	BS 6346	
16.	Electrical cable. Flexible cords 300/500V	BS 6500	
17.	Telecommunication equipment and telecommunication cabling	BS 6701 BS 50174	
18.	Cable ducting and trunking systems	BS 50085 BS 61537	
19.	Conduit system for cable management	BS 50086 BS 61386	
20.	Edison screw lampholders	BS 60238	
21.	Bayonet lampholders	BS 61184	
22.	Luminaires – All luminaires shall be LED	BS 60598	TROPICAL TRONIC AFRICAB
23.	Emergency Lighting	BS 5266 BS 1838	
24.	Lamp control gear	BS 61347	
25.	Fire Detection and Alarm System	BS 5839-1	TROPICAL TRONIC AFRICAB
26.	Earthing	BS 7430	TROPICAL TRONIC AFRICAB
27.	Lightning Protection System	BS 62305	
28.	PVC TRUNKING (3 compartment)		TROPICAL TRONIC AFRICAB

6. SPECIFICATIONS

6.1 INDENTIFICATION LABELS

All main switches, circuit breakers, isolators, switch fuses, control panels, switches, panel boards and distribution boards shall be neatly and clearly labelled externally with black on yellow background engraved labels to indicate the name, purpose and position of the gear. The identification mark must correspond with those on drawings or in specifications. Labelling tapes shall be laminated making them waterproof and suitable for high humidity environment

All circuits in distribution boards shall be clearly identified in respect to the number and location of Miniature Circuit Breakers (MCB). A schematic diagram of the distribution system shall be securely fixed inside the cover of each Distribution Board.

All cables inside the electrical riser and within ducts shall be labelled on each floor and along the entire cable length, preferably after every 10m of the cable run. Each label shall include the identification number of the cable together with the voltage, size and make-up, and the service which it supplies

6.2 NON-METALLIC CONDUIT

All non-metallic conduits shall be PVC class 'B DN20 heavy gauge. The minimum size to be used is 20mm external diameter. Unless otherwise specified all conduit, installation shall be concealed in walls, floors or structural slabs. All conduits shall be joined using appropriate coupler'. Conduit SHALL NOT be bent or joint by means of fire.

The conduit system shall be carefully planned and erected to avoid unnecessary bends or changes in direction. Conduits shall be laid in straight horizontal or vertical lines. Where several conduits follow similar routes, they shall be neatly grouped in multiple runs.

Conduits for each circuit shall be completely erected before any cable is drawn in. Adequate draw-in points shall be provided. Straight runs shall have draw-in facilities at distance not exceeding 12 meters. Runs incorporating sets or bends shall have draw-in facilities at a distance not exceeding 9 meters. These distances may need to be reduced in difficult situations or with cable complexes. Not more than four sets, or two right angle bends may be installed between draw-in points. Solid elbows or tees shall not be accepted.

6.3 CABLE DUCTS

The Electrical Contractor shall provide and lay pitch fibre or earthen wire cable ducts under concrete floors or walkways earthen under which cables are to be routed. The Main Contractor will supply and install ducts where required but it will be the Electrical Contractor's responsibility to provide accurate details to the Main Contractor of the required positions of these ducts.

6.4 FINAL SUB-CIRCUIT WIRING

The minimum size of sub-circuit wiring on lighting circuits shall be 1.5mm^2; and 4.0mm^2 on power spur circuits and 2.5mm^2 on ring main circuits. Colour coding requirements shall be as per IEE Wiring regulations

Lighting sub-circuits shall not be enclosed in the same conduit as general-purpose power sub- circuit. Single-phase sub-circuits shall not be enclosed in the same conduits as three-phase sub- circuits. Extra low voltage services shall be run in separate conduit systems. A dedicated conduit system for each service shall be provided.

No reduction of the strands forming the conductors shall be allowed at switch or other terminals, but all strands shall be effectively secured by screws, nuts and washers or other approved means, cables shall be joined together at the terminals of ceiling boxes and other accessories. Joints are not permitted along the cable run.

Drop-down cable for light fitting connection shall be 3-core flexible wire minimum 0.75mm^2 or as specified. Drop-down cable shall be terminated in ceiling rose. No exposed termination shall be allowed.

6.5 PVC INSULATED ARMOURED CABLES

The cores of four core cables shall be distinctively coloured as per current IEE standards. Cable terminations on transformers, switchgears and joint boxes for outgoing and incoming circuits on the switchboards and distribution boards shall be provided with appropriate glands and accessories

Before cables are laid, the bottom of the trench shall be evenly graded and cleared of all loose stones, and shall then be covered with an 80mm layer of sand or sifted soil and lightly compacted, and a further 80mm layer shall be placed on top of the cables. A marking tape showing the voltage level of the cable shall be along the whole length of the trench

The approved cable protection shall then be laid and the trench refilled with excavated materials in 20mm layers. The width of the trench shall be such that a clearance of 80mm shall be provided between outermost cable and the side of trench.

Where cables enter building, pipes, or ducts, the mouths of the pipes or ducts shall be effectively sealed to prevent the spread of fire and accumulation of moisture and dust

6.6 SOCKET OUTLETS

In all areas, general power outlets shall be of the 13Amp 3-pin fused plug type complying with BS 1363. Unless otherwise specified, they shall be flush pattern with white cover plastic plates. All fused connection units shall be 13Amp with fuse and neon indicator lamp.

Switches, socket outlets and spur units shall be of the same manufacturer and shall match to each other throughout the electrical works. Mixing of different brands is not allowed

The socket outlet installation wiring shall be carried out in an approved type of single core PVC insulated copper cable with earth continuity conductor enclosed in 20mm diameter PVC conduits or PVC trunking where specified.

The Electrical Contractor shall ascertain the precise positions of mechanical equipment and their associated control switches and have the positions approved in writing by the Engineer.

6.7 FIRE DETECTION AND ALARM SYSTEM

The fire detection and alarm system shall be configured to comply with the requirements of BS 5839-1 to meet a type L1 system

The system shall be fully integrated, and shall comprise of a range of analogue addressable, microprocessor-based fire alarm control equipment to offer flexibility in operation.

Table 2: Fire Detection and Alarm System Accessories - Standards

Itm	Description	Standard
1.	Photoelectric smoke detector	BS EN 54-7
2.	Heat detector	BS EN 54-5
3.	Manual call point	BS EN 54-11
4.	Sounder	BS EN 54-3

The system shall provide early warning of smoke detection to quickly identify the location of fire and provide user definable text informing the occupants of the building of potential smoke spread. Simultaneously, the system shall alert and evacuate the occupants, and control all necessary auxiliary command functions such as lift control and air-conditioning system shut down

The horizontal spacing of the detectors under flat ceilings between any point in a protected area and the detector nearest to that point should not exceed 7.5m if the nearest detector is a smoke detector; and 5.3m if the nearest detector is a heat detector. In apex roof, the detectors should be sited at or near each apex except that if the difference in height between the bottom of the roof and top of the apex is less than 600mm

Where structural beams or ductwork for lighting fittings or other isolated ceiling attachments, not greater that 250mm in depth, create obstacles to the flow of smoke, the detectors should not be mounted closer to the obstruction than twice the depth of the obstruction

Where an area contains partitions or storage racks that reach within 300mm of the ceiling, the partitions or storage racks should be treated as walls that extend to the ceiling. Ceiling obstructions such as structural beams greater than 150mm in depth and deeper than 10% of the overall ceiling height should be treated as walls

The method of operation of all manual call points should be that of type A (automatic change of the alarm condition). All call points should be identical, colour RED and protected against ingress of dust and water to IP65. Manual call points should be semi-recessed with the front face proud of the mounting surface by no less than 15mm, fixed at a height of 1.2m above finished floor level at areas shown in the drawings

The addressable sounder shall conform to and incorporate an individual loop address. The unit shall neatly be incorporated within the sensor to ensure aesthetics are maintained.

A Short Circuit Isolator shall be installed at each separate fire zone and in between floors. The circuit isolator shall protect the installation wiring in the event of a short in the cables. Should a fault occur; the isolator shall automatically disconnect the loop either side of the short. The control panel shall recognize this disconnection and shall communicate in both directions. This process will enable a limited number of devices to be offline whilst the fault is being investigated and repaired. Once the short is removed the isolators shall automatically reinstate the loop connection.

6.8 FIRE RESISTANT CABLES

Fire rated cable shall be a minimum of 1.0mm and the outer sheath shall be red Zero Halogen Low Smoke (OHLS). These cables shall be used in all critical paths and for final circuit providing low voltage main supply to the system.

Critical signal path shall include all components and interconnections between every fire alarm initiation point (manual call point or automatic fire detector) and the input on, or within, each fire alarm device.

The cable shall be installed in a concealed 25mm diameter PVC conduit or clipped directly onto galvanised tray where necessary. The clips shall be fire rated metal with an LSF coated red finish. The clips shall be fixed suitably and shall be no greater than 300mm between fixings. The Fire alarm cable shall not be installed within the same conduit as cables of other services to avoid the mechanical damage and electromagnetic interference with fire alarm signals.

The Fire alarm cable must be able to function in a fire for at least 30 minutes and shall conform to the following standards:

Table 3: Fire Alarm Cables - Standards

Itm	Description	Standard
1.	Fire resistance (circuit integrity under fire conditions)	BS 6387
2.	Mineral insulated copper sheathed cables and terminations (cable end seals and glands). The complete termination should comprise of a gland, a seal, and a gland shroud if plastic covered cable is used	BS 6207
3.	Flame retardancy and propagation	BS 4066
4.	Gases involved during combustion	BS 6425
5.	Smoke emission	BS 6724

6.9 EARTHING

Earthing pits complete with earthing mats, copper plates earthing electrodes and earth continuity conductors as per BS 7430 shall be constructed separately for the transformer, generator and Main switchboard. The earthing pits shall not overlap

For each equipment, the earth continuity conductor cross sectional area shall not be less than half the cross-sectional area of the phase conductor. In all the cases the earth electrode resistance shall be such that I $R_e \leq 50$Volts, where I is the maximum line current.

Earth electrodes shall be made of pure copper. The terminal head of each electrode shall be inside a concrete inspection pit, with cover. If the resistance to earth is not satisfactory with one electrode,

then additional electrodes or an earth mat shall be provided as directed by the Engineer. All distribution boards shall be earthed. The entire system of metallic conduits and trunking, metallic sheaths of cables, cases and switchgear enclosures and all electrical equipment shall be connected to the earth point in accordance with the IEE wiring regulations

Tests to be carried out after completion of the installation shall include earth loop impedance, polarity insulation resistance, ring circuit continuity and earth electrode resistance. All tests shall be carried out in the presence of the Engineer

6.10 COMPLIANCE WITH REGULATIONS AND TESTS

The entire electrical installation shall be tested to the statutory requirements of the electricity authority EWURA and utility provider TANESCO and commissioned in the presence of and to the satisfaction of the Engineer.

On completion of the installations, the Electrical Contractor will be required to submit Electrical Installation Certificate (in accordance with BS 7671) showing the following results:

(1) Insulation resistance phase to earth in MEGAOHMS
(2) Insulation resistance between phases in MEGAOHMS
(3) Insulation resistance between neutral and earth in MEGAOHMS
(4) Earth continuity condition in OHMS
(5) Earth lead resistance in OHMS, and
(6) Earth loop impedance in OHMS

Two copies of the Installation Certificate shall be submitted to the Engineer within seven days of carrying out the tests.

The Electrical Contractor shall include in his tender all fees arising from the testing and any subsequent re-testing of the installations

6.11 DRAWINGS

6.11.1 CONTRACT DRAWINGS

Contract drawings are detailed engineering drawings designed by the Engineer in order to establish the requirement and scope of electrical works. The drawings form part of the electrical specifications and are to be read in conjunction with this Specification and Bills of Quantities.

6.11.2 WORKING DRAWINGS

Working drawings shall be prepared by the Electrical Contractor as may be necessary. These shall be submitted to the Engineer for approval before execution of the works.

Working drawings to be prepared by the Electrical Contractor shall be detailed as below but not restricted to the following:

1. Any drawings required by the Electrical Contractor and the Engineer to enable structural provisions to be made. They shall include detailing of holes, chases, fixing, foundations, cable work ducting whether below or above ground
2. General arrangement drawings of all plant including transformer, switchgear, generator, control panels, switchboards, distribution boards, fittings, switches, switched sockets et cetera and installation layout arrangements of such plant and apparatus
3. Layout drawings of all concealed and surface ducts, conduits and cable trays showing cables and wires concealed or clipped onto cable trays
4. Detail and arrangement drawings for any alternative equipment approved by the Engineer
5. Such other drawings as are called for in the text of the Specifications or Schedules or as the Engineer may reasonably require

There shall be no deviation from the approved working drawings without the Engineer’s written permission.

6.11.3 RECORD DRAWINGS

Record drawings may include approved drawings adjusted as a correct record of the installation, subject to the approval of the Engineer

The drawings shall include but not restricted to the following drawings or information:

1. Working drawings and Contract drawings amended as necessary but titled Record drawings ('As-Built') and certified as a true record of the As-Installed electrical installation
2. Fully dimensioned drawings of all plant and fittings installed or connected by the Electrical Contractor
3. General arrangement drawings of equipment, other areas containing plant forming part of the electrical installation, including the accurate size and location
4. Routes, types, sizes and arrangement of all electric cables, conduits, ducts and wiring including the date of installation of concealed work
5. Schematic and wiring diagrams of individual plant and fittings, and those applicable to system operation as a whole

The Electrical Contractor shall supply for fixing in switch rooms, pump houses and plant rooms, the office of the Maintenance Engineer and similar places such suitable instruction charts, schematic diagrams of instrumentation and of the electrical regulations as may be requested by the Engineer provided the said charts, diagrams etc. relate to the installations forming part of the electrical works. All such charts shall be of suitable plastic materials on a stiff backing and must be approved by the Engineer before final printing. Marked-up drawing of the installation of the electrical works shall be kept up to date and completed by the date of practical or sectional completion

Two copies each of the Record drawings containing all the above information shall be submitted to the Engineer not more than four weeks upon completion and commissioning of the Electrical installation.

The Engineer reserves the right to withheld issuing of the Final Account Payment Certificate until the installation has been fully tested and commissioned; and the test results and as- built records drawings have been submitted as required.

6.11.4 MAINTENANCE MANUALS

Upon practical completion of the electrical works the Electrical Contractor shall submit to the Engineer two copies of operation and maintenance manual relating to any equipment or plant forming part of the electrical installation

The manual shall be of loose-leaf type, international A4 size with stiff covers. It may be in several volumes and must be sub-divided into sections, each section covering one engineering service system. It shall have ready means of reference and a detailed index

The manual shall contain full operating and maintenance instructions for each item of equipment, plant and fitting set up in a way dealing systematically with each system:

1. System description
2. Full operating instructions
3. Maintenance and servicing periods and procedures
4. Colour coding legend for all services
5. Schematic and wiring diagrams of plant, equipment and switchgear
6. Record drawing, true to scale, reduced to international A3 size
7. List of primary and secondary spares

6.11.5 DEFECTS LIABILITY AND CONTRACTUAL MAINTENANCE PERIOD

The Electrical Contractor shall maintain the complete installation in the total defects' liability period of TWELVE MONTHS and shall be responsible for the initiation and execution of the Employer's planned program of maintenance during this period.

During this maintenance period the Contractor shall carry out all necessary adjustments and repairs, cleaning, replacement of defective lamps etc. A report of any work shall be submitted to the Employer and incorporated in the maintenance records.

The Electrical Contractor shall be held responsible for and shall make good all defects in materials that appear during the maintenance period. The period of liability shall not end until all defects, which appear during the maintenance period, have been rectified.

The Sub-Contractor is required to allow in his tender for the cost of maintaining the complete installation up to the end of defects liability period.

GENERAL SPECIFICATIONS FOR STRUCTURED CABLING SYSTEM INSTALLATION

1. GENERAL

1.1 Standards

The entire structured cabling system shall comply with the Commercial Building Telecommunications Cabling Standard ANSI/TIA/EIA-568-C as defined by the Telecommunications Industry Association, International Standards Organisation ISO/IEC 11801 or the equivalent British Standard BS EN 50173; and comply with EMC Directive on Electromagnetic Interference. The system shall comprise ONLY of Category 6A.

The tenderer MUST submit together with his tender literature to prove that the system they are proposing meet minimum standard ANSI/TIA/EIA-568-C performance. The literature shall be in the form of latest original catalogues from the manufacturer.

The literature shall include the expected parameter values that the complete installed system shall give and colour pictures of the proposed components together with their electrical performance and physical properties.

To achieve the level of compliance expected all system components: information outlets, patch cords, patch panels, horizontal and backbone cables must be rated at minimum standard specification and perfectly matched to give reasonable margins above the minimum requirements of the ratified Category 6 parameters.

The tenderer MUST also submit warranty certificate from the equipment manufacturer stating clearly the type of application assurances covered and documentation / letter of authorisation from the manufacturer to prove that they are qualified and authorised to use their products.

The warranty certificate shall include documentation stating clearly the type of application assurances that shall be covered over the entire duration of the warranty and should there be any failures in the installation during the warranty period, the Sub-Contractor shall be required to remedy the installation at no cost to the Employer

FAILURE TO SUBMIT THE REQUIRED DOCUMENTATION WILL RESULT IN THE TENDER BEING DIS-QUALIFIED

1.2 Extent of the work

The work to be carried out under this contract include the supply, delivery, installation, connection, testing and leaving in service condition to the satisfaction of the Engineer the complete installation as herein described in the specification and related specification and / or on the attached drawings. The installations shall include the following but not limited to the following items:

(a) Horizontal distribution
(b) Horizontal cross-connect
(c) Work Area/Information Outlet
(d) Equipment Cabinets
(e) Earthing system, and
(f) All other necessary materials as they appear in the specifications and as found necessary to complete the works

1.3 Exclusion

The Electrical Sub-Contractor will do the following work in connection with the carrying out this installation:

1. The supply and installation of PVC trunking whenever required for cabling.
2. The supply and installation of standard 35mm deep single gang electrical boxes onto which the information outlets / faceplates shall be fixed.
3. The supply and installation of PVC conduits to provide cable pathway and routes from cable trays, ducts and/or trunking provided to the service ducts. It shall however be the responsibility

of the Sub-Contractor to ensure that the correct size and quantity of conduits have been installed by the Electrical Sub-Contractor
4. The supply and installation of voice/data outlet points comprising of conduit, outlet box and draw wire in 20mm diameter PVC conduits.

1.4 Contract drawings

The contract drawings are detailed preliminary drawings whose purpose is to establish the requirement and scope of the Structured Cabling system installations works. The drawings form part of this specification, and they are to be read in conjunction with this specification to enable the Sub-Contractor to prepare a tender.

1.5 Record drawings

During the execution of works on site, the Sub-Contractor shall, in a manner approved by the Engineer, record on contract drawings all information necessary for preparing record drawings of the installed works.
Record drawings may include approved drawings adjusted as a correct record of the installation of the contract works, subject to the approval of the Engineer

The drawings shall include but not restricted to the following drawings or information:

1. Contract drawings amended as necessary but titled *Record drawing* and certified as a true record of the *As Installed* installation. Subject to the approval of the Engineer such working drawing as may be inappropriate may be omitted
2. Fully dimensioned drawings of all fittings installed or connected by the Sub-Contractor
3. Routes, types, sizes and arrangement of all cables, conduits, ducts and trays

Two copies of record drawings showing the complete installation shall be provided to the Engineer not more than one month later after the installation has been tested and certified by the Engineer. **The Engineer reserves the right to review the marked-up drawings to see if they are in an up to date condition before approving the Sub-Contractor's request for interim payments.**

1.6 Maintenance Manuals

Upon practical completion of the works, the Sub-Contractor shall furnish to the Engineer two copies of maintenance manuals relating to any equipment or fitting forming part of the contract

The manuals shall be of loose-leaf type, A4 size. It may be in several volumes and must be sub-divided into sections, each section covering one engineering service system. It shall have ready means of reference and a detailed index

The manual shall contain full operating and maintenance instructions for each item of equipment and fitting set up in a way dealing systematically with each system. It shall include the following and any other items listed, in the text of this specification:

1. System description
2. Procedure of fault finding
3. Emergency procedures
4. Maintenance and servicing periods and procedures
5. Colour coding legend for all services
6. Schematic and wiring diagrams of equipment
7. Record drawing, true to scale, provided in A3 size
8. List of primary and secondary spares

1.7 Labelling

The entire Structured Cabling system shall be neatly and clearly labelled. Specifically, labels shall be provided on the faceplates, cable ends and along the entire cable length, preferably at every 10 meters of each cable run, and at the patch panels to indicate number assigned to each cable. The identification marks must correspond with those on drawings or in specifications

Faceplates and patch panels shall be clearly labelled with black characters on yellow background engraved labels to indicate the number assigned to each cable. Each label shall comprise of one alphabet and two digits. The alphabet shall represent the point usage D for Data and V for Voice.

The two digits shall represent the numbering format starting with 01 to 48. The numbering should correspond with those on faceplates and patch panels

1.8 Testing

At the end of the installation, the entire structured cabling system shall be tested for a guaranteed performance of minimum 350MHz. The equipment to be used for testing shall be the Fluke 4300 LAN analyser or similar approved equipment.

The test parameters shall include but not limited to the following: NEXT, Power Sum NEXT, ELFEXT, Power Sum ELFEXT, Return Loss, ACR, Power Sum ACR, Delay Skew, Insertion Loss and Attenuation

The tests shall be carried out in the presence of the Engineer and the test results for each pair shall be submitted to the Engineer within fourteen days of the first test. The Sub-Contractor shall issue a test certificate upon completion of the tests. Any defects, faults or omissions in the installation that might be apparent by such tests shall be corrected by the Sub-Contractor at his own expense.

After the approval of the test results by the Engineer, the sub-contractor shall make available one copy each in hard (bounded) and soft form of the tests results for each pair for submission to the client for their records. The Employer may choose to verify the authenticity of the results by demanding that tests be carried in their presence. The installation shall only be considered complete once all the points have been tested and a report of accepted test results submitted to the Engineer

The Sub-Contractor is required to include in his tender all fees arising from the testing and any subsequent re-testing of the installations. **The Engineer reserves the right to withheld issuing of the Penultimate and Final Account Payment Certificates until the installation has been fully tested and commissioned; and the test results and as-built records drawings have been submitted as required.**

1.9 Samples

The Sub-Contractor shall not proceed with the procurement and subsequent installation of any equipment, fittings and / or materials specified under this contract until the equipment, fitting and materials have been approved by the Engineer and Employer.

The Sub-Contractor shall furnish at his own cost any samples of material or workmanship that may be required by the Engineer and Employer. The Sub-Contractor shall also furnish the name and addresses of equipment manufacturer, and the contact person if requested to do so by the Engineer and / or Employer.

The procedure for submitting samples shall be as laid down by the Engineer and / or Employer.

During the execution of the contract, the Engineer shall be allowed all facilities for inspecting equipment and materials on the site and Sub-Contractor's workshop. In such cases notice shall be given to the Engineer that material has arrived on site and is ready for inspection

1.10 Trade Names

The approved make / manufacturers' brands of the entire Structured Cabling system including non-active equipment cabling and materials shall be **SIEMON, GIGANET and/or EXCEL** The Sub-Contractor is required to seek authorization from Employer through Consultant if they wish to use other brands of equal and approved specifications. In all cases the Employer's decision shall be final and binding.

The approved make / manufacturers' brands for active equipment such as network switches and router shall be determined by Employer as and when required.

2. STRUCTURED CABLING SYSTEM INSTALLATION

The cable standard shall be Category 6A F/FTP LSOH cables to run gigabit Ethernet protocol (IP based) for all applications and data communication in accordance with **ANSI/TIA/EIA-568-C**

2.1 Work Area/Information Outlet

The Work area/information outlet, which shall be designed for voice and data applications, shall be a modular RJ45 terminated to Insulation Displacement Connection and installed in a faceplate at the work location to provide termination for horizontal 4-pair F/FTP cables.

The outlets shall be provided with spring-loaded shutters, such that when no work area cord is inserted the shutter closes automatically by spring action and thus preventing dust entry into the RJ45 sockets.

Faceplates shall have 2xRJ45 ports as indicated in the drawings. Where 1xRJ45 ports are specified, blanking plates should be installed to cover the spare RJ45 outlets. Each faceplate shall have some space to be used as a labelling field

Faceplates shall be white in colour, in flush pattern and compatible with the 35mm deep single electrical box similar.

2.2 Patch/Equipment Cord

Cords for connecting information outlets to the terminal equipment shall have RJ45 plugs on both ends and shall not be less than 3.0m long. Other specific lengths may be used for particular application or function as specified and shall not exceed 5.0m in length.

Cords for connection patch panels and switches shall have RJ45 plugs on both ends and shall either be 1.5m or 3.0m long. Inside the equipment cabinet, the cords should pass through cable management modules through the back of the cabinet before terminating to a switch. The patch port number should be mapped and connected to the same number in the connecting switch

2.3 4-pair F/FTP LSOH Cables

Each RJ45 information outlet shall have its own dedicated 4-pair F/FTP cable. Pursuant to ISO/IEC 11801, the *link* (all cable and connector hardware between and including outlet, distributor and patch cord) of horizontal cabling should at maximum be 90m long, i.e. cable length including cable slack.

The total length of equipment and patch cords plus work area cable shall not exceed 10m in any one link, meaning its total performance should be no worse than 10m of installed horizontal cabling. The entire length of a *channel* shall therefore be at most 100m

All pairs of the 4 pair F/FTP cable shall be colour-coded and the cable shall be 100-Ohm balanced

Where cables are installed in 3 compartment PVC trunking and cable trays, plastic cable ties must be used to tie up the cables along their entire run preferably at every 900mm. Where cables are concealed under floor and walls in 20mm diameter PVC conduits, there shall not be more than two 4-pair UTP cables in the conduit.

Under no circumstance should the cables be clipped directly onto walls and ceiling slabs. Great care should be taken to avoid cable twists, kinks and any sharp bending radii as these may degrade the performance of the cables. The minimum bending radius shall be not more than 4 times the cable diameter; and the maximum pull force shall be 25lbs

The cables must be continuous and terminated only at respective information outlet and patch panel. There shall be no intermediate connections in the cables. Pairs of one cable shall not be shared by two or more information outlets

2.4 Equipment Cabinet

The equipment cabinet shall be used to terminate cables and host network devices, switches and servers. It shall have the following minimum specifications:

2.4.1 Equipment cabinet shall be of standard 19in and sized as specified in bills or quantities. The approved make / manufacturers' brand of the equipment cabinet shall be **DINTEK, SIEMON, or EXCEL.** The Sub-Contractor is required to seek authorization from Employer through Consultant if they wish to use other brands of equal and approved specifications. In all cases the Employer's decision shall be final and binding.

2.4.2 The cabinet shall be constructed of rigid aluminium frames and sheet metal panels. The front door, rear door and side panels shall be removable and lockable. The type of lock shall be a combination lock with override key. The front door shall be toughened glass

2.4.3 Secured cable channel for each individual compartment

2.4.4 Massive front to rear ventilation capacity

2.4.5 Equipment accessories shall include: patch cord management panels and one 12-ways power distribution unit in each compartment

2.4.6 All equipment installed inside the cabinet: patch panels, cable tidying and brush panels, power distribution units and computer active equipment shall be RJ45 based and of 19-inch rack mounting type

2.4.7 All cables from information outlets shall be terminated at the patch panels. Patch panels shall be in multiples of 24 or 48 RJ45 ports. The panel shall include voice and data labels for port identification, and the cable termination shall be done by Insulation Displacement Connection.

2.4.8 Patch cords organisers (cable guides) shall be used for routing patch cords in 19-inch rack mount RJ45 jack panel installations. The cable guides should be installed in between each patch panel to allow for neat arrangement of cables and patch cords.

2.5 Earthing

All metal parts associated with the cabling and equipment installation must be properly earthed in accordance with the latest edition of 'Regulations for Electrical Installations' issued by the Institution of Electrical Engineers (IEE) and ANSI/TIA/EIA-607-A Grounding and Bonding Requirements for Telecommunications in Commercial Buildings

3. Defects Liability and Contractual Maintenance Period

The Contractor shall maintain the complete installation in the total defects' liability period of TWELVE MONTHS and shall be responsible for the initiation and execution of the Employer's planned program of maintenance during this period.

During this maintenance period the Contractor shall carry out all necessary adjustments and repairs, cleaning, replacement of defective part due to installation or supply defects. A report of any work shall be submitted to the Employer and incorporated in the maintenance records.

The Electrical Contractor shall be held responsible for and shall make good all defects in materials that appear during the maintenance period. The period of liability shall not end until all defects, which appear during the maintenance period, have been rectified.

The Sub-Contractor is required to allow in his tender for the cost of maintaining the complete installation up to the end of defects liability period.

GENERAL SPECIFICATIONS FOR AIR-CONDITIONING SYSTEM INSTALLATION

1. EXTENT OF THE WORKS

The works include supply, installation, connecting, testing, energizing, commissioning and delivering in serviceable condition air-conditioning installation and electrical connections shown or specified in this specification, including all necessary elements as:

1.1 Split type air-conditioning equipment
1.2 Refrigerants pipes
1.3 Drainage Pipes
1.4 Electrical power connection
1.5 Conduits and PVC trunking

The works must include all labour, materials, tools, instruments, etc. necessary to execute the works in a first class manner, even such labour or material which are not specifically mentioned in the project but are necessary for satisfactory completion of the works and as per the equipment manufacturer specifications.

The Sub-Contractor shall be responsible for carrying out to completion the installation to the satisfaction of the Engineer as regards to workmanship, materials, execution, and maintenance and within the Main Contractor's programme. The Sub-Contractor shall be responsible for compliance with all tests required by the Local Authority and the Engineer.

The Sub-Contractor shall undertake all modifications demanded by the authorities in order to comply with regulations, and produce all certificates, if any, from the Authorities without extra charge.

2. REGULATION AND STANDARDS

The installation specified in this document shall be erected with equipment, plant components, materials and workmanship in compliance with the latest edition of the relevant standards / codes of practice and in particular the following:

2.1 The Tanzania Government Regulation and Rules
2.2 Relevant British Standards/Codes of Practice
2.3 The Electricity Supply Bye-Laws of Tanzania
2.4 This Specification and approved working Drawings, which are to be read and construed together

Where any of the above publications are at variance with any item of this specification, the requirements of this specification shall be final and binding

3. MATERIALS AND EQUIPMENTS

The Sub-Contractor shall not proceed with the procurement and subsequent installation of any equipment, fittings and / or materials specified under this contract until the equipment, fitting and materials have been approved by the Engineer and Employer.

The Sub-Contractor shall furnish at his own cost any samples of material or workmanship that may be required by the Engineer and Employer. The Sub-Contractor shall also furnish the name and addresses of equipment manufacturer, and the contact person if requested to do so by the Engineer and / or Employer.

The procedure for submitting samples shall be as laid down by the Engineer and / or Employer.

During the execution of the contract, the Engineer shall be allowed all facilities for inspecting equipment and materials on the site and Sub-Contractor's workshop. In such cases notice shall be given to the Engineer that material has arrived on site and is ready for inspection

All materials, equipment and accessories shall be new as specified and in accordance with the requirement of the current rules and regulations where such exists and with the relevant recognized

international standards. Uniformity of manufacturer and type of fittings and accessories shall be preserved as for as practicable throughout the Sub-Contract works.

Air-conditioners, electrical and control equipment shall be located and arranged in a manner to allow adequate access and maintenance in compliance with the manufacturer's recommendations and to the approval of the Engineer. Air conditioners shall be complete with all specified governing and safety controls and interlocks, which shall, operate independently and shall be supplied and installed by the Sub-Contractor as part of his scope of work.

The air-conditioning unit shall continue to run at a reduced capacity in the event of a fault occurring on any refrigerant circuit. Fault alarms shall be initiated. The unit shall automatically restart in the event of power failure.

4. BUILDER'S WORK

The Sub-contractor shall not make holes and / or cut the building fabric without the consent of the Engineer. Permanent holes into the building fabric to accommodate pipes, trunking, cable trays, etc. are excluded in this Sub-Contract and shall be carried out by the Main Contractor at the direction and instruction of the Sub-Contractor.

All repair and making good of holes, etc in connection with the air-conditioning equipment installation shall be carried out by the Main Contractor at the direction of the Sub-Contractor.

5. TRANSPORT AND STORAGE

All equipment shall during transportation be suitably packed, crated and protected to minimize the possibility of damage and prevent corrosion and other deterioration. On arrival at site all equipment shall be examined for damage to parts and protective coats made good before storage or installation. Adequate measures shall be taken to ensure that equipment do not suffer any deterioration during storage. Prior to installation all materials and equipment shall thoroughly be cleaned. If, in the opinion of the Engineer any equipment has deteriorated or has been damaged to such an extent that it is not suitable for installation, the Sub-Contractor shall replace the equipment at his own cost.

All supplies and installation of electrical equipment associated with the air conditioning equipment installation shall be carried out by the Sub-Contractor unless otherwise specified. All electrical installations shall be carried out by competent, licensed and approved Electrical Contractor. The complete electrical installation stipulated in this specification shall comply strictly with the Electrical Supply Authority Bye-Laws, applicable TANESCO requirements, Regulations for the Electrical Equipment of Building as published by the Institution of Electrical Engineers, (IEE) and General Electrical Specifications

6. AIR-CONDITIONING SYSTEM

6.1 Design Conditions

Extreme ambient conditions under which all plant shall be required to operate:	Maximum 35^{o}C DB, 29^{o} C WB and full solar load
Internal Conditions under which air conditioning plant shall be required to achieve installed capacity:	24^{o}C DB, 50+/-5 Relative Humidity
Electricity Supply:	380V – 415V, 50Hz balanced three phase, earth neutral

6.2 Split Air Conditioner Unit

Shall comprise of an air-cooled outdoor condensing unit and indoor fan coil unit (Hi-Wall and Ceiling Cassette types). The complete system proposed shall be **LG brand, Dual Cool Inverter type with wireless remote controller and Automatic Voltage Stabiliser (AVS)**. The Sub-Contractor is required

to seek authorization from Client/Consultant if they wish to use other brands of equal and approved specifications. In all cases the Employer's decision shall be final and binding.

The units shall be installed complete with the condensers, fan coil, refrigerant pipes, controllers, cabling, drainpipe and all necessary accessories and supports. Each split air-conditioner supplied shall be complete with a remote controller (either wired or wireless as specified)

The condensate drain from each/respective indoor fan coil unit shall be piped to the nearest waste drain/stack as shown on the plumbing / drainage drawings. The outdoor unit shall be suitable for tropical weather marine environmental conditions. The condenser fan shall be of propeller fan type. The compressor motor and condenser fan motor shall be thermally protected.

6.3 Copper Piping

Refrigerant Copper tubing shall be light gauge conforming to BS 2871 and the fittings shall be capillary or compression fittings to BS 864 of approved manufacturer. Joint on tubing up to and including 50mm diameter shall be compression or capillary joints or direct joints using Zinc-free self-fluxing silver brazing alloys. Joints on tubing above 50mm diameter shall be welded or brazed joints.

6.4 Drainage Pipework

All drainage pipes from fan coil units shall be uPVC of minimum 20mm diameter insulated with closed cell flexible neoprene similar to "Armaflex" of minimum thickness 10mm and fully vapour sealed, to avoid condensation on external surfaces of pipework. Pipework shall be graded from fan coil units to tundish or waste and supported at intervals as recommended by the air conditioner manufacturer. Drain pipework shall be tapped at fan coil unit.

6.5 Pipework Insulation

Thermal insulation to pipework services listed below as required for the whole installation within the specified termination points

6.5.1 Refrigerant Pipework and Condensate Drainage Insulation
6.5.2 Thermal insulation for refrigerant suction piping shall be as follows:

Performance
Maximum thermal conductance 0.04 W/mK at 32^{o}C Suitable for continuous duty at +20% of specified working temperature range and extreme ambient conditions

Materials
Flexible, closed cell, elastomeric performed tube insulation.

Insulation Thickness
Insulation thickness shall be:

- 10mm thick for refrigerant pipes of 10mm diameter or less,
- 15mm thick for refrigerant pipes of over 10mm diameter or
- Equipment Manufacturer Requirement

All joints shall be vapour sealed. Where pipework runs externally refrigerant pipework and condensate drain pipes shall run in rigid uPVC trunking chased in wall with the trunking cover flashing with the wall for easy removal during repair and servicing. Under no circumstance should the piping be visible

6.6 Noise and Vibration

All equipment shall be soldered, mounted and installed to produce no vibration that can reasonably be objected to and so as to meet noise guarantees set out elsewhere in the specification.

7. COMMISSIONING AND MAINTENANCE

7.1 Commissioning and Testing

Upon completion of the installation, the Sub-Contractor shall test the complete system at his own expense. The Sub-Contractor will be required to submit proof of the test results matching with the equipment manufacturers parameters. These shall include and not limited to Energy Efficient Ratio (EER), power consumption and air flow.

Before handing over, the Sub-Contractor shall confirm that the installation has been examined, tested, is ready for use, that it will operate and can be maintained efficiently.

The entire air-conditioning system installation shall be tested to the satisfaction of the Engineer and the Local Authority. The Sub-Contractor shall provide all necessary testing apparatus and facilitates for testing the installations and any defective work shall be replaced immediately and shall be the subject of re-testing until found satisfactory. Where pipes are to be legged, chased into walls or otherwise concealed, the work shall be tested prior to lagging, making good chases, etc.

The Engineer reserves the right to withheld issuing of the Final Account Payment Certificate until the installation has been fully tested and commissioned; and the test results and as-built records drawings have been submitted as required.

7.2 Record drawings

During the execution of works on site, the Sub-Contractor shall, in a manner approved by the Engineer, record on contract drawings all information necessary for preparing record drawings of the installed works. Record drawings may include approved drawings adjusted as a correct record of the installation of the contract works, subject to the approval of the Engineer

The drawings shall include but not restricted to the following drawings or information:

1. Contract drawings amended as necessary but titled *Record drawing* and certified as a true record of the *As Installed* installation. Subject to the approval of the Engineer such working drawing as may be inappropriate may be omitted
2. Fully dimensioned drawings of all fittings installed or connected by the Sub-Contractor
3. Routes, types, sizes and arrangement of all pipe work, cables, conduits and trunking

Two copies of record drawings showing the complete installation shall be provided to the Engineer not more than one month later after the installation has been tested and certified by the Engineer. **The Engineer reserves the right to review the marked-up drawings to see if they are in an up to date condition before approving the Sub-Contractor's request for interim payments.**

7.3 Maintenance Manuals

Upon practical completion of the works, the Sub-Contractor shall furnish to the Engineer two copies of maintenance manuals relating to any equipment or fitting forming part of the contract

The manuals shall be of loose-leaf type, A4 size. It may be in several volumes and must be sub-divided into sections, each section covering one engineering service system. It shall have ready means of reference and a detailed index

The manual shall contain full operating and maintenance instructions for each item of equipment and fitting set up in a way dealing systematically with each system. It shall include the following and any other items listed, in the text of this specification:

1. Description of equipment
2. Full operation and maintenance instructions
3. Maintenance and servicing periods and procedures
4. Record drawing, true to scale, reduced to A4 size
5. List of primary and secondary spares

7.4 Defects Liability and Contractual Maintenance Period

The Sub-Contractor shall maintain the complete installation in the total Defects Liability Period (DLP) of TWELVE (12) MONTHS and/or as specified in Main Bill and shall be responsible for the initiation and execution of the Employer's planned program of maintenance during this period. During this maintenance period the Sub-Contractor shall carry out all necessary adjustments and repairs, cleaning and lubricating, etc. A report of any work shall be submitted to the Employer and incorporated in the maintenance records.

The Sub-Contractor shall be held responsible for and shall make good all defects in materials that appear during the maintenance period. The period of liability shall not end until all defects, which appear during the maintenance period, have been rectified.

The Sub-Contractor is required to allow in his tender for the cost of maintaining the complete installation up to the end of DLP.

COT ESTIMATES FOR PROPOSED CONSTRUCTION OF MULTI- SERVICE PROJECT TO BE BUILT AT KIJITONYAMA DAR ES SALAAM

BILL NR. 1 - PRELIMINARIES

ITEM	DESCRIPTIONS	AMOUNT

PRELIMINARY PARTICULARS

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

the term the Works shall mean the whole of the works envisaged by the Contract, including, unless expressly stated otherwise, the works of nominated sub-contractors, nominated suppliers, local authorities and public undertakings whether or not the works of the latter are represented by prime cost sums

the term instructions, and words derived therefrom, shall mean written instructions issued by the Project manager unless otherwise described

the term approval, and words derived therefrom, shall mean written approval issued by the Project manager unless otherwise described

the terms approval, approved by, to approval, as directed and the like, refer always to approval or directions given by the Project manager. Approval will not be valid unless given in writing. When the Contractor seeks approval for work which cannot proceed without the Project manager's selection or inspection (e.g. performance tests; work of aesthetic importance) he shall give adequate notice in order that arrangements can be made. Unless otherwise specified in the written approval, such approvals will be limited to the visual appearance of the work involved and are not in any case to limit any other requirements of this Contract particularly in relation to the kind and standards of materials, goods and work

Abbreviations

The following abbreviations are used:-

SMM Standard Method of Measurement of Building Works: East Africa Edition, Second Edition, Metric 2008

M Metre(s)

MM Millimetre(s)

DEFINITIONS/ABBREVIATIONS

Abbreviations

M^2 Square metre(s)

M^3 Cubic metre(s)

No./Nr Number(s)

Kg Kilogram(s)

PRELIMINARY PARTICULARS: PROJECT

Name

The project shall be known as **PROPOSED CONSTRUCTION OF MULTI- SERVICE PROJECT TO BE BUILD AT PLOT NO... BLOCK ....., KIJITONYAMA DAR ES SALAAM**

PRELIMINARY PARTICULARS: PARTIES AND CONSULTANTS

Employer

The Employer is **QATAR CHARITY TANZANI**A
P.O.BOX.... HOUSE NO 22A & B OYSTEBAY

Project manager/Architects

The Project Manager/Architect is **DXE ASSOCIATES** of
P. O. BOX 32062, DAR ES SALAAM.

Quantity Surveyor

The Quantity Surveyor is **Equa-SERVE Limited** of
P. O. BOX 76577, DAR ES SALAAM.

Consultant Structural Engineer

The Consultant Structural Engineer is **GALAXY PROJECT SERVICE LTD** of
P.O.Box 32600, DAR ES SALAAM.

Consultant Services Engineer

The Consultant Service Engineer is **TANSERVE CONSULTING ENGINEERS LTD of P.O.Box 79769, DAR ES SALAAM.**

A	**Plant, Tools and Vehicles** The Contractor shall be responsible for the provision of all plant, tools, and vehicles and workmen required for the Works except in so far as may be stated otherwise herein or except for such items specifically and only required for the use of and provided by Client appointed agents as described herein. No timber used for scaffolding, formwork or similar purpose shall be used afterwards in the permanent work.	
B	**Safety, Health and Welfare of the work people** The Contractor shall be responsible for and shall ensure the safety and welfare of his work people, and those of his Subcontractors, Client appointed agents, Nominated Suppliers and persons employed directly by the Employer. Allow for securing OSHA certificate, providing and maintaining on the site adequate medical facilities and approved first aid equipment kept fully replenished and in an accessible position. The contractor shall comply and observe all neccesary measures agaist Covid-19 as directed by Goverment Authorities.	
C	**Notices and Fees** The Contractor shall give all notices in accordance with the Conditions of Contract. The Contractor shall pay all fees and charges required in the Conditions of Contract, regulatory authorities and any Local Authority where the Works are being executed. The amount of all such fees and charge shall be deemed to be included in the Contract Sum. Those in respect of the following items are included elsewhere in this Document if applicable to the Works. Rates on temporary buildings Hoardings Temporary telephones Water for the work Works to be carried out by Local Authorities or Statutory Undertakings.	
D	**Setting out the works** The Contractor shall set out the Works in accordance with the dimensions and levels shown on the Drawings and shall be responsible for the correctness of all dimensions and levels so set out by him and will be required to amend all errors arising from inaccurate setting out at his own cost and expense. In the event of any error or discrepancy in the dimensions or levels marked on the Drawings being discovered such errors or discrepancies must be reported by the Contractor to the Project manager for his immediate attention. No work shall be commenced by the Contractor until he has received written instructions from the Project manager to adjust such discrepancies which may be proved. Upon receipt of such instructions the Contractor shall there upon be responsible for the accurate setting out of the works, giving effect to the adjustments necessary to comply with such instructions, and no claim for extra expense based on any discrepancy or error in the dimensions or levels shown on the Drawings may be made thereafter.	
	General Conditions and Preliminaries To Summary Tshs	

A	**Contractor's Supervision** The Contractor shall provide full and adequate supervision during the progress of the works and shall keep a competent and authorized Agent or General foreman, approved by the Project manager (which approval may be withdrawn at any time) constantly on the works. Such authorized Agent or General Foreman shall give his whole time to the supervision of the works and must be able to read and speak English, to receive and act upon (on behalf of the Contractor) all instructions, directions, or orders issued by the Project manager or his representative. No work shall be carried out at night or on gazetted holidays unless authorized by the Project manager in writing.		
B	**Labour and fair wages** The Contractor shall provide all labour and shall include for all costs arising from the current Government regulations regarding annual leave and passages, medical facilities, public holidays, overtime, training levy, income tax, housing, travelling allowances, wages and salaries, and any other statutory requirement current at the date of tender. The Contractor shall pay rates of wages and observe hours and conditions of labour not less favourable than the minimum rates of remuneration and minimum conditions of employment applicable in the district in which the work is carried out as laid down by the Regulations of Wages and Conditions of Employment Act, Building and Construction Industry Wages Council. The relevant notice must be kept posted upon the site where it can be conveniently read by the employees concerned.		
C	**Watching and Security** The Contractor shall provide all watching and security and everything else necessary by day and night for the due protection and Security of the Works and the public and other persons. He shall provide all barriers, notices, watchmen to prevent access of unauthorized persons into the site. The Contractor will be liable for all consequences of theft from the site of his own or Subcontractors or Suppliers materials or equipment. Any such theft will not relieve the Contractor of his liability for completion the Works on time.		
D	**Maintenance of public and private roads and services** The Contractor shall be responsible for all damage to roads, (whether public or private), crossovers, services and the like arising out of, or in the course of, or by reason of the execution of the works and shall be responsible for observing any by- laws or other regulation imposed by a competent authority regarding the keeping of such roads free from mud, filth, etc, arising as aforesaid.		
E	**Police regulations** The Contractor shall at all times observe any police regulations including those regarding the loading or unloading or any waiting by vehicles on the public highway and the Contract Sum shall be deed to include for strictly compliance therewith.		
	General Conditions and Preliminaries	To Summary	Tshs

A	**Progress chart, progress reports and progress photographs** Immediately after signing the Contract the Contractor is to prepare a time and progress chart showing the time and order in which he proposes to carry out the works within the total construction time stated in the Contract. The chart shall show in detail the construction time and order in which each section of the work is to be carried out and be subdivided into trades or tasks. Where the Contract is made up of individual buildings a separate chart shall be provided for each. Upon the letting of Subcontracts the Contractor is to incorporate similar times and details of each separate Subcontractor's work (which information is to be provided by the Subcontractor) and the chart shall be so designed to accommodate this information. At the end of each week the Contractor is to mark on the chart, in a different colour, the actual time taken to complete the respective stages and sections of the work. The Contractor shall also show upon the chart the anticipated weekly labour strength required upon the site (divided into labourers and craftsmen) and shall similarly mark up the actual numbers employed. Copies of the completed chart are to be supplied to the Project manager Two days before each of the scheduled site meeting the Contractor shall submit a progress report in triplicate to the Project Manager indicating the periodic progress and giving details of any delays caused by inclement weather or other reasons beyond his control. The report must include information on labour employed, and the progress of all trades, including Agents appointed by the Client. Also the Contractor shall submit three copies of progress photographs clearly indicating the date and time of the activity shown on the photograph.	
B	**Checking schedules, drawings, etc** The Contractor shall be responsible for checking all schedules and drawings supplied by the Project manager and all shop drawings approved by the Project manager. In the event of any discrepancy being found between such schedules and drawings or if the Contractor considers that additional detail drawings are required, then in either case the Contractor shall report such discrepancy to the Project manager for instruction or apply in writing for such detail at least 28 days before the works concerned are to be executed. The Contractor shall ascertain from the drawings or otherwise any holes, recesses, plugs, etc, which may be required in time to form these as the works proceed. No extra payment will be allowed for cutting or forming such holes, recesses, or plugging, Subsequently. The Contractor's attention is drawn to the requirements for the submission of samples, shop drawings, certificates and guarantees contained in previous or subsequent items of this Document.	
C	**SUFFICIENCY OF TENDER** The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the rates and stated in the priced Bills of Quantities. Rates and prices quoted shall cover all his prices obligations under the contract and all matters and things necessary for the proper completion and maintenance of the works. General Conditions and Preliminaries To Summary Tshs	

A	**Samples** Samples of proposed materials and workmanship shall, if required by the Project manager, be submitted for approval, and those samples will be left on site by the Project manager who shall have power to reject all such materials and condemn such workmanship that does not correspond with the approved sample. The following samples (and others as directed by the Project manager) shall be provided; tiles, doors, sanitary fittings, electrical fittings, painting, and glass panels.	
B	**Tests** The Project manager may, whenever he considers it desirable, test any materials before they leave the maker's premises as well as after delivery on the site, and the Project manager shall be at liberty to reject any materials after delivery should he consider them unsatisfactory, notwithstanding the preliminary test and approval of the materials at the maker's premises. The costs of these tests are to be borne by the Contractor. When directed by the Project manager, samples of materials (the samples being taken by approved sampling methods) are to be supplied by the Contractor for laboratory tests and shall be delivered by the Contractor at his own cost to the Project manager office or as otherwise directed. The Contractor shall, whenever so instructed by the Structural Engineer, prepare all equipment for pile testing as specified in the measured works section. The Contractor shall keep photographs of instruments readings, ensure safety of performers and observers of pile testing The Contractor shall, whenever so instructed by the Project manager, cut out sections of work executed or samples of materials incorporated therein and shall deliver them where directed for the purpose of testing. All work disturbed shall be made good forthwith by the Contractor. All costs incurred in cutting out, making good and delivering as aforesaid, shall be borne by the Contractor unless the result of the test shows that the materials etc, are in accordance with this Contract. The contractor shall and as Project manager may instruct during execution, provide samples for all kind of testing including physical destructive Testing Contactor shall provide at least a 10 year guarantee from a supplier of any material whenever requested by client with PM Approval; Such as Water proofing material, Glass Works, Painting, Curtain Walls, Aluminium material, Granite/Marble, Mashrabya Screens,Porcelain tiles, Clading material, acoustic material, signages, ceramic tiles, vinyl Tiles, Carpets, Elevators , Lights, Cables, ceilling tiles, Sanitary wares, Furnitures, Ironmongeries, Pumps ,Roofing sheet, Pipes, ventilation devices. The contractor shall make sure that all materials are tested at authorized Testing in laboratories with the consent of Consultants. General Conditions and Preliminaries To Summary Tshs	

A	**Disposal of water for all sections of the works** Allow for keeping the site and buildings free from water arising from whatsoever cause. The Contractor shall notify the Project manager as soon as water percolation or water-logging becomes apparent and he shall obtain the written permission of the Project manager before carrying out any continuous pumping or other method of removal of water which may lower the water level on adjoining sites. The Contractor shall ensure that no nuisance is caused by the outfall of pumped water and shall obtain the necessary permission before connecting temporary drainage to existing drains and/or sewers. Any fees and charges in connection with such work shall be deemed to be included in the Contract Sum.	
B	**Site levels** Before commencing work the Contractor must arrange for and agree with the Project manager the existing site levels and similarly establish and agree a bench mark. The levels and bench mark thus agreed will then be used for the duration of works for all purposes.	
C	**Interruption of work** The Contractor shall allow herein for all costs incurred by the interruption of work owing to public parades, processions and the like.	
D	**Overtime** The Contractor shall allow in his tender for any extra costs for overtime working he considers will be necessary in order to complete the work by the contract Date for Completion. If during the course of the Contract overtime is worked for a specific purpose in accordance with a written instruction issued by the Project manager the Contractor will be reimbursed in respect of such overtime to the extent only of the additional net cost of unproductive time payable over and above the basic hourly rates as laid down in the regulations affecting the wages and conditions of employment, etc. in the construction industry but excluding any bonuses, profits and overheads.	
E	**Housing labour on the site** No labour, with the exception of watchmen, may be housed on the site and the Contractor must allow for all costs in moving labour to and from the site at such times and by routes approved by the Police and Local Authorities.	
	General Conditions and Preliminaries To Summary Tshs	

A	**Area to be occupied by the Contractor** The area of the site which may be occupied by the Contractor for use as storage and for the purpose of erecting workshops, etc., shall be agreed between the Project manager and the Contractor.	
B	**Stamp charges** Allow for paying all stamp charges in connection with the Surety Bond and the Contractor Agreement.	
C	**Pricing and Correction of Bills of Quantities, etc.** costs relating to items which are not priced will be deemed to have been included elsewhere in these Bills of Quantities	
D	**Details to be private and Confidential** The Drawings, Bills of quantities and Contract Documents applicable to this contract are restricted by copyright. The Contractor shall treat the details of this Contract as private and confidential for his own information only and shall not publish or disclose the details of the Contract in any trade or technical paper or elsewhere (except as necessary for the purpose hereof) without the previous consent in writing of the Employer.	
E	**Copyright** The copyright of these Bills of Quantities is vested in the Quantity Surveyor M/s Equa SERVE Limited and they may not be reproduced in whole or in part without the Quantity Surveyor's written permission	
F	**Water for the work** The contractor shall at his own expense use whatever means at his disposal, provide on the site plentiful, suitable and clean water for use of the works. The Contract Sum shall be deemed to include for all costs and charges of whole water to be used in the works.	
G	**Temporary lighting and power for the works** The Contractor shall provide all artificial lighting, electric power and the energy required for the execution of the work. The provision of light and, where appropriate, power for Agents appointed by the Client and Local Authorities is included in the items of general and special attendance in Provisional and Prime Cost Sums. The Contract sum shall be deemed to include for all fees and charges for all temporary services and clearing away on completion, and for the cost of all electricity consumed for the works.	
	General Conditions and Preliminaries To Summary Tshs	

A	**Protection of persons and property** The Contractor shall provide for the efficient of the public, the Employer's servants and property and all other persons occupying or using the premises, also of adjoining or neighbouring property during the progress of the works included in or required to be done on connection with the Contract. This shall include provision of scaffolding and protective netting around and to the full height of the building, maintain the same until completion of the Works. The Contractor shall take all precaution to eliminate as far as possible the danger to the public and other persons arising from the entry and exit of vehicles to and from the site.	
B	**Trespass and nuisance** All reasonable means shall be used to avoid inconveniencing adjoining owners and occupiers. No workmen or plant employed on the works shall be allowed to trespass upon adjoining properties. If the execution of the works requires that workmen or plant must enter upon adjoining property, the necessary permission shall be first obtained by the Contractor who shall see that these instructions are carried out. The Contractor shall indemnify the Employer against any claim or action for damages on account of any trespass or other misconduct of the Contractor's employees. The Contractor shall not obstruct any public way or otherwise do or suffer to be done anything which may amount to a nuisance or annoyance, and shall not interfere with any right of way or right to adjoining property, and any notice received by him or left upon the site requiring the discontinuance or suspension of any part of the works shall at once be forwarded by him to the Project manager or, if given verbally, shall at once be communicated by him to the Project manager in writing, and the Contractor shall keep the Employer indemnified against any claim or loss consequent upon any act, neglect or omission of the Contractor, his agents, servants or workmen in this respect.	
C	**Temporary works generally** The Contractor shall provide all temporary roads, tracks, hardstandings, crossing and the like to ensure satisfactory and efficient access to the works. The cost of such temporary works shall be deemed to be included in the Contract Sum.	
D	**Temporary roads** All such temporary roads shall be to the approval of the Project manager and in general will only be permitted over the areas planned for permanent roads and hardstanding as indicated on the Site Plan.	
E	**Temporary buildings for use by the Contractor** The contractor shall, at his own cost, supply and erect all temporary buildings, sheds, mess rooms and stores with floors at least 150mm above ground level. No office, stores or other temporary buildings shall be erected on the site without first obtaining the consent of the Project Manager/Project manager as to the type of temporary building to be supplied and the position in which they are to be erected.	
F	**Temporary latrines** Temporary latrines shall be provided, maintained and removed on completion by the Contractor to the satisfaction of the Project manager and Local Authorities.	
	General Conditions and Preliminaries To Summary Tshs	

A	**Temporary facilities for use by persons acting on behalf of the Employer & Consultants** The Contractor shall provide, erect and maintain where convenient an approved lock-up office building for the sole use of the Project manager with a floor area of not less than 50 square metres. The office is to be furnished with lockable steel cabinet, a table and chairs of sufficient size and number for site meetings, a plain chest and pin-up boards and air conditioning . The Contractor shall also keep clean and attend on the above mentioned accommodation as required. Copies of the Drawings, Specification and Bills of quantities shall be kept in this office at all times. The Contractor shall allow in the contract sum the expenses for refreshments during site meetings for client and consultants . There shall be one scheduled meeting in every month. The contractor shall provide one Printer for clerk of work's office ; To be HP laserjet printer, capable to print both A4 and A3 paper sizes; including maintainance and cartridge refilling from project commencement to practical completion	
B	**Rates on temporary buildings** The Contractor shall be responsible for the payment of all rates and taxes in respect of huts or other temporary buildings erected anywhere for the purposes of the works. The Contractor shall also be responsible for agreeing or otherwise dealing with notice of assessment, demand note or other like document which may be received in respect of such huts or temporary buildings. The Contract Sum shall be deemed to include for the aforesaid and for payment of any expenses incurred by the Contractor in connection with such assessment.	
D	**Sign board** The Contractor shall unless otherwise directed, obtain any necessary consent or license from the Local Authority and immediately upon commencement of the works the Contractor shall, in accordance with the details supplied by the Project manager, make and erect a sign board showing the name of the Employer, all Consultants, the Contractor, all Sub-contractor and such other information as shall be directed and approved by the Project manager. The Contractor shall include in the Contract Sum all fees and charges payable to Professional and Regulatory Boards for Project managers, Architect, Quantity Surveyors and Engineers(AQRB and ERB). The Contractor shall be liable for any penalty arising from inadequate or wrongly erected signboard.	
	General Conditions and Preliminaries To Summary Tshs	

A	**Temporary hoarding** The works shall be enclosed by the Contractor with a fence not less than 3.00m high neat and uniform in appearance to the approval of the Project manager. The fence shall be a sufficient obstacle to prevent the ingress of unauthorized persons or children and shall be complete with all necessary padlocked entrance gates, fans and screens as may be requisite to ensure the safety of the public or adjoining owners and of the works. Any commercial paint on the hoarding shall be done at the approval of the Employer. The Contractor shall maintain the fence, gates, and screens, obtain all necessary licenses and pay all fees in connection therewith, the amounts of which shall be deemed to be included in the Contract Sum. The Contractor shall allow for moving or adapting the fencing as and when required during the progress of the works and shall dismantle and remove at completion of the work, but not until all danger to the public has passed and shall make good all work disturbed.	
B	**General scaffolding** Provide all scaffolding, (tubular steel or similar), that may be required for the works.	
C	**Prime cost (P.C.) items** The words "Prime Cost" (or the initials ("P.C.") wherever appearing in these Bills of Quantities, shall mean net cost exclusive of any trade, cash or other discount whatsoever but inclusive of the cost of packing, carriage and delivery. Such cost shall be the sums due to Agents approved by the Client or Supplier after adjustment where applicable in respect of measurements or rates. Any increases or decreases in these Prime Cost sums resulting from the adjustments and properly paid by the Contractor, shall be added to or deducted from the Contract Sum in the final account. In substantiation the Contractor will be required to produce to the Project manager all quotations, invoices and receipted accounts as shall be necessary to show the details of the sums actually paid. Any sum added by the Contractor in these Bills of Quantities in respect of profit upon any Prime Cost sum will be deducted at the final settlement of accounts and a sum will be added, the amount of which will bear the same proportion to the sum added as the net amount properly expended bears to the original P.C. Sum	
D	**Insurance and Securities** The Contractor is to allow in his tender for effecting Security and insurances under and in accordance with conditions of contract; as stipilated in ; Perfomance Guarantee; Insurances; (a) Loss or demage of material,plants and material (b) Loss or demage of Equipemt (C) Loss or demage of Property (d)Personal Injury or death	
	General Conditions and Preliminaries To Summary Tshs	

A	**Particulars to be supplied when inviting quotation under P.C. Sums** When inviting quotations for the supply of goods or the execution of work described under P.C. Sums, full particulars as contained herein (except the sums provided), and shown on the drawings in respect of the goods or work in question shall in all cases be supplied by the contractor to the persons, firms or companies quoting. All such invitations shall contain a stipulation that the quotations must state a guaranteed time for delivery or fixing, as the case may be, from the date when the particulars are supplied, in the case of materials to be delivered on the site in bulk, the person, firm or company quoting musts guarantee the delivery of the quantity required, (uniform with the approved samples), by and at the time required to suit the progress of the building operations. The Contractor shall, with such invitations, supply full details of the times at which such delivery and/or fixing will be required in order that such guaranteed times may be stated.	
B	**Protection of works** The Contractor shall allow for and provide and/or maintain during the execution of the Works all shoring, strutting, needling and other supports and shall take all other precautions and adopt such expedients as may be necessary to preserve the stability of all buildings, structures, fences, walls, land and property, roads and footpaths, sewers, drains, gullies and other services (including those of adjoining owners) that may in any way be affected by the work to be executed under the Contract immediately he has taken possession of the Site and until completion of the Works. The Contractor shall hold the Employer completely indemnified against all or any claim for damage or losses accruing from any settlement resulting from such shoring and strutting or lack thereof and the striking and removal of same.	
C	**Protection of works Cont'd** Any damage and/or settlement that may be caused arising out of or directly or indirectly consequent upon the aforesaid protective measures or the lack thereof or the carrying out of the Works is to be made good by the Contractor at his own expense to the satisfaction of the Project manager and all other parties concerned. The Contractor shall cover up and protect all finished work liable to damage including provision of temporary roofs, gutters, drains, etc., until the completion of the Works. The entire responsibility in respect of all matters mentioned or referred to in this clause shall rest with the Contractor not withstanding any approval given by the Project manager to, or concurrence in, the action taken or proposed to be taken by the Contractor, in pursuance of his obligations.	
	General Conditions and Preliminaries To Summary Tshs	

A	**SERVICES INSTALLATIONS** The contractor with the domestic subcontractors shall allow sum to cover for the following in relation to all service works to be installed in building covering the whole scope of work; Prepare shop/working drawings - 3Nos hard copies-A2 size paper (soft and hard) . Allow for labelling for service fittings/equipments. Allow for test results for fittings/equipments. Allow for service and maintenance after every three months during defect liability period of one year. Allow for training Allow for warranty		
B	**Removal of plant, rubbish, etc.** The Contractor shall, upon completion of the Works remove and clear away all temporary buildings, plant, rubbish and unused materials, and shall leave the whole of the Site of the Works in a clean and tidy state to the Satisfaction of the Project manager. He shall also remove all rubbish and dirt from the Site at weekly intervals or as directed by the Project manager.		
C	**Final cleaning of building and site** Before handing over any building the Contractor shall properly clean all floors and finished surfaces, clean glass inside and outside and leave all sanitary and other appliances in full working order. He shall also cut and weed all grassed areas, clean down external steps, paths and roads and leave the whole in perfect condition ready for occupation.		
D	**As Built Drawings** The contractor shall produce and submit to the Employer 3 copies of "As Built Drawings" (1 original and 2 photocopies) in A2 paper size and in PDF format and DWG (Soft copy Drawings saved in flash disc) of all building works and operational & maintenance manuals- 3Nos hard copies- A2 size paper (soft and hard).		
	General Conditions and Preliminaries	To Summary	Tshs

	ENVIROMENTAL PROTECTION AND WASTE DISPOSAL	
	GENERAL REQUIREMENTS	
A	In minimising adverse environmental impacts, the Contractor shall perform his duties strictly in accordance with the Site-specific Environmental and Social Management and Monitoring Plan (ESMP), which shall be approved by the Engineer and is to be prepared by the Contractor following Contract award. The ESMP shall also be submitted to the Employer for review and comments prior to implementation. The ESMP shall reflect the present social and physical situation on the project site, and shall be based on these Technical Specifications, the approved Environmental and Social Impact Assessment Report (ESIA) and Conditions of the Environmental Impact Assessment Certificate (EIAC). Both the ESIA and EIAC shall be provided by the proper Authorities	
	LANDSCAPE PRESERVATION	
B	Topsoil shall at all times be preserved for later redistribution to the disturbed areas such as borrow areas, haul roads, contractors yards and all construction areas within the road reserve.Certified seed is to be used when obtained from commercial sources. Locally harvested seed may be used in conjunction with commercial seed. When available, well decomposed compost/manure should be preferred to fresh manure.Topsoil to be removed and stockpiled (windrows) for reuse after closure.	
	TEMPORARY SOIL EROSION CONTROL	
C	Special care with soil erosion control must be exercised, not only for works within the building but also to road reserve, opening and working borrow pits, quarries, work camps and access roads. Operations in highly erodible areas must be avoided.	
	HIV/AIDS, GENDER AND SOCIAL ISSUES	
D	HIV/AIDS awareness and prevention campaign, Training ENVIRONMENTAL, SOCIAL IMPACT AND MITIGATION MEASURES	
E	Contractor Shall comply and provide the following Total Costs to cover costs of compliance with Environmental and Social Mitigation measures to be carried out in accordance with approved Environmental and Social Management Plan (ESMP) throughout the project duration	
F	Contractor to cover costs for compliance with provisions of Health and Safety Management Plan (HSMP) throughout the project duration	
G	Environmental and Social Mitigation works to be carried out in accordance with approved ESIA report with qatar charity	
H	The Contractor shall ensure reforestation of campsite, yard sites, detours, rubble mounds etc.	
J	The Contractor shall ensure Reforestation with indigenous trees to spoil hip and damp fill borrow pits	
K	Develop a GBV Action Plan which will include prevention and response measures. This will include codes of conduct, training and capacity building, awareness raising, access to referral pathways etc.	
L	Prepare and implement prevention and Contingency Plan for diseases outbreak, SEA; SH/GBV	
	General Conditions and Preliminaries To Summary Tshs	

SUMMARY- PRELIMINARIES

TOTAL BILL NO. 1 PRELIMINARIES
TO GENERAL SUMMARY TSHS.

BILL NR. 2 - MULTIFUNCTIONAL DINING

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	BILL NO. 2 - MULTI FUNCTIONAL DINING				
	ELEMENT NO. 1 - SUBSTRUCTURE				
	SITE CLEARANCE				
A	Clear site of small trees, bushes, grass, undergrowth and the like including grubbing up their roots	m2	678		
B	Excavate oversite average 150mm deep vegetable to remove soil and remove away from site.	m2	678		
	EXCAVATION				
C	Excavate trench commencing at stripped/reduced level to receive strip foundation not exceeding 1.50 metres deep	m3	268		
	Excavation in rock				
D	Extra over excavation for excavating in rock (no blasting allowed)	m3	40		
	Trimmings				
E	Bottom of foundations to receive blinding concrete	m2	223		
	Risk of collapse of excavations				
	Planking and strutting				
F	Allow for maintaining and supporting sides of excavations by provision of planking and strutting and for keeping the same free from fallen materials	Item	1		
	Keeping excavations free of water				
G	Allow for keeping all excavations free of water (except spring or running water) and mud by pumping, baling or other approved means	Item	1		
	FILLINGS				
	Making up levels under floors				
H	Approved imported earthfilling compacted in layers not exceeding 300mm deep all to the approval of the Engineer	m2	575		
	Backfilling Imported material around foundations				
S	Approved granular fill materials G15 compacted 95% MOD AASHTO in layers not exceeding 150mm thick	m3	224		
	DISPOSAL OF EXCAVATED MATERIALS				
T	Load and cart away surplus material from excavations and/or stock piles on site for future use as directed by the Architect	m3	308		
	To Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ANTI-TERMITE TREATMENT				
	Anti- termite treatment				
	Gladiator TC; 1.0% solution or other equal and approved anti-termite treatment				
	At the Rate of 7 litres per square metre				
A	Over the compacted Hardcore	m2	575		
	At the Rate of 80 litres per cubic metre				
B	300mm depth and 235mm width to backfilling to one side of wall foundations	m3	8		
	HARDCORE				
C	150mm thick hardcore, levelled and blinded to receive polythene membrane	m2	575		
	Damp proof Membrane				
D	500 gauge Polythene sheet laying on blinded hardcore with 150mm sides and end laps	m2	575		
	Damp proof Course				
	Hessian based bituminous felt damp proof course to B.S. 743 type 5A with 200 mm laps bedded and pointed in cement mortar (1:3)				
E	230 mm wide	m	319		
	CONCRETE WORK				
	Plain in-situ concrete in accordance with BS 8110 - 1997				
	Normal; mix Grade 10 at 28 days - 19mm aggregate vibrated strength 15N/mm2 at 28 days				
F	50mm Thick blinding concrete under pad foundations and Strip Foundation	m2	223		
	Reinforced in-situ concrete in accordance with BS 8110 - 1997				
	Normal; mix Grade 25 at 28 days-19mm aggregate vibrated strength 30N/mm2 at 28 days				
G	Column	m3	0.4		
H	Ground beam	m3	30		
	Normal; mix Grade 20 at 28 days-19mm aggregate vibrated strength 30N/mm2 at 28 days				
J	Strip foundation	m3	52		
	Normal; mix Grade 15 at 28 days-19mm aggregate vibrated strength 30N/mm2 at 28 days				
K	100mm thick bed	m2	575		
	REINFORCEMENT				
	Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers; High tensile steel bar reinforcement to B.S. 4466:				
L	Asorted sizes	kg	7416		
	MESH REINFORCEMENTS				
M	Fabric mesh reinforcements to BS 4483 ref A.142 at 200mm both directions laid in concrete bed.	m2	575		
	To Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	FORMWORK				
	Sawn formwork to:-				
A	Vertical sides of column	m2	6		
B	Vertical sides of strip foundations	m2	145		
C	Vertical sides of and soffits of horizontal beams	m2	261		
D	Edges of floor beds over 75mm wide not exceeding 150mm wide	m	110		
	WALLING				
	Blockwork				
	Solid concrete block walling with minimum crushing strength of 7Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
E	230mm Wall	m2	262		
F	Steps	m2	16		
	FINISHING TO PLINTH WALL				
	Plastering				
	External plastering in two coats steel trowelled to a smooth finish				
G	15mm to wall	m2	45		
	Three coats of weather guard paint				
H	Skimming using white cement; prepare and apply three coats of weatherguard paint to rendered plinth wall externally.	m2	45		
	To Collection				
	COLLECTION				
	Page 2/1				
	Page 2/2				
	Page 2/3				
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ELEMENT NO. 2 - FRAME				
	CONCRETE WORK				
	Reinforced in-situ concrete in accordance with BS 8110 - 1997 Normal; mix Grade 25 at 28 days-19mm aggregate vibrated strength 30N/mm2 at 28 days				
A	Columns	m3	1		
B	150mm Suspended slab	m2	28		
C	Horizontal Beams	m3	16		
	REINFORCEMENT Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers; High tensile steel bar reinforcement to B.S. 4466:				
D	Asorted sizes	kg	1980		
	FORMWORK Sawn formwork to:-				
J	Vertical sides and soffits of horizontal beams	m2	232		
K	Vertical sides of columns	m2	19		
L	Horizontal soffits of suspended slab	m2	28		
M	Edges of slab over 75mm not exceeding 150mm wide	m	41		
	BUILDER'S WORKS				
N	Allow sum for builder's work in connection to all service works; including chasing, Coring, making openings ; replaster repaints, sleeves to slab and making good.	Item	1		
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ELEMENT NO. 3 - ROOF CONSTRUCTION				
	ROOF SCREEDS.				
	Cement and Sand (1:4) lightweight screed with polyurethane water proofing compound or equal and approved.				
A	40mm thick to 0.3% sloping falls	m2	28		
	WATER PROOFING				
	Concrete Treatment for Permanent water/moisture proofing by applying XYPEX concentrate, in two layers, each of 1mm at the rate given in the technical details provided in the manufacturer's specifications and approved method of water proofing accepted by Architect/ Engineer in charge. water proofing to;				
B	Surface of the Conrete slab	m2	28		
C	To vertical sides of parapet wall	m2	48		
	ROOF COVERINGS				
	G28 type resign coated (IT5) roofing sheets as manufactured by ALAF ltd ,or other equal and approved manufactures; laid with one and a half corrugations side laps and 250mm end laps fixed to steel purlins (measured separately) with 120x8mm galvanized steel hook bolts including galvanized steel and bitumen washers				
D	Sloping not exceeding 45 degrees from horizontal	m2	696		
E	Ridge caps not exceeding 450 mm girth	m	33		
	ROOF STRUCTURE				
	STRUCTURAL STEELWORKS				
	Weldable structural steel work grade 43 to B.S. 5950 in roof trusses, remove all slags from welded joints to expose the steel prior to painting as per BS 7079:2009, painted with one coat (30 micron) red lead primer, one coat (30 micron) multi purpose undercoat in accordance with BS 5950 use Type II grade I and two coats of alkyo base enamel (30 micron/coat) to colour specification				
	Tubular steel roof truss over 18metres but not exceeding 21 metres span comprising of top, bottom, struts and ties; all plated and welded to 8mm thick fillet together with bolted site connections (T1, 4Nos)				
	Top chord & Bottom Chord				
F	Ø 76.4 x 4mm CHS (Black pipe)	m	174		
	Struts				
G	Ø 48 x4mm CHS (black pipe)	m	125		
	Tubular steel roof truss over 16metres but not exceeding 19metres span comprising of top, bottom, struts and ties; all plated and welded to 8mm thick fillet together with bolted site connections (T2, 2Nos)				
	Top chord & Bottom Chord				
H	Ø 76.4 x 4mm CHS (Black pipe)	m	78		
	Struts				
J	Ø 48 x4mm CHS (black pipe)	m	62		
	Tubular steel roof truss over 14 metres but not exceeding 17metres span comprising of top, bottom, struts and ties; all plated and welded to 8mm thick fillet together with bolted site connections (T3, 4Nos)				
	Top chord & Bottom Chord				
K	Ø 76.4 x 4mm CHS (Black pipe)	m	138		
	Struts				
L	Ø 48 x4mm CHS (black pipe)	m	116		
	Z-Purlins				
M	200 x 75 x 20 x 2mm	m	524		
	To collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Fittings ; bolted and welded				
	Mild steel plates				
A	110x100x10mm Thick plates	No	580		
B	90x90x5mm Thick angle	No	360		
	HD anchor bolts, washers, nuts, including drilling holes				
C	M16, 110mm long, grade 8.8	No	720		
	ROOF DRAINAGE				
	Unplasticized PVC rainwater pipes to BS 4514				
D	150mm uPVC pipe half round rainwater gutter including fixing brackets	m	52		
E	150mm Pipe fixed with and including standard holder bats plugged to blockwork or concrete work walls at 1.5metres general spacing.	m	18		
F	Extra over for shoe	No	4		
G	Extra over for swarn-neck	No	4		
	"Fulbora" cast iron rain water outlet				
H	200mm Vertical spigot outlet with dome grating cast into concrete slab with caulked joint to P.V.C pipe	No	4		
	To collection				
	COLLECTION				
	Page 5				
	Page 6				
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ELEMENT NO. 4 - DOORS				
	PANELLED DOOR				
	All hardwood Door to be finished with well seasoned and dried hardwood MNINGA.				
A	50mm hardwood panneled door panel door; single panel; overall size 900mmx 2700mm high,comprising of 145mm wide stiles and intermediate rail, 200mm wide bottom rails with one each leaf filled with 2nr unequal sized and 22mm thick tongued labour; and grooved boarding housed to stiles , intermediate, top and bottom rails.Reff. to Door Schedule (D3).	No	10		
B	Ditto; Overall size 800 x 2700mm high; single leaf, single swing. Reff. To Door Schedule (D4).	No	7		
C	50mm panel door; double leaf panels; overall size,2000mmx 2700mm high, Double swing; including 2 equal openable leaves of size 1000x 2400mm high,Comprising of 145mm wide stiles and intermediate rail, 200mm wide bottom rails with one labour; leaf filled with 4nr unequal sized with 22mm thick hardwood boarding tongued and grooved to top rail, intermediate rail, bottom rail and stiles; .Reff to Door Schedule (D1).	No	3		
D	Ditto; Overall size 1200 x 2700mm high; double leaves with two equal shutters, single swing. Reff to Door schedule (D2)	No	1		
	GLAZING				
E	6mm thick clear glass in panes including 20x20mm hardwood glazing beads.	m2	7		
	FRAMES				
	Wrought surface free from knots; prime Quality Mninga hardwood; including fischer and screws				
F	50x145mm Frame rebated with one labour	m	135		
G	50x145mm Transome rebated with one labour	m	23		
H	70x30mm Architrave	m	270		
J	30x15mm Quadrant	m	270		
	To Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	IRONMONGERIES Supply and fix the following Ironmongery with matching screws; 60min fire Rated, corrosion resistance with minimum 200,000 Test cycle. All materials to stainless steel finished in Satin as per UNION or any other equal and Approved manufacturer.				
A	Doors closer; 90kg	No	18		
B	Cylinder Mortice lockset complete SS Rose level tubular handle with escutcheons	No	14		
C	Cubicle lock with thumb turn Indicator	No	7		
D	Male symbol plates	No	1		
E	Female symbol plates	No	1		
F	100mm x 75mm ball bearing hinges	No	51		
G	Half Moon Floor door stops; Stainless steel	No	14		
H	Wall Mounted Door Stops; stainless steel with rubber buffer	No	7		
J	SS Flush Bolt	No	8		
K	SS Coat Hook	No	7		
	FINISHING TO DOORS Prepare and apply two coats of Aron clear tixotropic polyurethane primer Ref. VFA 143; 50% catalyzed with Aron B37 catalyzing agent, one finishing coat Aron mat polyurethane varnish Ref.541 (20 gloss) 50% catalyzed with Aron B37 agent; including sanding primed surface.				
L	Frames and the like	m	698		
M	General door surfaces	m2	65		
	To Collection				
	COLLECTION Page 2/11 Page 2/12				
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ELEMENT NO. 5 - WINDOWS				
	ALUMINIUM WINDOWS				
	Supply and fix High quality and approved Powder coated "MATT CHARCOAL" REF INTERPON D25-ANP3055/LL258P aluminium windows comprising Standard Extruded 100 x 40 x 1.2mm Thick Heavy Duty Aluminium extrusion Powder coated frame charcoal Grey Powder Coated complete securely fixed and sealed into an approved wall batten in configuration as shown with ironmongery and accessories including tumbler push bottom window lock including fiberglass mosquito gauze, pilkington - deep oceanic blue double glazing or equally approved; 5mm thick laminated glass. All to be approved by window supplier and Conform to BS fire regulations as per Architectural details.				
A	Fixed Aluminium window; Overall sizes 2000x 1800mm high divided in 2Nos Equal Sliding panels. All as per window schedule;W1	No	14		
B	Fixed Aluminium window; Overall sizes 6500x 1500mm high divided in 4Nos Equal Sliding panels. All as per window schedule; W2	No	1		
	Mild steel metal grills				
C	Supply and fix mild steel window grill comprising of 40x40mm frame made of reactangular hollow steel sections,40x4mm thick flat bars welded horizontally spaced at 373mm c/c together including 16mm Ms round vertical bar piercing to 40x4mm flat bar spaced at 125mm c/c polished; welded conditions to smooth surfaces welded to metal rods fixed in the wall, painted with 3 coats of gloss paint architect's to Approval.	m2	14		
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ELEMENT NO. 6 - WALLING AND PARTITIONS				
	CONCRETE WORK				
	Pre-cast reinforced concrete Grade 25 to BS 6073-2:2008				
	Window Cill				
A	350 x 75mm Thick Cill rebated, weathered and throated with stones dressing	m	28		
	WALLING				
	Blockwork				
	Solid concrete block walling with minimum crushing strength of 7Mpa bedded and jointed in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
B	150mm Wall	m2	644		
	Solid concrete block walling with minimum crushing strength of 5Mpa bedded and jointed in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
C	230mm thick parapet wall	m2	24		
	LOUVRED BLOCK WALL				
	jointed in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250				
D	230mm Wall	m2	79		
	COPING TO PARAPET WALL				
	Precast concrete grade "20" including hoisting to position, bedding and pointing in cement mortar (1:3)				
E	200 mm x 75mm Thick Copings reinforced 4 No. 12mm rolled mild steel bars; 8mm diameter mild steel links at 200mm centres; finish fair on top, two faces and part soffits	m	20		
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ELEMENT NO. 7 - FINISHINGS				
	FLOOR FINISHES				
	Bedding Mortar; cement and sand (1:4); 40mm Thick one coat beds; screeded; to receive floor tiles; to concrete; generally to;				
A	Floors	m2	582		
B	Skirting; 100mm high	m	177		
C	Steps	m2	16		
	Porcelain Tiles 600 x 600 x 10mm Non-slippery full-bodied Porcelain Tiles Cream-ish with matt finish (RAK or equal approved) fixed with approved high strength rapid setting adhesive to wood floated concrete with heavy duty grout; laid diagonally or other equal to Approval.				
D	To floors	m2	543		
E	Steps	m2	16		
	100x600x10mm Non-slippery full-bodied Porcelain Tiles (RAK) Brown-ish with matt finish fixed with approved high strength rapid setting adhesive to blockwork with heavy duty grout.				
F	Skirting; 100mm high including edge trimming labour work	m	177		
	400 x 400 x 10mm Non-slippery full-bodied Porcelain Tiles Beige-ish with matt finish (RAK) fixed with approved high strength rapid setting adhesive to wood floated concrete with heavy duty grout; laid horizontally or other equal to Approval.				
G	To floors	m2	39		
	To Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	WALL FINISHES				
	Internal Plastering				
	Internal plastering in two coats steel trowelled to a smooth finish; Cement and Sand (1:3)				
A	15mm to walls and columns	m2	814		
	External Plastering				
	External cement and sand (1:3) render with approved plaster in two coats steel trowelled to paint				
B	15mm to wall and columns	m2	428		
C	15mm to Parapet walls	m2	48		
D	15mm to soffit of slab	m2	28		
	Wall Tiles				
	White colour glazed ceramic wall tiles (RAK) with cushion edges fixed to backing with adhesive and pointed with white silicon: horizontally laid or other equal to Approval.				
E	600 x 300 x 6mm Tilling to wall as per Architect's approval	m2	174		
	Backing				
	12 mm one coat backings; screeded; to receive wall tiles; to concrete base; generally to				
F	To Walls	m2	174		
	Corner Covers				
G	Aluminium corner cover strips to wall tiles	m	81		
	CEILING FINISHES				
	9 mm thickGypsum boards fixed to timber branderings, with galvanised drive screws; head holes filled and sanded taped and skimmed board joints; all to receive direct decoration;				
H	Over 300mm wide	m2	522		
	BRANDERING				
	Treated softwood concealed framework at 600 mm centres both ways for mounting gyproc or MDF sheeting; all bracing and pinning together; plugging and screwing framework at perimeter				
J	50x50mm	m	2349		
	To Collection				
	COLLECTION				
	Page 2/11				
	Page 2/12				
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ELEMENT NO. 8 - DECORATIONS				
	PAINTING				
	Internal Work Prepare and apply one thinned coat and two full coats of wash and wear paint to; colour paint to architect's approval				
A	Plastered walls and columns	m2	814		
B	Gypsum ceiling	m2	522		
	External Works Prepare and apply one thinned coat and two full coats of weather guard paint to; colour paint to architect's approval				
C	Rendered wall and columns	m2	428		
D	Plastered parapet walls	m2	48		
E	soffits of slab	m2	28		
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ELEMENT NO. 9 - FITTINGS AND FIXTURES				
	THE FOLLOWING FITTINGS IN WASHROOMS				
	Vanity Tops				
	Black Granite Tops				
A	30mm Thick Natural polished Granite Tops fixed on 25 x 20mm angle section screwed on wall	m2	3		
	Fascia				
B	20mm x 100mm High Granite fascia	m	6		
	Labour				
C	Half round bullnose edge	m	6		
D	Making hole for washing sink	No	10		
	Vanity Tops (Singled WHB)				
E	Supply and install 20mm thick polished granite fixed on angle 25 x20mm section screwed on wall;including 100mmx20mm thick fascia all around; all bullnose edges curved and smoothen; including making hole for WHB : overall size 600 x 900mm wide. All to Approval by Project manager.	No	2		
	THE FOLLOWING FITTINGS IN KITCHEN/PANTRY AREAS				
	Concrete Plinth				
F	75mm Plain insitu concrete grade '25' plinth base, finished with porcelain tiles (M.S) to match basins as per Architects approval.	m2	19		
	Concrete Tops				
G	75mm Reinforced insitu concrete grade '25' to Tops	m2	19		
	Mesh				
H	Fabric mesh reinforcements to BS 5950 ref A.252 at 200mm both directions laid in concrete bed.	m2	19		
	Form work				
J	75mm thick formwork to edges of plinth	m	34		
K	75mm thick formwork to edges of Top slab	m	34		
L	To soffit of slab	m2	19		
	Blockwork				
	Solid concrete block walling with minimum crushing strength of 5Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
M	100mm Wall	m2	12		
	Plastering				
	Internal cement and sand (1:4) render with approved plaster in two coats steel trowelled to paint				
N	15mm to wall	m2	24		
	Painting				
	Prepare and apply one thinned coat and two full coats of wash and wear paint to;				
P	Plastered walls	m2	24		
	Work Top Finishing				
Q	30mm thick polished Granite fixed with and including appropriate adhesives for bonding to Concrete Tops	m2	19		
R	Ditto; 100mm high fascia	m	34		
S	Bullnose trimming to the edge of Granite	m	34		
	Joinery				
	Prime quality 'Mkongo' or other equal and approved hardwood ; including Matt varnish for finishing				
T	100mm x 25mm Thick mkongo wall cover to fixed including Matt varnish to surfaces	m	59		
	To Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	100mm x 25mm mkongo framing around the opening	m	22		
B	75mm x 20mm Mkongo architrave	m	22		
	Two panel hardwood door shutter of size 1000 x 450mm to the wardrobe including all Finishing surfaces with matt varnish				
C	25mm Thick	No	20		
	Shelves/Divisions Hardwood shelves/Divisions painted with two coats of aron clear tixotropic polyurethane primer Ref. VFA 143; 50% catalyzed with aron B37 catalyzing agent, one finishing coat Aron mat polyurethane varnish Ref.541 (20 gloss) 50% catalyzed with Aron B37 agent; including sanding primed surface				
D	30mm Thick x 600mm wide Hardwood shelves	m2	32		
	Hardwood Bearers				
E	50 x 50 mm	m	64		
	Ironmongeries Supply and fix ironmongeries as per HAFELE				
F	100mm high door handle	No	20		
G	Door hinges	No	40		
H	Ball Catch	No	20		
	Drawers				
J	Supply and fix hardwood mkongo drawer sizes 600x600x150mm high complete with rails, handle and locks, including matt varnishes to Architect Approval.	No	14		
K	Supply and install Hardwood high Level Kitchen cabinet of size 3500x500x 600mm made of hardwood shelves, panelled shutters, hinges and stainless steel handles, to be finished in Varnish.	No	1		
	To collection				
	COLLECTION				
	Page 2/14				
	Page 2/15				
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	SUMMARY- MULTI FUNCTIONAL DINING				
A	ELEMENT NO. 1 - SUBSTRUCTURE				
B	ELEMENT NO. 2 - FRAME				
C	ELEMENT NO. 3 - ROOF CONSTRUCTION				
D	ELEMENT NO. 4 - DOORS				
E	ELEMENT NO. 5 - WINDOWS				
F	ELEMENT NO. 6 - WALLING AND PARTITIONS				
G	ELEMENT NO. 7 - FINISHINGS				
H	ELEMENT NO. 8 - DECORATIONS				
J	ELEMENT NO. 9 - FITTINGS AND FIXTURES				
	TOTAL MAIN BUILDING -CARRIED TO G.S				

BILL NR. 3 - ADMINISTRATION & CLASSROOM BLOCK

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	BILL NO. 3 - CLASSROOM & ADMINISTRATION BUILDING				
	ELEMENT NO. 1 - SUBSTRUCTURE				
	SITE CLEARANCE				
A	Clear site of small trees, bushes, grass, undergrowth and the like including grubbing up their roots	m2	885		
B	Excavate oversite average 150mm deep vegetable to remove soil and remove away from site.	m2	885		
	EXCAVATION				
C	Excavate Pits commencing at reduced level to receive column footing and lift Footings not exceeding 1.50 metres deep	m3	311		
D	Ditto over 1.50m deep but not exceeding 3.00metres deep	m3	104		
E	Excavate trench commencing at stripped/reduced level to receive strip foundation not exceeding 1.50 metres deep	m3	270		
	Excavation in rock				
F	Extra over excavation for excavating in rock (no blasting allowed)	m3	82		
	Trimmings				
G	Bottom of foundations to receive blinding concrete	m2	432		
	Risk of collapse of excavations				
	Planking and strutting				
H	Allow for maintaining and supporting sides of excavations by provision of planking and strutting and for keeping the same free from fallen materials	Item	1		
	Keeping excavations free of water				
J	Allow for keeping all excavations free of water (except spring or running water) and mud by pumping, baling or other approved means	Item	1		
K	Allow Sum for keeping all excavations free from Spring or running water by pumping, baling or other approved means.	Item	1		
	FILLINGS				
	Making up levels under floors				
L	Approved imported earthfilling compacted in layers not exceeding 300mm deep all to the approval of the Engineer	m2	640		
	Backfilling Imported material around foundations				
M	Approved granular fill materials G15 compacted 95% MOD AASHTO in layers not exceeding 150mm thick	m3	365		
	DISPOSAL OF EXCAVATED MATERIALS				
N	Load and cart away surplus material from excavations and/or stock piles on site for future use as directed by the Architect	m3	685		
	To Collection				

	ANTI-TERMITE TREATMENT Anti- termite treatment Gladiator TC; 1.0% solution or other equal and approved anti-termite treatment				
	At the Rate of 7 litres per square metre				
A	Over the compacted Hardcore	m2	640		
	At the Rate of 80 litres per cubic metre				
B	300mm depth and 235mm width to backfilling to one side of wall foundations	m3	10		
	HARDCORE				
C	175mm thick hardcore, levelled and blinded to receive polythene membrane	m2	640		
	Damp proof Membrane				
D	500 gauge Polythene sheet laying on blinded hardcore with 150mm sides and end laps	m2	640		
	Damp proof Course Hessian based bituminous felt damp proof course to B.S. 743 type 5A with 200 mm laps bedded and pointed in cement mortar (1:3)				
E	230 mm wide	m	522		
	CONCRETE WORK **Plain in-situ concrete in accordance with BS 8110 - 1997**				
	Normal; mix Grade 10 at 28 days - 19mm aggregate vibrated strength 15N/mm2 at 28 days				
F	50mm Thick blinding concrete under pad foundations and Strip Foundation	m2	532		
	Reinforced in-situ concrete in accordance with BS 8110 - 1997				
	Normal; mix Grade 20 at 28 days-19mm aggregate vibrated strength 20N/mm2 at 28 days				
G	Steps	m3	1		
H	100mm thick Ramp	m2	55		
J	Strip Foundation	m3	52		
	Normal; mix Grade 25 at 28 days-19mm aggregate vibrated strength 30N/mm2 at 28 days				
K	Pad Foundations	m3	71		
L	Columns	m3	7		
M	100mm Thick bed	m2	753		
N	Ground Beams	m3	36		
	REINFORCEMENT Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers; High tensile steel bar reinforcement to B.S. 4466:				
P	Asorted sizes	kg	16568		
	To Collection				

	MESH REINFORCEMENTS				
A	Fabric mesh reinforcements to BS 4483 ref A.252 at 200mm both directions laid in concrete bed.	m2	753		
	FORMWORK				
	Sawn formwork to:-				
B	Vertical sides of column	m2	104		
C	Vertical sides of Pad foundations	m2	171		
D	Vertical sides of strip foundation	m2	148		
E	Vertical sides of ground beams	m2	313		
F	Edges of floor beds over 75mm wide not exceeding 150mm wide	m	146		
	WALLING				
	Blockwork				
	Solid concrete block walling with minimum crushing strength of 7Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
G	230mm Wall	m2	506		
	FINISHING TO PLINTH WALL				
	Plastering				
	External plastering in two coats steel trowelled to a smooth finish				
H	15mm to wall	m2	66		
	Three coats of weather guard paint				
J	Skimming using white cement; prepare and apply three coats of weatherguard paint to rendered plinth wall externally.	m2	66		
	To Collection				
	COLLECTION				
	Page 1				
	Page 2				
	Page 3				
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 2 - FRAME				
	CONCRETE WORK				
	Reinforced in-situ concrete in accordance with BS 8110 - 1997				
	Normal; mix Grade 25 at 28 days-19mm aggregate vibrated strength 30N/mm2 at 28 days				
A	Columns	m3	37		
B	150mm Suspended slab & Roof slab	m2	507		
C	175mm Suspended slab & Roof slab	m2	770		
D	Horizontal Beams	m3	61		
	REINFORCEMENT				
	Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers; High tensile steel bar reinforcement to B.S. 4466:				
E	8mm Diameter	kg	2245		
F	12mm Diameter	kg	6948		
G	16mm Diameter	kg	8337		
H	20mm Diameter	kg	2245		
J	25mm Diameter	kg	5409		
	FORMWORK				
	Sawn formwork to:-				
K	Vertical sides and soffits of horizontal beams	m2	741		
L	Vertical sides of columns	m2	589		
M	Horizontal soffits of suspended slab & roof slab	m2	1277		
N	Edges of slab over 75mm not exceeding 150mm wide	m	226		
P	Edges of slab over 150mm not exceeding 225mm wide	m	368		
	BUILDER'S WORKS				
Q	Allow sum for builder's work in connection to all service works; including chasing, Coring, making openings ; replaster repaints, sleeves to slab and making good.	Item	1		
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 3 - STAIRS				
	CONCRETE WORK **Reinforced in-situ concrete in accordance with BS 8110 - 1997**				
	Normal; mix Grade 25 at 28 days-19mm aggregate vibrated strength 30N/mm2 at 28 days				
A	Stairs, strings and the like	m3	5		
B	Landing beams-Stairs	m3	2		
C	175mm horizontal suspended landing	m2	11		
	REINFORCEMENT Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers; High tensile steel bar reinforcement to B.S. 4466:				
E	12mm Diameter	kg	321		
F	16mm Diameter	kg	482		
	FORMWORK Sawn formwork to:				
G	Horizontal soffit of suspended landings	m2	11		
H	Sloping soffits of stairs	m2	20		
J	Vertical edges and soffits to beams	m2	30		
K	Vertical edges of slab over 150mm but not exceeding 225mm high	m	21		
L	Edges of open raking string to steps 300mm high (extreme) cut and fitted to profile of treads and risers	m	16		
M	Risers	m	69		
	METAL WORK Balustrade system Provide all materials fabricate and fix polished grade-316 stainless steel balustrade system corrosion resistant, heat resistance and high strength performance to staircases size 975mm high comprising of 60mm diameter stainless steel solid circular bar baluster spaced at 800mm centres, welded to handrail and bolted into concrete, including 40mm polished stainless steel handrail, 4Nr 10mm Diameter polished stainless steel tubular bar intermediate rails; all bolted with 12mm Diameter raw bolt as per detail drawing				
N	To External Ramps	m	27		
P	To staircases	m	15		
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 4 - ROOF CONSTRUCTION				
	ROOF SCREEDS. Cement and Sand (1:4) lightweight screed with polyurethane water proofing compound or equal and approved.				
A	40mm thick to 0.3% sloping falls	m2	742		
	WATER PROOFING Concrete Treatment for Permanent water/moisture proofing by applying XYPEX concentrate, in two layers, each of 1mm at the rate given in the technical details provided in the manufacturer's specifications and approved method of water proofing accepted by Architect/ Engineer in charge. water proofing to;				
B	Surface of the Conrete roof slab	m2	742		
C	Vertical sides of the parapet walls	m2	526		
	ROOF DRAINAGE				
	Unplasticized PVC rainwater pipes to BS 4514				
D	150mm Pipe fixed with and including standard holder bats plugged to blockwork or concrete work walls at 1.5metres general spacing.	m	45		
E	Extra over for shoe	No	6		
F	Extra over for swarn-neck	No	6		
	"Fulbora" cast iron rain water outlet				
G	200mm Vertical spigot outlet with dome grating cast into concrete slab with caulked joint to P.V.C pipe	No	6		
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 5 - DOORS				
	PANELED DOOR				
	Mninga Hardwood				
A	50mm hardwood panneled door panel door; single panel; overall size 900mmx 2700mm high,comprising of 145mm wide stiles and intermediate rail, 200mm wide bottom rails with one each leaf filled with 2nr unequal sized and 22mm thick tongued labour; and grooved boarding housed to stiles , intermediate, top and bottom rails.Reff. to Door Schedule (D2).	No	25		
B	Ditto, Overall size 800x2700mm single panel door Reff to Door Schedule (D3).	No	4		
C	Ditto, Overall size 800x2700mm single panel door Reff to Door Schedule (D3A).	No	24		
D	50mm panel door; double leaf panels; overall size,1500mmx 2700mm high, including 2 equal openable leaves of size 750x 2400mm high,Comprising of 145mm wide stiles and intermediate rail, 200mm wide bottom rails with one labour; leaf filled with 4nr unequal sized with 22mm thick hardwood boarding tongued and grooved to top rail, intermediate rail, bottom rail and stiles; .Reff to Door Schedule (D1A).	No	11		
E	Ditto, Overall size 1200x2700mm high double leaf panels door Reff to Door Schedule (D1).	No	2		
	ALUMINIUM DUCT DOORS Supply and fix aluminium louvred door comprising of 50 x 100 mm powder coated aluminium frames with 3mm thick aluminium louvres placed horizontally at 45 degrees, inclusive of locks, hinges and handles.				
F	Overall size; 500 x 2700mm high	No	8		
	ALUMINIUM DOORS				
	Supply and fix the following aluminium units; powder coated frame or otherwise approved; colour subject to Architect's approval; profile size subdivisions and gauge as per Door Schedule; complete with associated ironmongery; with and including assembling, screwing to subframe surrounds, including 5mm thick laminated glass, bedding frames in appropriately bedding compound, pointing externally with structural silcone; stripping protective coat from aluminium frames (45x100mm); including Stainless Steel Satin 1800mm long,38mmm Diam. handle furniture:with perkomatic concelead door closer (DC522S-90kg)); All Ironmongery as per Manufacturer's.				
G	Double leaf ; Overall size 1800mm x 2700mm high	No	1		
	GLAZING				
H	6mm thick clear glass in panes including 20x20mm hardwood glazing beads.	m2	14		
	To Collection				

	FRAMES Wrought surface free from knots; prime Quality Mninga hardwood; including fischer and screws				
A	50x150mm Frame rebated with one labour	m	444		
B	50x150mm Transome rebated with one labour	m	64		
C	38x15mm Architrave	m	888		
D	30x15mm Quadrant	m	888		
	IRONMONGERIES Supply and fix the following Ironmongery with matching screws; 60min fire Rated, corrosion resistance with minimum 200,000 Test cycle. All materials to stainless steel finished in Satin as per UNION or any other equal and Approved manufacturer.				
E	Doors closer; 90kg	No	51		
F	Cylinder Mortice lockset complete SS Rose level tubular handle with escutcheons	No	55		
G	Cubicle lock with thumb turn Indicator	No	28		
H	Male symbol plates	No	6		
J	Female symbol plates	No	6		
K	Disable symbol plate	No	2		
L	100mm x 75mm ball bearing hinges	No	237		
M	Half Moon Floor door stops; Stainless steel	No	28		
N	SS Flush Bolt	No	26		
P	SS Coat Hook	No	20		
	FINISHING TO DOORS Prepare and apply two coats of Aron clear tixotropic polyurethane primer Ref. VFA 143; 50% catalyzed with Aron B37 catalyzing agent, one finishing coat Aron mat polyurethane varnish Ref.541 (20 gloss) 50% catalyzed with Aron B37 agent; including sanding primed surface.				
Q	Frames and the like	m	2284		
R	General door surfaces	m2	306		
	To Collection				
	COLLECTION Page 7 Page 8				
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 6 - WINDOWS				
	ALUMINIUM WINDOWS Supply and fix High quality and approved Powder coated "MATT CHARCOAL" REF INTERPON D25-ANP3055/LL258P aluminium windows comprising Standard Extruded 105 x 42 x 2mm Thick Heavy Duty Aluminium extrusion Powder coated frame charcoal Grey Powder Coated complete securely fixed and sealed into an approved wall batten in configuration as shown with ironmongery and accessories including tumbler push bottom window lock including fiberglass mosquito gauze, pilkington - deep oceanic blue double glazing or equally approved; 6mm thick laminated glass. All to be approved by window supplier and Conform to BS fire regulations as per Architectural details.				
A	Fixed Aluminium window; Overall sizes 2500x1800mm high divided in 3Nos Equal Sliding panels. All as per window schedule; W1	No	16		
B	Fixed Aluminium window; Overall sizes 2000x1800mm high divided in 2Nos Equal Sliding panels. All as per window schedule; W2	No	15		
C	Fixed Aluminium window; Overall sizes 1500x600mm high divided in 2Nos Equal Sliding panels. All as per window schedule; W3	No	16		
D	Fixed Aluminium window; Overall sizes 2000x600mm high divided in 2Nos Equal Sliding panels. All as per window schedule; W4	No	4		
E	Fixed Aluminium window; Overall sizes 1650x750mm high divided in 2Nos Equal Sliding panels. All as per window schedule; W5	No	8		
F	Fixed Aluminium window; Overall sizes 2500x750mm high divided in 2Nos Equal Sliding panels. All as per window schedule; W6	No	11		
	METAL WORK Purpose made units Mild steel metal grills				
G	Supply and fix mild steel window grill comprising of 40x40mm frame made of reactangular hollow steel sections,40x4mm thick flat bars welded horizontally spaced at 373mm c/c together including 16mm Ms round vertical bar piercing to 40x4mm flat bar spaced at 125mm c/c polished; welded conditions to smooth surfaces welded to metal rods fixed in the wall, painted with 3 coats of gloss paint architect's to Approval.	m2	22		
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 7 - WALLING AND PARTITIONS				
	CONCRETE WORK				
	Pre-cast reinforced concrete Grade 25 to BS 6073-2:2008				
	Window Cill				
A	350 x 75mm Thick Cill rebated, weathered and throated with stones dressing	m	30		
	Lintel				
B	230 x200 mm high lintel, with 4Nos of Y16 bars and Y8 stirrups at 200 mm centres, including all necessary formwork, bedding and jointing in cement mortar (1:4) and hoisting into position	m	101		
C	150 x200 mm high lintel, with 4Nos of Y16 bars and Y8 stirrups at 200 mm centres, including all necessary formwork, bedding and jointing in cement mortar (1:4) and hoisting into position	m	105		
	WALLING				
	Blockwork				
	Solid concrete block walling with minimum crushing strength of 7Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
D	230mm Wall	m2	1558		
E	150mm Wall	m2	344		
E	100mm Wall	m2	178		
	Solid concrete block walling with minimum crushing strength of 5Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
F	230mm thick parapet wall	m2	263		
	COPING TO PARAPET WALL				
	Precast concrete grade "20" including hoisting to position, bedding and pointing in cement mortar (1:3)				
G	200 mm x 75mm Thick Copings reinforced 4 No. 12mm rolled mild steel bars; 8mm diameter mild steel links at 200mm centres; finish fair on top, two faces and part soffits	m	219		
	LOUVRED BLOCK WALL				
	Louvred concrete blocks walling with minimum crushing strength of 5Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
H	230mm Wall	m2	73		
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 8 - FINISHINGS				
	FLOOR FINISHES				
	Bedding Mortar; cement and sand (1:4); 40mm Thick one coat beds; screeded; to receive floor tiles; to concrete; generally to;				
A	Floors	m2	1186		
B	Skirting; 100mm high	m	465		
C	Landing	m2	11		
D	300mm wide; tread	m	107		
E	175mm wide; risers	m	134		
F	Ramps	m2	55		
	Porcelain Tiles 600 x 600 x 10mm Non-slippery full-bodied Porcelain Tiles Cream-ish with matt finish (RAK or equivalent) fixed with approved high strength rapid setting adhesive to wood floated concrete with heavy duty grout; laid diagonally or other equal to Approval.				
G	To floors	m2	1072		
H	Landing	m2	11		
J	300mm wide; tread	m	107		
K	175mm wide; risers	m	134		
L	Ramps	m2	55		
	100x600x10mm Non-slippery full-bodied Porcelain Tiles (ex-italy) Brown-ish with matt finish fixed with approved high strength rapid setting adhesive to blockwork with heavy duty grout.				
M	Skirting; 100mm high including edge trimming labour work	m	465		
	400 x 400 x 10mm Non-slippery full-bodied Porcelain Tiles Beige-ish with matt finish (RAK or equivalent) fixed with approved high strength rapid setting adhesive to wood floated concrete with heavy duty grout; laid horizontally or other equal to Approval.				
N	To floors	m2	114		
	To Collection				

	WALL FINISHES				
	Internal Plastering				
	Internal plastering in two coats steel trowelled to a smooth finish; Cement and Sand (1:3)				
A	15mm to walls and columns	m2	2519		
B	15mm to soffit of slab	m2	1277		
	External Plastering				
	External cement and sand (1:3) render with approved plaster in two coats steel trowelled to paint				
C	15mm to wall and columns	m2	1278		
D	15mm to Parapet walls	m2	263		
	Wall Tiles				
	White colour glazed ceramic wall tiles (RAK) with cushion edges fixed to backing with adhesive and pointed with white silicon: horizontally laid or other equal to Approval.				
E	600 x 300 x 6mm Tilling to wall as per Architect's approval	m2	433		
	Backing				
	12 mm one coat backings; screeded; to receive wall tiles; to concrete base; generally to				
F	To Walls	m2	433		
	Corner Covers				
G	Aluminium corner cover strips to wall tiles	m	103		
	To Collection				
	COLLECTION				
	Page 11				
	Page 12				
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 9 - DECORATIONS				
	PAINTING				
	Internal Work Prepare and apply one thinned coat and two full coats of wash and wear paint to; colour paint to architect's approval				
A	Plastered walls and columns	m2	2519		
B	Soffit of Slab	m2	1277		
	External Works Prepare and apply one thinned coat and two full coats of weather guard paint to; colour paint to architect's approval				
C	Rendered wall and columns	m2	1278		
D	Plastered parapet walls	m2	263		
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 10 - FITTINGS AND FIXTURES				
	THE FOLLOWING FITTINGS IN WASHROOMS				
	Vanity Tops				
	Black Granite Tops				
A	30mm Thick Natural polished Granite Tops fixed on 25 x 20mm angle section screwed on wall	m2	5		
	Fascia				
B	20mm x 100mm High Granite fascia	m	12		
	Labour				
C	Half round bullnose edge	m	12		
D	Making hole for washing sink	No	22		
	Vanity Tops (Singled WHB)				
E	Supply and install 20mm thick polished granite fixed on angle 25 x20mm section screwed on wall;including 100mmx20mm thick fascia all around; all bullnose edges curved and smoothen; including making hole for WHB : overall size 600 x 900mm wide. All to Approval by Project manager.	No	6		
	THE FOLLOWING FITTINGS IN KITCHEN/PANTRY AREAS				
	Concrete Plinth				
F	75mm Plain insitu concrete grade '25' plinth base, finished with porcelain tiles (M.S) to match basins as per Architects approval.	m2	4		
	Concrete Tops				
G	75mm Reinforced insitu concrete grade '25' to Tops	m2	4		
	Mesh				
H	Fabric mesh reinforcements to BS 5950 ref A.252 at 200mm both directions laid in concrete bed.	m2	4		
	Form work				
J	75mm thick formwork to edges of plinth	m	6		
K	75mm thick formwork to edges of Top slab	m	6		
L	To soffit of slab	m2	4		
	Blockwork				
	Solid concrete block walling with minimum crushing strength of 5Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
M	100mm Wall	m2	5		
	Plastering				
	Internal cement and sand (1:4) render with approved plaster in two coats steel trowelled to paint				
N	15mm to wall	m2	10		
	Painting				
	Prepare and apply one thinned coat and two full coats of wash and wear paint to;				
P	Plastered walls	m2	10		
	Work Top Finishing				
Q	30mm thick polished Granite fixed with and including appropriate adhesives for bonding to Concrete Tops	m2	4		
R	Ditto; 100mm high fascia	m	6		
S	Bullnose trimming to the edge of Granite	m	6		
	Joinery				
	Prime quality 'Mkongo' or other equal and approved hardwood ; including Matt varnish for finishing				
T	100mm x 25mm Thick mkongo wall cover to fixed including Matt varnish to surfaces	m	17		
	To Collection				

A	100mm x 25mm mkongo framing around the opening	m	6		
B	75mm x 20mm Mkongo architrave	m	6		
	Two panel hardwood door shutter of size 1000 x 450mm to the wardrobe including all Finishing surfaces with matt varnish				
C	25mm Thick	No	7		
	Shelves/Divisions Hardwood shelves/Divisions painted with two coats of aron clear tixotropic polyurethane primer Ref. VFA 143; 50% catalyzed with aron B37 catalyzing agent, one finishing coat Aron mat polyurethane varnish Ref.541 (20 gloss) 50% catalyzed with Aron B37 agent; including sanding primed surface				
D	30mm Thick x 600mm wide Hardwood shelves	m2	10		
	Hardwood Bearers				
E	50 x 50 mm	m	19		
	Ironmongeries Supply and fix ironmongeries as per HAFELE				
F	100mm high door handle	No	7		
G	Door hinges	No	14		
H	Ball Catch	No	7		
	Drawers				
J	Supply and fix hardwood mkongo drawer sizes 600x600x150mm high complete with rails, handle and locks, including matt varnishes to Architect Approval.	No	6		
K	Supply and install Hardwood high Level Kitchen cabinet of size 3500x500x 600mm made of hardwood shelves, panelled shutters, hinges and stainless steel handles, to be finished in Varnish.	No	1		
	To Collection				
	COLLECTION Page 14 Page 15				
	TOTAL CARRIED TO SUMMARY				

	SUMMARY -CLASSROOM & ADMINISTRATION BUILDING				
A	ELEMENT NO. 1 - SUBSTRUCTURE				
B	ELEMENT NO. 2 - FRAME				
C	ELEMENT NO. 3 - STAIRS				
D	ELEMENT NO. 4 - ROOF CONSTRUCTION				
E	ELEMENT NO. 5 - DOORS				
F	ELEMENT NO. 6 - WINDOWS				
G	ELEMENT NO. 7 - WALLING AND PARTITIONS				
H	ELEMENT NO. 8 - FINISHINGS				
J	ELEMENT NO. 9 - DECORATIONS				
K	ELEMENT NO. 10 - FITTINGS AND FIXTURES				
	TOTAL MAIN BUILDING -CARRIED TO GENERAL SUMMARY				

BILL NR. 4 - RESIDENTIAL BLOCK

	ELEMENT NO. 1 - SUBSTRUCTURE				
	SITE CLEARANCE				
A	Clear site of small trees, bushes, grass, undergrowth and the like including grubbing up their roots	m2	195		
B	Excavate oversite average 150mm deep vegetable to remove soil and remove away from site.	m2	195		
	Tree				
C	Cutting down Existing trees; over 600mm girth but not exceeding 900mm girth including grubbing up their roots and obtaining approval from authorities	No	1		
	EXCAVATION				
D	Cutting to make up site level irrrespective of depth	m3	82		
G	Excavate trench commencing at stripped/reduced level to receive strip foundation not exceeding 1.50 metres deep	m3	143		
	Excavation in rock				
J	Extra over excavation for excavating in rock (no blasting allowed)	m3	21		
	Trimmings				
K	Bottom of foundations to receive blinding concrete	m2	34		
	Risk of collapse of excavations				
	Planking and strutting				
L	Allow for maintaining and supporting sides of excavations by provision of planking and strutting and for keeping the same free from fallen materials	Item	1		
	Keeping excavations free of water				
M	Allow for keeping all excavations free of water (except spring or running water) and mud by pumping, baling or other approved means	Item	1		
N	Allow Sum for keeping all excavations free from Spring or running water by pumping, baling or other approved means.	Item	1		
	FILLINGS				
	Making up levels under floors				
P	Approved Imported earthfilling materials compacted in layers in layers not exceeding 150mm thick	m2	145		
	Backfilling Imported material around foundations				
S	Approved granular fill materials G15 compacted 95% MOD AASHTO in layers not exceeding 150mm thick	m3	114		
	DISPOSAL OF EXCAVATED MATERIALS				
T	Load and cart away surplus material from excavations and/or stock piles on site for future use as directed by the Architect	m3	29		
	To Collection				

	ANTI-TERMITE TREATMENT Anti- termite treatment Gladiator TC; 1.0% solution or other equal and approved anti-termite treatment				
	At the Rate of 7 litres per square metre				
A	Over the compacted Hardcore	m2	145		
	At the Rate of 80 litres per cubic metre				
B	300mm depth and 235mm width to backfilling to one side of wall foundations	m3	5		
	HARDCORE				
C	150mm thick hardcore, levelled and blinded to receive polythene membrane	m2	145		
	Damp proof Membrane				
D	500 gauge Polythene sheet laying on blinded hardcore with 150mm sides and end laps	m2	145		
	Damp proof Course Hessian based bituminous felt damp proof course to B.S. 743 type 5A with 200 mm laps bedded and pointed in cement mortar (1:3)				
E	230 mm wide	m	149		
	CONCRETE WORK				
	Plain in-situ concrete in accordance with BS 8110 - 1997				
	Normal; mix Grade 10 at 28 days - 19mm aggregate vibrated strength 15N/mm2 at 28 days				
F	50mm Thick blinding concrete under pad foundations and Strip Foundation	m2	104		
	Reinforced in-situ concrete in accordance with BS 8110 - 1997				
	Normal; mix Grade 20 at 28 days-19mm aggregate vibrated strength 20N/mm2 at 28 days				
J	Strip foundation	m3	24		
	Normal; mix Grade 25 at 28 days-19mm aggregate vibrated strength 30N/mm2 at 28 days				
L	100mm thick bed	m2	178		
N	Ground beam	m3	10		
	To Collection				

	REINFORCEMENT Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers; High tensile steel bar reinforcement to B.S. 4466:				
A	8mm Diameter	kg	987		
B	16mm Diameter	kg	1095		
C	20mm Diameter	kg	2678		
	MESH REINFORCEMENTS				
D	Fabric mesh reinforcements to BS 4483 ref A.252 at 200mm both directions laid in concrete bed.	m2	178		
	FORMWORK Sawn formwork to:-				
E	Vertical sides of strip foundations	m2	70		
F	Vertical sides of ground beams	m2	90		
G	Edges of floor beds over 75mm wide not exceeding 150mm wide	m	67		
	WALLING Blockwork Solid concrete block walling with minimum crushing strength of 7Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
H	230mm Wall	m2	145		
	FINISHING TO PLINTH WALL Plastering External plastering in two coats steel trowelled to a smooth finish				
C	15mm to wall	m2	30		
D	Three coats of weather guard paint Skimming using white cement; prepare and apply three coats of weatherguard paint to rendered plinth wall externally.	m2	30		
	To Collection				
	COLLECTION Page 1 Page 2 Page 3				
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 2 - FRAME				
	CONCRETE WORK				
	Reinforced in-situ concrete in accordance with BS 8110 - 1997 Normal; mix Grade 25 at 28 days-19mm aggregate vibrated strength 30N/mm2 at 28 days				
A	150mm Gutter	m2	27		
B	Horizontal Beams	m3	9		
	REINFORCEMENT Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers; High tensile steel bar reinforcement to B.S. 4466:				
C	8mm Diameter	kg	964		
D	12mm Diameter	kg	1567		
E	16mm Diameter	kg	1789		
	FORMWORK Sawn formwork to:-				
F	Vertical sides and soffits of horizontal beams	m2	110		
G	Edges of slab over 75mm not exceeding 150mm wide	m	20		
	BUILDER'S WORKS				
H	Allow sum for builder's work in connection to all service works; including chasing, Coring, making openings ; replaster repaints, sleeves to slab and making good.	Item	1		
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 3 - ROOF CONSTRUCTION				
	ROOF SCREEDS. Cement and Sand (1:4) lightweight screed with polyurethane water proofing compound or equal and approved.				
A	40mm thick to 0.3% sloping falls	m2	11		
	WATER PROOFING Concrete Treatment for Permanent water/moisture proofing by applying XYPEX concentrate, in two layers, each of 1mm at the rate given in the technical details provided in the manufacturer's specifications and approved method of water proofing accepted by Architect/ Engineer in charge. water proofing to;				
B	Surface of the Conrete slab (Gutter)	m2	11		
	ROOF COVERINGS G28 type resign coated (IT5) roofing sheets as manufactured by ALAF ltd ,or other equal and approved manufactures; laid with one and a half corrugations side laps and 250mm end laps fixed to steel purlins (measured separately) with 120x8mm galvanized steel hook bolts including galvanized steel and bitumen washers				
C	Sloping not exceeding 45 degrees from horizontal	m2	218		
	STRUCTURAL TIMBER The following in timber trusses; selected softwood; pressure impregnated with preservative including hoisting to position as per structural drawings;				
	Top chord				
D	150 x 50 mm	m	152		
	Bottom chord				
E	150 x 50 mm	m	140		
	Purlins				
F	50 x 50 mm	m	182		
	Struts and ties				
G	100 x 50 mm	m	123		
	Wall plate				
H	100 x 50 mm	m	145		
	Prime Quality Hardwood; mninga including paint and decorations				
J	200 x 25mm. Fascia and barge boards.	m	60		
	BOLTS AND PLATES				
K	300 x 75 x 75 x 8mm MS plate casted to ring beams	No	32		
L	200mm long x 12mm diameter bolt grade 8.8 including washer and nuts	No	64		
	GUSSET PLATES				
M	245x200 x 12mm marine plywood gusset plates	No	32		
N	270 x 180 x 12mm marine plywood gusset plates	No	32		
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 4 - DOORS				
	PANELLED DOOR **All hardwood Door to be finished with well seasoned and dried hardwood MNINGA.**				
A	50mm hardwood panneled door panel door; single panel; overall size 900mmx 2700mm high,comprising of 145mm wide stiles and intermediate rail, 200mm wide bottom rails with leaf filled with 2nr unequal sized and 22mm thick tongued labour; and grooved boarding housed to stiles , intermediate, top and bottom rails.Reff. to Door Schedule (D01).	No	10		
B	Ditto; Overall size 800 x 2700mm high; single leaf, single swing. Reff. To Door Schedule (D02).	No	4		
	GLAZING				
C	6mm thick clear glass in panes including 20x20mm hardwood glazing beads.	m2	4		
	FRAMES Wrought surface free from knots; prime Quality Mninga hardwood; including fischer and screws				
D	50x145mm Frame rebated with one labour	m	101		
E	50x145mm Transome rebated with one labour	m	13		
F	70x30mm Architrave	m	202		
G	30x15mm Quadrant	m	202		
	To Collection				

	IRONMONGERIES Supply and fix the following Ironmongery with matching screws; 60min fire Rated, corrosion resistance with minimum 200,000 Test cycle. All materials to stainless steel finished in Satin as per UNION or any other equal and Approved manufacturer.				
A	Doors closer; 90kg	No	14		
B	Cylinder Mortice lockset complete SS Rose level tubular handle with escutcheons	No	14		
C	Cubicle lock with thumb turn Indicator	No	4		
D	Male symbol plates	No	1		
E	Female symbol plates	No	1		
F	100mm x 75mm ball bearing hinges	No	42		
G	Half Moon Floor door stops; Stainless steel	No	10		
H	Wall Mounted Door Stops; stainless steel with rubber buffer	No	4		
J	SS Coat Hook	No	4		
	FINISHING TO DOORS Prepare and apply two coats of Aron clear tixotropic polyurethane primer Ref. VFA 143; 50% catalyzed with Aron B37 catalyzing agent, one finishing coat Aron mat polyurethane varnish Ref.541 (20 gloss) 50% catalyzed with Aron B37 agent; including sanding primed surface.				
K	Frames and the like	m	518		
L	General door surfaces	m2	66		
	To Collection				
	COLLECTION Page 6 Page 7				
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 5 - WINDOWS				
	ALUMINIUM WINDOWS				
	Supply and fix High quality and approved Powder coated "MATT CHARCOAL" REF INTERPON D25-ANP3055/LL258P aluminium windows comprising Standard Extruded 100 x 40 x 1.2mm Thick Heavy Duty Aluminium extrusion Powder coated frame charcoal Grey Powder Coated complete securely fixed and sealed into an approved wall batten in configuration as shown with ironmongery and accessories including tumbler push bottom window lock including fiberglass mosquito gauze, pilkington - deep oceanic blue double glazing or equally approved; 5mm thick laminated glass. All to be approved by window supplier and Conform to BS fire regulations as per Architectural details.				
A	Fixed Aluminium window; Overall sizes 2000x 1800mm high divided in 2Nos Equal Sliding panels. All as per window schedule;W1	No	9		
B	Fixed Aluminium window; Overall sizes 2000x 1700mm high divided in 2Nos Equal Sliding panels. All as per window schedule; W2	No	1		
C	Fixed Aluminium window; Overall sizes 1000x 1000mm high divided in 2Nos Equal Sliding panels. All as per window schedule; W3	No	4		
	METAL WORK				
	Purpose made units Mild steel metal grills				
D	Supply and fix mild steel window grill comprising of 40x40mm frame made of reactangular hollow steel sections,40x4mm thick flat bars welded horizontally spaced at 373mm c/c together including 16mm Ms round vertical bar piercing to 40x4mm flat bar spaced at 125mm c/c polished; welded conditions to smooth surfaces welded to metal rods fixed in the wall, painted with 3 coats of gloss paint architect's to Approval.	m2	40		
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 6 - WALLING AND PARTITIONS				
	CONCRETE WORK				
	Pre-cast reinforced concrete Grade 25 to BS 6073-2:2008				
	Window Cill				
A	350 x 75mm Thick Cill rebated, weathered and throated with stones dressing	m	25		
	WALLING				
	Blockwork				
	Solid concrete block walling with minimum crushing strength of 7Mpa bedded and jointed in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
B	150mm Wall	m2	244		
C	150mm parapet wall	m2	14		
	COPING TO PARAPET WALL				
	Precast concrete grade "20" including hoisting to position, bedding and pointing in cement mortar (1:3)				
D	200 mm x 75mm Thick Copings reinforced 4 No. 12mm rolled mild steel bars; 8mm diameter mild steel links at 200mm centres; finish fair on top, two faces and part soffits	m	24		
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 7 - FINISHINGS				
	FLOOR FINISHES				
	Bedding Mortar; cement and sand (1:4); 40mm Thick one coat beds; screeded; to receive floor tiles; to concrete; generally to;				
A	Floors	m2	156		
B	Skirting; 100mm high	m	132		
C	Steps	m2	12		
	Porcelain Tiles 600 x 600 x 10mm Non-slippery full-bodied Porcelain Tiles Cream-ish with matt finish (RAK or equivalent) fixed with approved high strength rapid setting adhesive to wood floated concrete with heavy duty grout; laid diagonally or other equal to Approval.				
D	To floors	m2	138		
E	Steps	m2	12		
	100x600x10mm Non-slippery full-bodied Porcelain Tiles (RAK or equivalent) Brown-ish with matt finish fixed with approved high strength rapid setting adhesive to blockwork with heavy duty grout.				
F	Skirting; 100mm high including edge trimming labour work	m	132		
	400 x 400 x 10mm Non-slippery full-bodied Porcelain Tiles Beige-ish with matt finish (RAK or equivalent) fixed with approved high strength rapid setting adhesive to wood floated concrete with heavy duty grout; laid horizontally or other equal to Approval.				
G	To floors	m2	18		
	To Collection				

	WALL FINISHES				
	Internal Plastering Internal plastering in two coats steel trowelled to a smooth finish; Cement and Sand (1:3)				
A	15mm to walls and columns	m2	371		
	External Plastering External cement and sand (1:3) render with approved plaster in two coats steel trowelled to paint				
B	15mm to wall	m2	201		
	Wall Tiles White colour glazed ceramic wall tiles (RAK) with cushion edges fixed to backing with adhesive and pointed with white silicon: horizontally laid or other equal to Approval.				
C	600 x 300 x 6mm Tilling to wall as per Architect's approval	m2	87		
	Backing 12 mm one coat backings; screeded; to receive wall tiles; to concrete base; generally to				
D	To Walls	m2	87		
	Corner Covers				
E	Aluminium corner cover strips to wall tiles	m	48		
	CEILING FINISHES				
	Gypsum Ceilling 9 mm thick plaster boards ceiling fixed to timber branderings, with galvanised drive screws; head holes filled and sanded taped and skimmed board joints; all to receive direct decoration;				
F	over 300mm wide ; horizontal ceilings ; over 3.5 metres but not exceeding 5.0 m above floor level to receive direct decoration to receive direct decoration.	m2	156		
	BRANDERING Treated softwood concealed framework at 600 mm centres both ways for mounting gyproc or MDF sheeting; all bracing and pinning together; plugging and screwing framework at perimeter				
G	50x50mm	m	702		
	To Collection				
	COLLECTION Page 10 Page 11				
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 8 - DECORATIONS				
	PAINTING				
	Internal Work Prepare and apply one thinned coat and two full coats of wash and wear paint to; colour paint to architect's approval				
A	Plastered walls	m2	371		
B	Gypsum ceiling	m2	156		
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 9 - FITTINGS AND FIXTURES				
	THE FOLLOWING FITTINGS IN KITCHEN/PANTRY AREAS				
	Concrete Plinth				
A	75mm Plain insitu concrete grade '25' plinth base, finished with porcelain tiles (M.S) to match basins as per Architects approval.	m2	10		
	Concrete Tops				
B	75mm Reinforced insitu concrete grade '25' to Tops	m2	10		
	Mesh				
C	Fabric mesh reinforcements to BS 5950 ref A.252 at 200mm both directions laid in concrete bed.	m2	10		
	Form work				
D	75mm thick formwork to edges of plinth	m	34		
E	75mm thick formwork to edges of Top slab	m	34		
F	To soffit of slab	m2	20		
	Blockwork				
	Solid concrete block walling with minimum crushing strength of 5Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
G	100mm Wall	m2	12		
	Plastering Internal cement and sand (1:4) render with approved plaster in two coats steel trowelled to paint				
H	15mm to wall	m2	24		
	Painting Prepare and apply one thinned coat and two full coats of wash and wear paint to;				
J	Plastered walls	m2	24		
	Work Top Finishing				
K	30mm thick polished Granite fixed with and including appropriate adhesives for bonding to Concrete Tops	m2	10		
L	Ditto; 100mm high fascia	m	34		
M	Bullnose trimming to the edge of Granite	m	34		
	Joinery Prime quality 'Mkongo' or other equal and approved hardwood ; including Matt varnish for finishing				
N	100mm x 25mm Thick mkongo wall cover to fixed including Matt varnish to surfaces	m	14		
	To Collection				

A	100mm x 25mm mkongo framing around the opening	m	52		
B	75mm x 20mm Mkongo architrave	m	52		
	Two panel hardwood door shutter of size 1000 x 450mm to the wardrobe including all Finishing surfaces with matt varnish				
C	25mm Thick	No	40		
	Shelves/Divisions Hardwood shelves/Divisions painted with two coats of aron clear tixotropic polyurethane primer Ref. VFA 143; 50% catalyzed with aron B37 catalyzing agent, one finishing coat Aron mat polyurethane varnish Ref.541 (20 gloss) 50% catalyzed with Aron B37 agent; including sanding primed surface				
D	30mm Thick x 600mm wide Hardwood shelves	m2	20		
	Hardwood Bearers				
E	50 x 50 mm	m	40		
	Ironmongeries Supply and fix ironmongeries as per HAFELE				
F	100mm high door handle	No	40		
G	Door hinges	No	80		
H	Ball Catch	No	40		
	Drawers				
J	Supply and fix hardwood mkongo drawer sizes 600x600x150mm high complete with rails, handle and locks, including matt varnishes to Architect Approval.	No	8		
K	Supply and install Hardwood high Level Kitchen cabinet of size 3500x500x 600mm made of hardwood shelves, panelled shutters, hinges and stainless steel handles, to be finished in Varnish.	No	2		
	To Collection				
	COLLECTION Page 13 Page 14				
	TOTAL CARRIED TO SUMMARY				

	SUMMARY- RESIDENTIAL BUILDING					
B	ELEMENT NO. 1 - SUBSTRUCTURE					
C	ELEMENT NO. 2 - FRAME					
E	ELEMENT NO. 3 - ROOF CONSTRUCTION					
F	ELEMENT NO. 4 - DOORS					
G	ELEMENT NO. 5 - WINDOWS					
H	ELEMENT NO. 6 - WALLING AND PARTITIONS					
J	ELEMENT NO. 7 - FINISHINGS					
K	ELEMENT NO. 8 - DECORATIONS					
L	ELEMENT NO. 9 - FITTINGS AND FIXTURES					
	TOTAL MAIN BUILDING -CARRIED TO G.S					

BILL NR. 5 - POLYCLINIC BUILDING

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	BILL NO. 5 - POLYCLINIC BUILDING				
	ELEMENT NO. 1 - SUBSTRUCTURE (PROVISIONAL)				
	SITE CLEARANCE				
A	Clear site of small trees, bushes, grass, undergrowth and the like including grubbing up their roots	m2	450		
B	Excavate oversite average 150mm deep vegetable to remove soil and remove away from site.	m2	450		
	Tree				
C	Cutting down Existing trees; over 600mm girth but not exceeding 900mm girth including grubbing up their roots and obtaining approval from authorities	No	2		
	EXCAVATION				
D	Cutting to make up site level irrrespective of depth	m3	270		
E	Excavate trench commencing at stripped/reduced level to receive strip foundation not exceeding 1.50 metres deep	m3	210		
	Excavation in rock				
F	Extra over excavation for excavating in rock (no blasting allowed)	m3	32		
	Trimmings				
G	Bottom of foundations to receive blinding concrete	m2	175		
	Risk of collapse of excavations				
	Planking and strutting				
H	Allow for maintaining and supporting sides of excavations by provision of planking and strutting and for keeping the same free from fallen materials	Item	1		
	Keeping excavations free of water				
J	Allow for keeping all excavations free of water (except spring or running water) and mud by pumping, baling or other approved means	Item	1		
K	Allow Sum for keeping all excavations free from Spring or running water by pumping, baling or other approved means.	Item	1		
	FILLINGS				
	Making up levels under floors				
L	Approved imported earthfilling compacted in layers not exceeding 300mm deep all to the approval of the Engineer	m2	270		
	Backfilling Imported material around foundations				
M	Approved granular fill materials G15 compacted 95% MOD AASHTO in layers not exceeding 150mm thick	m3	141		
	DISPOSAL OF EXCAVATED MATERIALS				
N	Load and cart away surplus material from excavations and/or stock piles on site for future use as directed by the Architect	m3	210		
	To Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ANTI-TERMITE TREATMENT				
	Anti- termite treatment				
	Gladiator TC; 1.0% solution or other equal and approved anti-termite treatment				
	At the Rate of 7 litres per square metre				
A	Over the compacted Hardcore	m2	270		
	At the Rate of 80 litres per cubic metre				
B	300mm depth and 235mm width to backfilling to one side of wall foundations	m3	6		
	HARDCORE				
C	150mm thick hardcore, levelled and blinded to receive polythene membrane	m2	270		
	Damp proof Membrane				
D	500 gauge Polythene sheet laying on blinded hardcore with 150mm sides and end laps	m2	270		
	Damp proof Course				
	Hessian based bituminous felt damp proof course to B.S. 743 type 5A with 200 mm laps bedded and pointed in cement mortar (1:3)				
E	230 mm wide	m	272		
	CONCRETE WORK				
	Plain in-situ concrete in accordance with BS 8110 - 1997				
	Normal; mix Grade 15 at 28 days - 19mm aggregate vibrated strength 15N/mm2 at 28 days				
F	50mm Thick blinding concrete under pad foundations and Strip Foundation	m2	175		
	Reinforced in-situ concrete in accordance with BS 8110 - 1997				
	Normal; mix Grade 20 at 28 days-19mm aggregate vibrated strength 20N/mm2 at 28 days				
H	100mm thick Ramp	m2	10		
J	Strip foundation	m3	44		
	Normal; mix Grade 25 at 28 days-19mm aggregate vibrated strength 30N/mm2 at 28 days				
L	100mm thick bed	m2	270		
M	Column	m3	1		
N	Ground beam	m3	23		
Q	300mm thick RC Wall	m2	19		
	To Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	REINFORCEMENT				
	Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers; High tensile steel bar reinforcement to B.S. 4466:				
A	Asorted sizes	kg	7425		
	MESH REINFORCEMENTS				
B	Fabric mesh reinforcements to BS 4483 ref A.252 at 200mm both directions laid in concrete bed.	m2	270		
	FORMWORK				
	Sawn formwork to:-				
C	Vertical sides of column	m2	7		
D	Vertical sides of RC Wall	m2	37		
E	Vertical sides of strip foundations	m2	119		
F	Vertical sides of and soffits of horizontal beams	m2	260		
G	Edges of floor beds over 75mm wide not exceeding 150mm wide	m	88		
	WATER PROOFING				
	Concrete Treatment for Permanent water/moisture proofing by applying XYPEX concentrate, in two layers, each of 1mm at the rate given in the technical details provided in the manufacturer's specifications and approved method of water proofing accepted by Architect/ Engineer in charge. water proofing to;				
H	To surfaces of RC wall	m2	19		
	WALLING				
	Blockwork				
	Solid concrete block walling with minimum crushing strength of 7Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
J	230mm Wall	m2	250		
K	Steps	m2	15		
	FINISHING TO PLINTH WALL				
	Plastering				
	External plastering in two coats steel trowelled to a smooth finish				
L	15mm to wall	m2	40		
	Three coats of weather guard paint				
M	Skimming using white cement; prepare and apply three coats of weatherguard paint to rendered plinth wall externally.	m2	40		
	To Collection				
	COLLECTION				
	Page 1				
	Page 2				
	Page 3				
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ELEMENT NO. 2 - FRAME (PROVISIONAL)				
	CONCRETE WORK				
	Reinforced in-situ concrete in accordance with BS 8110 - 1997 Normal; mix Grade 25 at 28 days-19mm aggregate vibrated strength 30N/mm2 at 28 days				
A	Columns	m3	1		
B	150mm Suspended slab	m2	24		
C	Horizontal Beams	m3	23		
D	RC wall	m3	12		
	REINFORCEMENT Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers; High tensile steel bar reinforcement to B.S. 4466:				
E	8mm diameter	kg	519		
F	12mm Diameter	kg	324		
G	16mm Diameter	kg	778		
H	20mm Diameter	kg	326		
J	25mm Diameter	kg	1626		
	FORMWORK Sawn formwork to:-				
K	Vertical sides and soffits of horizontal beams	m2	258		
L	Vertical sides of columns	m2	23		
M	Vertical sides of RC wall	m2	82		
N	Horizontal soffits of suspended slab	m2	24		
P	Edges of slab over 75mm not exceeding 150mm wide	m	25		
	BUILDER'S WORKS				
Q	Allow sum for builder's work in connection to all service works; including chasing, Coring, making openings ; replaster repaints, sleeves to slab and making good.	Item	1		
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ELEMENT NO. 3 - ROOF CONSTRUCTION (PROVISIONAL)				
	ROOF SCREEDS. Cement and Sand (1:4) lightweight screed with polyurethane water proofing compound or equal and approved.				
A	40mm thick to 0.3% sloping falls	m2	24		
B	25mm to Parapet wall	m2	40		
	WATER PROOFING Concrete Treatment for Permanent water/moisture proofing by applying XYPEX concentrate, in two layers, each of 1mm at the rate given in the technical details provided in the manufacturer's specifications and approved method of water proofing accepted by Architect/ Engineer in charge. water proofing to;				
C	Surface of the Conrete slab	m2	24		
D	Vertical sides of the parapet walls	m2	40		
	ROOF COVERINGS G28 type resign coated (IT5) roofing sheets as manufactured by ALAF ltd ,or other equal and approved manufactures; laid with one and a half corrugations side laps and 250mm end laps fixed to steel purlins (measured separately) with 120x8mm galvanized steel hook bolts including galvanized steel and bitumen washers				
E	Sloping not exceeding 45 degrees from horizontal	m2	425		
F	Ridge caps and hip caps 550 mm girth	m	36		
	STRUCTURAL TIMBER The following in timber trusses; selected softwood; pressure impregnated with preservative including hoisting to position as per structural drawings;				
G	Top chord 150 x 50 mm	m	296		
H	Bottom chord 150 x 50 mm	m	273		
J	Purlins 50 x 50 mm	m	355		
K	Struts and ties 100 x 50 mm	m	240		
L	Wall plate 100 x 50 mm	m	258		
	Eaves overhang 1220 x 610 x 3.2mm thick Duravent panels/boards for eaves overhang	no	21		
M	***Prime Quality Hardwood; mninga including paint and decorations*** 200 x 25mm. Fascia and barge boards.	m	116		
	BOLTS AND PLATES				
N	300 x 75 x 75 x 8mm MS plate casted to ring beams	No	58		
P	200mm long x 12mm diameter bolt grade 8.8 including washer and nuts	No	124		
	GUSSET PLATES				
Q	245x200 x 12mm marine plywood gusset plates	No	62		
R	270 x 180 x 12mm marine plywood gusset plates	No	62		
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ELEMENT NO. 4 - DOORS				
	PANELLED DOOR **All hardwood Door to be finished with well seasoned and dried hardwood MNINGA.**				
A	50mm hardwood panneled door panel door; single panel; overall size 1000mm x 2700mm high,comprising of 145mm wide stiles and intermediate rail, 200mm wide bottom rails with one each leaf filled with 2nr unequal sized and 22mm thick tongued labour; and grooved boarding housed to stiles , intermediate, top and bottom rails.Reff. to Door Schedule (D2).	No	19		
B	Ditto; Overall size 800 x 2700mm high; single leaf, single swing. Reff. To Door Schedule (D3).	No	10		
C	50mm panel door; double leaf panels; overall size,2000mmx 2700mm high, Double swing; including 2 equal openable leaves of size 1000x 2400mm high,Comprising of 145mm wide stiles and intermediate rail, 200mm wide bottom rails with one labour; leaf filled with 4nr unequal sized with 22mm thick hardwood boarding tongued and grooved to top rail, intermediate rail, bottom rail and stiles; .Reff to Door Schedule (D1).	No	1		
	FRAMES Wrought surface free from knots; prime Quality Mninga hardwood; including fischer and screws				
D	50x145mm Frame rebated with one labour	m	238		
E	70x30mm Architrave	m	476		
F	30x15mm Quadrant	m	476		
	IRONMONGERIES Supply and fix the following Ironmongery with matching screws; 60min fire Rated, corrosion resistance with minimum 200,000 Test cycle. All materials to stainless steel finished in Satin as per UNION or any other equal and Approved manufacturer.				
G	Doors closer; 90kg	No	20		
H	Cylinder Mortice lockset complete SS Rose level tubular handle with escutcheons	No	20		
J	Cubicle lock with thumb turn Indicator	No	10		
K	Male symbol plates	No	2		
L	Female symbol plates	No	2		
M	100mm x 75mm ball bearing hinges	No	87		
N	100mm x 75mm ball bearing hinges (180 degrees turn)	No	6		
P	Half Moon Floor door stops; Stainless steel	No	10		
Q	SS Flush Bolt	No	2		
R	SS Coat Hook	No	10		
	FINISHING TO DOORS Prepare and apply two coats of Aron clear tixotropic polyurethane primer Ref. VFA 143; 50% catalyzed with Aron B37 catalyzing agent, one finishing coat Aron mat polyurethane varnish Ref.541 (20 gloss) 50% catalyzed with Aron B37 agent; including sanding primed surface.				
S	Frames and the like	m	1190		
T	General door surfaces	m2	156		
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ELEMENT NO. 5 - WINDOWS				
	ALUMINIUM WINDOWS				
	Supply and fix High quality and approved Powder coated "MATT CHARCOAL" REF INTERPON D25-ANP3055/LL258P aluminium windows comprising Standard Extruded 100 x 40 x 1.2mm Thick Heavy Duty Aluminium extrusion Powder coated frame charcoal Grey Powder Coated complete securely fixed and sealed into an approved wall batten in configuration as shown with ironmongery and accessories including tumbler push bottom window lock including fiberglass mosquito gauze, pilkington - deep oceanic blue double glazing or equally approved; 5mm thick laminated glass. All to be approved by window supplier and Conform to BS fire regulations as per Architectural details.				
A	Fixed Aluminium window; Overall sizes 2000x 1800mm high divided in 2Nos Equal Sliding panels. All as per window schedule;W1	No	13		
B	Fixed Aluminium window; Overall sizes 1500x 1000mm high divided in 4Nos Equal Sliding panels. All as per window schedule; W2	No	6		
C	Fixed Aluminium window; Overall sizes 2500x 1300mm high divided in 4Nos Equal Sliding panels. All as per window schedule; W3	No	2		
	METAL WORK				
	Purpose made units Mild steel metal grills				
D	Supply and fix mild steel window grill comprising of 40x40mm frame made of reactangular hollow steel sections,40x4mm thick flat bars welded horizontally spaced at 373mm c/c together including 16mm Ms round vertical bar piercing to 40x4mm flat bar spaced at 125mm c/c polished; welded conditions to smooth surfaces welded to metal rods fixed in the wall, painted with 3 coats of gloss paint architect's to Approval.	m2	62		
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ELEMENT NO. 6 - WALLING AND PARTITIONS				
	CONCRETE WORK				
	Pre-cast reinforced concrete Grade 25 to BS 6073-2:2008				
	Window Cill				
A	350 x 75mm Thick Cill rebated, weathered and throated with stones dressing	m	40		
	WALLING				
	Blockwork				
	Solid concrete block walling with minimum crushing strength of 7Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
B	230mm wall	m2	172		
C	150mm Wall	m2	421		
	Solid concrete block walling with minimum crushing strength of 5Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
D	230mm thick parapet wall	m2	40		
	LOUVRED BLOCK WALL				
	Louvred concrete blocks walling with minimum crushing strength of 5Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
E	230mm Wall	m2	28		
	COPING TO PARAPET WALL				
	Precast concrete grade "20" including hoisting to position, bedding and pointing in cement mortar (1:3)				
E	200 mm x 75mm Thick Copings reinforced 4 No. 12mm rolled mild steel bars; 8mm diameter mild steel links at 200mm centres; finish fair on top, two faces and part soffits	m	35		
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ELEMENT NO. 7 - FINISHINGS				
	FLOOR FINISHES				
	Bedding Mortar; cement and sand (1:4); 40mm Thick one coat beds; screeded; to receive floor tiles; to concrete; generally to;				
A	Floors	m2	471		
B	Skirting; 100mm high	m	226		
C	Steps	m2	11		
	Porcelain Tiles 600 x 600 x 10mm Non-slippery full-bodied Porcelain Tiles Cream-ish with matt finish (RAK or equivalent) fixed with approved high strength rapid setting adhesive to wood floated concrete with heavy duty grout; laid diagonally or other equal to Approval.				
D	To floors	m2	435		
E	Steps	m2	11		
	100x600x10mm Non-slippery full-bodied Porcelain Tiles (RAK) Brown-ish with matt finish fixed with approved high strength rapid setting adhesive to blockwork with heavy duty grout.				
F	Skirting; 100mm high including edge trimming labour work	m	226		
	400 x 400 x 10mm Non-slippery full-bodied Porcelain Tiles Beige-ish with matt finish (RAK or equivalent) fixed with approved high strength rapid setting adhesive to wood floated concrete with heavy duty grout; laid horizontally or other equal to Approval.				
G	To floors	m2	36		
	To Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	WALL FINISHES				
	Internal Plastering				
	Internal plastering in two coats steel trowelled to a smooth finish; Cement and Sand (1:3)				
A	15mm to walls and columns	m2	746		
B	15mm to slab	m2	24		
	External Plastering				
	External cement and sand (1:3) render with approved plaster in two coats steel trowelled to paint				
C	15mm to wall and columns	m2	255		
D	15mm to Parapet walls	m2	80		
	Wall Tiles				
	White colour glazed ceramic wall tiles (Ex-italy) with cushion edges fixed to backing with adhesive and pointed with white silicon: horizontally laid or other equal to Approval.				
E	600 x 300 x 6mm Tilling to wall as per Architect's approval	m2	144		
	Backing				
	12 mm one coat backings; screeded; to receive wall tiles; to concrete base; generally to				
F	To Walls	m2	144		
	Corner Covers				
G	Aluminium corner cover strips to wall tiles	m	48		
	CEILING FINISHES				
	Gypsum Ceilling				
	9 mm thick plaster boards ceiling fixed to timber branderings, with galvanised drive screws; head holes filled and sanded taped and skimmed board joints; all to receive direct decoration;				
H	over 300mm wide ; horizontal ceilings ; over 3.5 metres but not exceeding 5.0 m above floor level to receive direct decoration to receive direct decoration.	m2	307		
	BRANDERING				
	Treated softwood concealed framework at 600 mm centres both ways for mounting gyproc or MDF sheeting; all bracing and pinning together; plugging and screwing framework at perimeter				
J	50x50mm	m	1382		
	Cornice				
K	75 x 75 mm; plain	m	384		
	To Collection				
	COLLECTION				
	Page 9				
	Page 10				
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ELEMENT NO. 8- DECORATIONS				
	PAINTING				
	Internal Work Prepare and apply one thinned coat and two full coats of wash and wear paint to; colour paint to architect's approval				
A	Plastered walls and columns	m2	602		
B	Soffit of Slab	m2	24		
C	Gypsum ceiling	m2	307		
	External Works Prepare and apply one thinned coat and two full coats of weather guard paint to; colour paint to architect's approval				
D	Rendered wall and columns	m2	255		
E	Plastered parapet walls	m2	80		
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	ELEMENT NO. 9 - FITTINGS AND FIXTURES				
	THE FOLLOWING FITTINGS IN WASHROOMS				
	Vanity Tops				
	Black Granite Tops				
A	30mm Thick Natural polished Granite Tops fixed on 25 x 20mm angle section screwed on wall	m2	2		
	Fascia				
B	20mm x 100mm High Granite fascia	m	3.4		
	Labour				
C	Half round bullnose edge	m	3.4		
D	Making hole for washing sink	No	4		
	Vanity Tops (Singled WHB)				
E	Supply and install 20mm thick polished granite fixed on angle 25 x20mm section screwed on wall;including 100mmx20mm thick fascia all around; all bullnose edges curved and smoothen; including making hole for WHB : overall size 600 x 900mm wide. All to Approval by Project manager.	No	4		
	THE FOLLOWING FITTINGS IN KITCHEN AREAS				
	Concrete Plinth				
F	75mm Plain insitu concrete grade '25' plinth base, finished with porcelain tiles (M.S) to match basins as per Architects approval.	m2	7		
	Concrete Tops				
G	75mm Reinforced insitu concrete grade '25' to Tops	m2	7		
	Mesh				
H	Fabric mesh reinforcements to BS 5950 ref A.252 at 200mm both directions laid in concrete bed.	m2	7		
	Form work				
J	75mm thick formwork to edges of plinth	m	16		
K	75mm thick formwork to edges of Top slab	m	16		
L	To soffit of slab	m2	7		
	Blockwork				
	Solid concrete block walling with minimum crushing strength of 5Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
M	100mm Wall	m2	4		
	Plastering				
	Internal cement and sand (1:4) render with approved plaster in two coats steel trowelled to paint				
N	15mm to wall	m2	8		
	Painting				
	Prepare and apply one thinned coat and two full coats of wash and wear paint to;				
P	Plastered walls	m2	8		
	Work Top Finishing				
Q	30mm thick polished Granite fixed with and including appropriate adhesives for bonding to Concrete Tops	m2	7		
R	Ditto; 100mm high fascia	m	16		
S	Bullnose trimming to the edge of Granite	m	16		
	Joinery				
	Prime quality 'Mkongo' or other equal and approved hardwood ; including Matt varnish for finishing				
T	100mm x 25mm Thick mkongo wall cover to fixed including Matt varnish to surfaces	m	14		
	To Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	100mm x 25mm mkongo framing around the opening	m	48		
B	75mm x 20mm Mkongo architrave	m	48		
	Two panel hardwood door shutter of size 1000 x 450mm to the wardrobe including all Finishing surfaces with matt varnish				
C	25mm Thick	No	9		
	Shelves/Divisions Hardwood shelves/Divisions painted with two coats of aron clear tixotropic polyurethane primer Ref. VFA 143; 50% catalyzed with aron B37 catalyzing agent, one finishing coat Aron mat polyurethane varnish Ref.541 (20 gloss) 50% catalyzed with Aron B37 agent; including sanding primed surface				
D	30mm Thick x 600mm wide Hardwood shelves	m2	21		
	Hardwood Bearers				
E	50 x 50 mm	m	91		
	Ironmongeries Supply and fix ironmongeries as per HAFELE				
F	100mm high door handle	No	9		
G	Door hinges	No	18		
H	Ball Catch	No	9		
	Drawers				
J	Supply and fix hardwood mkongo drawer sizes 600x600x150mm high complete with rails, handle and locks, including matt varnishes to Architect Approval.	No	12		
K	Supply and install Hardwood high Level Kitchen cabinet of size 3500x500x 600mm made of hardwood shelves, panelled shutters, hinges and stainless steel handles, to be finished in Varnish.	No	1		
	To Collection				
	COLLECTION Page 12 Page 13				
	TOTAL CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	SUMMARY- POLYCLINIC BUILDING				
A	ELEMENT NO. 1 - SUBSTRUCTURE (PROVISIONAL)				
B	ELEMENT NO. 2 - FRAME (PROVISIONAL)				
C	ELEMENT NO. 3 - ROOF CONSTRUCTION (PROVISIONAL)				
D	ELEMENT NO. 4 - DOORS				
E	ELEMENT NO. 5 - WINDOWS				
F	ELEMENT NO. 6 - WALLING AND PARTITIONS				
G	ELEMENT NO. 7 - FINISHINGS				
H	ELEMENT NO. 8- DECORATIONS				
J	ELEMENT NO. 9 - FITTINGS AND FIXTURES				
	TOTAL MAIN BUILDING -CARRIED TO G.S				

BILL NR. - DOMITORY BUILDINGS

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	BILL NO. 6 - DOMITORY BUILDING (2Nos)				
	ELEMENT NO. 1 - SUBSTRUCTURE (ALL PROVISIONAL)				
	SITE CLEARANCE				
A	Clear site of small trees, bushes, grass, undergrowth and the like including grubbing up their roots	m2	1119		
B	Excavate oversite average 150mm deep vegetable to remove soil and remove away from site.	m2	1119		
	EXCAVATION				
C	Excavate Pits commencing at reduced level to receive column footing and lift Footings not exceeding 1.50 metres deep	m3	3		
D	Excavate trench commencing at stripped/reduced level to receive strip foundation not exceeding 1.50 metres deep	m3	301		
	Excavation in rock				
E	Extra over excavation for excavating in rock (no blasting allowed)	m3	46		
	Trimmings				
F	Bottom of foundations to receive blinding concrete	m2	251		
	Risk of collapse of excavations				
	Planking and strutting				
G	Allow for maintaining and supporting sides of excavations by provision of planking and strutting and for keeping the same free from fallen materials	Item	1		
	Keeping excavations free of water				
H	Allow for keeping all excavations free of water (except spring or running water) and mud by pumping, baling or other approved means	Item	1		
J	Allow Sum for keeping all excavations free from Spring or running water by pumping, baling or other approved means.	Item	1		
	FILLINGS				
	Making up levels under floors				
K	Approved imported earthfilling compacted in layers not exceeding 300mm deep all to the approval of the Engineer	m2	869		
	Backfilling Imported material around foundations				
L	Approved granular fill materials G15 compacted 95% MOD AASHTO in layers not exceeding 150mm thick	m3	202		
	DISPOSAL OF EXCAVATED MATERIALS				
M	Load and cart away surplus material from excavations and/or stock piles on site for future use as directed by the Architect	m3	304		
	To Collection				

	ANTI-TERMITE TREATMENT Anti- termite treatment Gladiator TC; 1.0% solution or other equal and approved anti-termite treatment				
	At the Rate of 7 litres per square metre				
A	Over the compacted Hardcore	m2	739		
	At the Rate of 80 litres per cubic metre				
B	300mm depth and 235mm width to backfilling to one side of wall foundations	m3	12		
	HARDCORE				
C	150mm thick hardcore, levelled and blinded to receive polythene membrane	m2	739		
	Damp proof Membrane				
D	500 gauge Polythene sheet laying on blinded hardcore with 150mm sides and end laps	m2	739		
	Damp proof Course Hessian based bituminous felt damp proof course to B.S. 743 type 5A with 200 mm laps bedded and pointed in cement mortar (1:3)				
E	230 mm wide	m	358		
	CONCRETE WORK **Plain in-situ concrete in accordance with BS 8110 - 1997**				
	Normal; mix Grade 15 at 28 days - 19mm aggregate vibrated strength 15N/mm2 at 28 days				
F	50mm Thick blinding concrete under pad foundations and Strip Foundation	m2	254		
	Reinforced in-situ concrete in accordance with BS 8110 - 1997				
	Normal; mix Grade 20 at 28 days-19mm aggregate vibrated strength 20N/mm2 at 28 days				
G	100mm thick Ramp	m2	36		
H	Strip Foundation	m3	58		
	Normal; mix Grade 25 at 28 days-19mm aggregate vibrated strength 30N/mm2 at 28 days				
J	Pad Foundations	m3	1		
K	Columns	m3	1		
L	100mm Thick bed	m2	868		
M	Ground Beams	m3	21		
	REINFORCEMENT Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers; High tensile steel bar reinforcement to B.S. 4466:				
N	Asorted sizes	Kg	8,024		
	To Collection				

	MESH REINFORCEMENTS				
A	Fabric mesh reinforcements to BS 4483 ref A.252 at 200mm both directions laid in concrete bed.	m2	904		
	FORMWORK				
	Sawn formwork to:-				
B	Vertical sides of column	m2	3		
C	Vertical sides of Pad foundations	m2	3		
D	Vertical sides of strip foundation	m2	82		
E	Vertical sides of ground beams	m2	62		
F	Edges of floor beds over 75mm wide not exceeding 150mm wide	m	130		
	WALLING				
	Blockwork				
	Solid concrete block walling with minimum crushing strength of 7Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
F	230mm Wall	m2	322		
G	Steps	m2	15		
	FINISHING TO PLINTH WALL				
	Plastering				
	External plastering in two coats steel trowelled to a smooth finish				
H	15mm to wall	m2	59		
	Three coats of weather guard paint				
J	Skimming using white cement; prepare and apply three coats of weatherguard paint to rendered plinth wall externally.	m2	59		
	To Collection				
	COLLECTION				
	Page 1				
	Page 2				
	Page 3				
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 2 - FRAME (PROVISIONAL)				
	CONCRETE WORK				
	Reinforced in-situ concrete in accordance with BS 8110 - 1997				
	Normal; mix Grade 25 at 28 days-19mm aggregate vibrated strength 30N/mm2 at 28 days				
A	Columns	m3	1		
B	150mm Concrete Gutter	m2	54		
C	Horizontal Beams	m3	30		
	REINFORCEMENT Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers; High tensile steel bar reinforcement to B.S. 4466:				
D	Assorted sizes	Kg	3910		
	FORMWORK Sawn formwork to:-				
E	Vertical sides and soffits of horizontal beams	m2	96		
F	Vertical sides of columns	m2	8		
G	Horizontal soffits of gutter	m2	54		
H	Edges of slab over 75mm not exceeding 150mm wide	m	73		
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 3 - ROOF CONSTRUCTION (PROVISIONAL)				
	ROOF SCREEDS. Cement and Sand (1:4) lightweight screed with polyurethane water proofing compound or equal and approved.				
A	40mm thick to 0.3% sloping falls	m2	54		
	WATER PROOFING Concrete Treatment for Permanent water/moisture proofing by applying XYPEX concentrate, in two layers, each of 1mm at the rate given in the technical details provided in the manufacturer's specifications and approved method of water proofing accepted by Architect/ Engineer in charge. water proofing to;				
B	Surface of the Conrete roof slab	m2	54		
C	Vertical sides of the parapet walls	m2	128		
	ROOF COVERINGS G28 type resign coated (IT5) roofing sheets as manufactured by ALAF ltd ,or other equal and approved manufactures; laid with one and a half corrugations side laps and 250mm end laps fixed to steel purlins (measured separately) with 120x8mm galvanized steel hook bolts including galvanized steel and bitumen washers				
D	Sloping not exceeding 45 degrees from horizontal	m2	1090		
E	Ridge caps 550 mm girth	m	28		
	STRUCTURAL TIMBER The following in timber trusses; selected softwood; pressure impregnated with preservative including hoisting to position as per structural drawings;				
F	Top chord, 150 x 50 mm	m	760		
G	Bottom chord, 150 x 50 mm	m	700		
H	Purlins, 50 x 50 mm	m	910		
J	Struts and ties, 100 x 50 mm	m	615		
K	Wall plate, 100 x 50 mm	m	725		
	Prime Quality Hardwood; mninga including paint and decorations				
L	200 x 25mm. Fascia and barge boards.	m	300		
	BOLTS AND PLATES				
M	300 x 75 x 75 x 8mm MS plate casted to ring beams	No	160		
N	200mm long x 12mm diameter bolt grade 8.8 including washer and nuts	No	340		
	GUSSET PLATES				
P	245x200 x 12mm marine plywood gusset plates	No	164		
Q	270 x 180 x 12mm marine plywood gusset plates	No	164		
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 4 - DOORS				
	PANELED DOOR				
	Mninga Hardwood				
A	50mm hardwood panneled door panel door; single panel; overall size 1500mmx 2700mm high,comprising of 145mm wide stiles and intermediate rail, 200mm wide bottom rails with one each leaf filled with 2nr unequal sized and 22mm thick tongued labour; and grooved boarding housed to stiles , intermediate, top and bottom rails.Reff. to Door Schedule (D2).	No	8		
B	Ditto, Overall size 900x2700mm single panel door Reff to Door Schedule (D3).	No	4		
C	Ditto, Overall size 800x2700mm single panel door Reff to Door Schedule (D3A).	No	14		
D	Ditto, Overall size 1800x2700mm high double leaf panels door Reff to Door Schedule (D1).	No	8		
	GLAZING				
E	6mm thick clear glass in panes including 20x20mm hardwood glazing beads.	m2	18		
	FRAMES Wrought surface free from knots; prime Quality Mninga hardwood; including fischer and screws				
F	50x150mm Frame rebated with one labour	m	225		
G	50x150mm Transome rebated with one labour	m	64		
H	38x15mm Architrave	m	450		
J	30x15mm Quadrant	m	450		
	IRONMONGERIES Supply and fix the following Ironmongery with matching screws; 60min fire Rated, corrosion resistance with minimum 200,000 Test cycle. All materials to stainless steel finished in Satin as per UNION or any other equal and Approved manufacturer.				
E	Doors closer; 90kg	No	34		
F	Cylinder Mortice lockset complete SS Rose level tubular handle with escutcheons	No	20		
G	Cubicle lock with thumb turn Indicator	No	14		
H	Male symbol plates	No	2		
J	Female symbol plates	No	4		
K	Disable symbol plate	No	2		
L	100mm x 75mm ball bearing hinges	No	102		
M	Half Moon Floor door stops; Stainless steel	No	20		
N	SS Flush Bolt	No	32		
P	SS Coat Hook	No	14		
	FINISHING TO DOORS Prepare and apply two coats of Aron clear tixotropic polyurethane primer Ref. VFA 143; 50% catalyzed with Aron B37 catalyzing agent, one finishing coat Aron mat polyurethane varnish Ref.541 (20 gloss) 50% catalyzed with Aron B37 agent; including sanding primed surface.				
Q	Frames and the like	m	1189		
R	General door surfaces	m2	223		
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 5 - WINDOWS				
	ALUMINIUM WINDOWS Supply and fix High quality and approved Powder coated "MATT CHARCOAL" REF INTERPON D25-ANP3055/LL258P aluminium windows comprising Standard Extruded 105 x 42 x 2mm Thick Heavy Duty Aluminium extrusion Powder coated frame charcoal Grey Powder Coated complete securely fixed and sealed into an approved wall batten in configuration as shown with ironmongery and accessories including tumbler push bottom window lock including fiberglass mosquito gauze, pilkington - deep oceanic blue double glazing or equally approved; 6mm thick laminated glass. All to be approved by window supplier and Conform to BS fire regulations as per Architectural details.				
A	Fixed Aluminium window; Overall sizes 2000x1700mm high divided in 3Nos Equal Sliding panels. All as per window schedule; W1	No	6		
B	Fixed Aluminium window; Overall sizes 2500x1800mm high divided in 2Nos Equal Sliding panels. All as per window schedule; W2	No	6		
C	Fixed Aluminium window; Overall sizes 2000x600mm high divided in 2Nos Equal Sliding panels. All as per window schedule; W3	No	7		
D	Fixed Aluminium window; Overall sizes 2000x1800mm high divided in 2Nos Equal Sliding panels. All as per window schedule; W4	No	10		
	METAL WORK				
	Purpose made units Mild steel metal grills				
E	Supply and fix mild steel window grill comprising of 40x40mm frame made of reactangular hollow steel sections,40x4mm thick flat bars welded horizontally spaced at 373mm c/c together including 16mm Ms round vertical bar piercing to 40x4mm flat bar spaced at 125mm c/c polished; welded conditions to smooth surfaces welded to metal rods fixed in the wall, painted with 3 coats of gloss paint architect's to Approval.	m2	93		
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 6 - WALLING AND PARTITIONS				
	CONCRETE WORK				
	Pre-cast reinforced concrete Grade 25 to BS 6073-2:2008				
	Window Cill				
A	350 x 75mm Thick Cill rebated, weathered and throated with stones dressing	m	63		
	Lintel				
B	230 x200 mm high lintel, with 4Nos of Y16 bars and Y8 stirrups at 200 mm centres, including all necessary formwork, bedding and jointing in cement mortar (1:4) and hoisting into position	m	124		
C	150 x200 mm high lintel, with 4Nos of Y16 bars and Y8 stirrups at 200 mm centres, including all necessary formwork, bedding and jointing in cement mortar (1:4) and hoisting into position	m	67		
	WALLING				
	Blockwork				
	Solid concrete block walling with minimum crushing strength of 7Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
D	230mm Wall	m2	566		
E	150mm Wall	m2	602		
	Solid concrete block walling with minimum crushing strength of 5Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
F	230mm thick parapet wall	m2	192		
	COPING TO PARAPET WALL				
	Precast concrete grade "20" including hoisting to position, bedding and pointing in cement mortar (1:3)				
G	200 mm x 75mm Thick Copings reinforced 4 No. 12mm rolled mild steel bars; 8mm diameter mild steel links at 200mm centres; finish fair on top, two faces and part soffits	m	160		
	LOUVRED BLOCK WALL				
	Louvred concrete blocks walling with minimum crushing strength of 5Mpa bedded and jouinted in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
H	230mm Wall	m2	40		
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 7 - FINISHINGS				
	FLOOR FINISHES				
	Bedding Mortar; cement and sand (1:4); 40mm Thick one coat beds; screeded; to receive floor tiles; to concrete; generally to;				
A	Floors	m2	822		
B	Skirting; 100mm high	m	372		
C	Steps	m2	15		
D	Ramps	m2	36		
	Porcelain Tiles 600 x 600 x 10mm Non-slippery full-bodied Porcelain Tiles Cream-ish with matt finish (RAK or equivalent) fixed with approved high strength rapid setting adhesive to wood floated concrete with heavy duty grout; laid diagonally or other equal to Approval.				
E	To floors	m2	708		
F	Steps	m2	15		
G	Ramps	m2	36		
	100x600x10mm Non-slippery full-bodied Porcelain Tiles (RAK or equivalent) Brown-ish with matt finish fixed with approved high strength rapid setting adhesive to blockwork with heavy duty grout.				
H	Skirting; 100mm high including edge trimming labour work	m	372		
	400 x 400 x 10mm Non-slippery full-bodied Porcelain Tiles Beige-ish with matt finish (RAK) fixed with approved high strength rapid setting adhesive to wood floated concrete with heavy duty grout; laid horizontally or other equal to Approval.				
J	To floors	m2	114		
	To Collection				

	WALL FINISHES				
	Internal Plastering				
	Internal plastering in two coats steel trowelled to a smooth finish; Cement and Sand (1:3)				
A	15mm to walls and columns	m2	2674		
B	15mm to soffit of slab	m2	54		
	External Plastering				
	External cement and sand (1:3) render with approved plaster in two coats steel trowelled to paint				
C	15mm to wall and columns	m2	566		
D	15mm to Parapet walls	m2	384		
	Wall Tiles				
	White colour glazed ceramic wall tiles (RAK) with cushion edges fixed to backing with adhesive and pointed with white silicon: horizontally laid or other equal to Approval.				
E	600 x 300 x 6mm Tilling to wall as per Architect's approval	m2	245		
	Backing				
	12 mm one coat backings; screeded; to receive wall tiles; to concrete base; generally to				
F	To Walls	m2	245		
	Corner Covers				
G	Aluminium corner cover strips to wall tiles	m	84		
	CEILING FINISHES				
	Gypsum Ceilling				
	9 mm thick plaster boards ceiling fixed to timber branderings, with galvanised drive screws; head holes filled and sanded taped and skimmed board joints; all to receive direct decoration;				
H	over 300mm wide ; horizontal ceilings ; over 3.5 metres but not exceeding 5.0 m above floor level to receive direct decoration to receive direct decoration.	m2	634		
	BRANDERING				
	Treated softwood concealed framework at 600 mm centres both ways for mounting gyproc or MDF sheeting; all bracing and pinning together; plugging and screwing framework at perimeter				
J	50x50mm	m	2853		
	Cornice				
K	75 x 75 mm; plain	m	230		
	To Collection				
	COLLECTION				
	Page 9				
	Page 10				
	TOTAL CARRIED TO SUMMARY				

	ELEMENT NO. 8 - DECORATIONS				
	PAINTING				
	Internal Work Prepare and apply one thinned coat and two full coats of wash and wear paint to; colour paint to architect's approval				
A	Plastered walls and columns	m2	2674		
B	Soffit of Slab	m2	54		
C	Gypsum ceiling	m2	634		
	External Works Prepare and apply one thinned coat and two full coats of weather guard paint to; colour paint to architect's approval				
D	Rendered wall and columns	m2	566		
E	Plastered parapet walls	m2	384		
	TOTAL CARRIED TO SUMMARY				

	SUMMARY - DOMITORY BUILDING (2NOs)				
A	ELEMENT NO. 1 - SUBSTRUCTURE (ALL PROVISIONAL)				
B	ELEMENT NO. 2 - FRAME (PROVISIONAL)				
C	ELEMENT NO. 3 - ROOF CONSTRUCTION (PROVISIONAL)				
D	ELEMENT NO. 4 - DOORS				
E	ELEMENT NO. 5 - WINDOWS				
F	ELEMENT NO. 6 - WALLING AND PARTITIONS				
G	ELEMENT NO. 7 - FINISHINGS				
H	ELEMENT NO. 8 - DECORATIONS				
				Subtotal	
			X2		
	TOTAL FOR 2 HOSTEL BUILDINGS -CARRIED TO GENERAL SUMMARY				

BILL NR.7- EXTERNAL WORKS

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	BILL NO. 7 - EXTERNAL WORKS				
	CLASSROOM & ADMINISTRATION BLOCK				
	ELEMENT NO.1- LANDSCAPING				
	HARD LANDSCAPING				
	Earthworks				
	Site Clearance				
A	Clear site vegetation; bushes, curb, undergrowth and general debris; grubbing up roots; filling in voids left by removal of roots with selected imported fill material	1203	m2		
	Excavation of top soil				
B	Excavate to remove vegetable soil; average 150mm thick deep and dispose materials away from site to a tip to be approved by the Engineer	1203	m2		
	Cut and fill				
	Cut the over site to reduce levels, level and compact.				
C	over 300mm deep	361	m3		
	Surface preparation				
D	Scarify the existing layer 150 mm deep and compact the materials to 93% MDD AASTO (the existing layer materials to be approved by Engineer on site before the layer work commence)	803	m2		
	WALK WAYS/PARKING				
	Precast Interlocking Pavers Block;				
E	200 X 100 X 80mm thick; butt joints straight both ways; to falls or cross falls not exceeding 15 degrees from the horizontal; on blinded gravel bed (m/s); Paving blocks to be not less that 30N/mm2	802	m2		
	Damp proof Membrane				
F	1000 gauge Polythene sheet laying on blinded hardcore with 150mm sides and end laps	802	m2		
	Pure Sand blinding				
G	To open excavations; 50mm thick well graded and compacted	802	m2		
	Subgrade Filling				
H	Provide, place and compact approved 150 mm granular material (G15) layer with minimal CBR=25, Compacted to minimum 95% of (of maximum Dry Density) heavy compaction to layers not exceeding 300mm	802	m2		
	PRECAST CONCRETE; MIX (1:2:4); 450MM LONG; BEDDING, JOINTING AND POINTING IN CEMENT MORTAR(1:3)				
	Kerbs; haunching with plain in-situ concrete mix in-situ concrete mix (1:2:4) second side; formwork, excavation work; backfilling and disposal of surplus spoil by spreading over site;including hot poured rubber bitumen between kerb and haunching				
J	600 X 250mm high	151	m		
	DRAINAGE				
	Storm Water Channel				
K	Costruct a box storm water channel, 600 mm wide and 850 mm minimum depth, comprising of 150 mm thick wall and bases in reinforced concrete grade 25, with T8 bars at 200 mm centres and 50 mm blinding in plain concrete grade 15; closed with 650 x 650 x 50mm thick precast concrete cover with A252 mesh; including all excavations, backfilling, disposal and formwork (All per engineers details and specifications)		item		
	To Collection				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	PARKING FACILITY				
A	Allow for putting markings on parking lots; strips to be in yellow and white as per Highway codes; 100mm girth strips	44	m		
	Allow for fabrication and erection of mild steel post; sizes W 220 x D 390mm welded on 30 x 30 x 2.5 RHS; fixed concrete footing sizes 125 x 125 x 200mm grade 20 plain; steelworks primed in red oxide and finished in 2 coast of gloss oil paint; including naming the posts				
B	Parking reservations	2	No		
C	Building direction/Exit /Entrance	2	No		
D	Ditto; Assembly point post in Approved specification	1	No		
	SOFT LANDSCAPING				
	Pemba Grasses				
E	Cut, compact, level provide manure and make good land scaping by providing and plant grasses to patterns; Lawns grass(Pemba grasses)	800	m2		
	Trees Tree planting; including vegetable soil; filling, manure, well watering and maintaining for the 9 months until well established.				
F	Phoenix Palm Trees	2	No		
G	Royal Palm Tree	2	No		
	To Collection				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	COLLECTION Page 7/1 Page 7/2				
	TOTAL EXTERNAL WORKS FOR CLASSROOM &ADMINISTRATION BLOCK				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	MULTIFUNCTIONAL DINING HALL				
	ELEMENT NO.1- LANDSCAPING				
	HARD LANDSCAPING				
	Earthworks				
	Site Clearance				
A	Clear site vegetation; bushes, curb, undergrowth and general debris; grubbing up roots; filling in voids left by removal of roots with selected imported fill material	796	m2		
	Excavation of top soil				
B	Excavate to remove vegetable soil; average 150mm thick deep and dispose materials away from site to a tip to be approved by the Engineer	796	m2		
	Cut and fill				
C	Cut the over site to reduce levels, level and compact, over 300mm deep	239	m3		
	WALK WAYS/PARKING				
	Precast Interlocking Pavers Block;				
D	200X100X80mm thick; butt joints straight both ways; to falls or cross falls not exceeding 15 degrees from the horizontal; on blinded gravel bed (m/s); Paving blocks to be not less that 30N/mm2	627	m2		
	Damp proof Membrane				
E	500 gauge Polythene sheet laying on blinded hardcore with 150mm sides and end laps	627	m2		
	Pure Sand blinding				
F	To open excavations; 50mm thick well graded and compacted	627	m2		
	Subgrade Filling				
G	Provide, place and compact approved 150 mm granular material (G15) layer with minimal CBR=25, Compacted to minimum 95% of (of maximum Dry Density) heavy compaction to layers not exceeding 300mm	627	m2		
	PRECAST CONCRETE; MIX (1:2:4); 450MM LONG; BEDDING, JOINTING AND POINTING IN CEMENT MORTAR(1:3)				
	Kerbs; haunching with plain in-situ concrete mix in-situ concrete mix (1:2:4) second side; formwork, excavation work; backfilling and disposal of surplus spoil by spreading over site;including hot poured rubber bitumen between kerb and haunching				
H	600 X 250mm high	106	m		
	DRAINAGE				
	Storm Water Channel				
J	Costruct a box storm water channel, 600 mm wide and 850 mm minimum depth, comprising of 150 mm thick wall and bases in reinforced concrete grade 25, with T8 bars at 200 mm centres and 50 mm blinding in plain concrete grade 15; closed with 650 x 650 x 50mm thick precast concrete cover with A252 mesh; including all excavations, backfilling, disposal and formwork (All per engineers details and specifications)		item		
	PARKING FACILITY				
K	Allow for putting markings on parking lots; strips to be in yellow and white as per Highway codes; 100mm girth strips	54	m		
	To Collection				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Allow for fabrication and erection of mild steel post; sizes W 220 x D 390mm welded on 30 x 30 x 2.5 RHS; fixed concrete footing sizes 125 x 125 x 200mm grade 20 plain; steelworks primed in red oxide and finished in 2 coast of gloss oil paint; including naming the posts				
A	Parking reservations	2	No		
B	Building direction/Exit /Entrance	2	No		
C	Ditto; Assembly point post in Approved specification	1	No		
	SOFT LANDSCAPING				
	Pemba Grasses				
D	Cut, compact, level provide manure and make good land scaping by providing and plant grasses to patterns; Lawns grass(Pemba grasses)	169	M2		
	Trees Tree planting; including vegetable soil; filling, manure, well watering and maintaining for the 9 months until well established.				
E	Phoenix Palm Trees	2	No		
F	Ashoka Tree	2	No		
	To Collection				
	COLLECTION Page 7/ 4 Page 5/ 5				
	TOTAL EXTERNAL WORKS FOR MULTI FUNCTIONAL DINING HALL				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	HOSTEL/DOMITORY BUILDINGS				
	ELEMENT NO.1- LANDSCAPING				
	HARD LANDSCAPING				
	Earthworks				
	Site Clearance				
A	Clear site vegetation; bushes, curb, undergrowth and general debris; grubbing up roots; filling in voids left by removal of roots with selected imported fill material	913	m2		
	Excavation of top soil				
B	Excavate to remove vegetable soil; average 150mm thick deep and dispose materials away from site to a tip to be approved by the Engineer	913	m2		
	Cut and fill				
	Cut the over site to reduce levels, level and compact.				
C	over 300mm deep	274	m3		
	WALK WAYS/PARKING				
	Precast Interlocking Pavers Block;				
E	200 X 100 X 80mm thick; butt joints straight both ways; to falls or cross falls not exceeding 15 degrees from the horizontal; on blinded gravel bed (m/s); Paving blocks to be not less that 30N/mm2	558	m2		
	Damp proof Membrane				
F	1000 gauge Polythene sheet laying on blinded hardcore with 150mm sides and end laps	558	m2		
	Pure Sand blinding				
G	To open excavations; 50mm thick well graded and compacted	558	m2		
	Subgrade Filling				
H	Provide, place and compact approved 150 mm granular material (G15) layer with minimal CBR=25, Compacted to minimum 95% of (of maximum Dry Density) heavy compaction to layers not exceeding 300m	558	m2		
	PRECAST CONCRETE; MIX (1:2:4); 450MM LONG; BEDDING, JOINTING AND POINTING IN CEMENT MORTAR(1:3)				
	Kerbs; haunching with plain in-situ concrete mix in-situ concrete mix (1:2:4) second side; formwork, excavation work; backfilling and disposal of surplus spoil by spreading over site;including hot poured rubber bitumen between kerb and haunching				
J	600 X 250mm high	175	m		
	DRAINAGE				
	Storm Water Channel				
K	Costruct a box storm water channel, 600 mm wide and 850 mm minimum depth, comprising of 150 mm thick wall and bases in reinforced concrete grade 25, with T8 bars at 200 mm centres and 50 mm blinding in plain concrete grade 15; closed with 650 x 650 x 50mm thick precast concrete cover with A252 mesh; including all excavations, backfilling, disposal and formwork (All per engineers details and specifications)		item		
	To collection				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	SOFT LANDSCAPING				
	Pemba Grasses				
A	Cut, compact, level provide manure and make good land scaping by providing and plant grasses to patterns; Lawns grass(Pemba grasses)	355	m2		
	Trees Tree planting; including vegetable soil; filling, manure, well watering and maintaining for the 9 months until well established.				
B	Phoenix Palm Trees	2	No		
C	Royal Palm Tree	2	No		
D	Ashoka Tree	2	No		
	To Collection				
	COLLECTION				
	Page 7/6				
	Page 7/7				
	TOTAL EXTERNAL WORKS FOR DOMITORY BUILDINGS				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	POLYCLINIC BUILDING				
	ELEMENT NO.1- LANDSCAPING				
	HARD LANDSCAPING				
	Earthworks				
	Site Clearance				
A	Clear site vegetation; bushes, curb, undergrowth and general debris; grubbing up roots; filling in voids left by removal of roots with selected imported fill material	862	m2		
	Excavation of top soil				
B	Excavate to remove vegetable soil; average 150mm thick deep and dispose materials away from site to a tip to be approved by the Engineer	862	m2		
	Cut and fill				
C	Cut the over site to reduce levels, level and compact, over 300mm deep	259	m3		
	WALK WAYS/PARKING				
	Precast Interlocking Pavers Block;				
D	200X100X80mm thick; butt joints straight both ways; to falls or cross falls not exceeding 15 degrees from the horizontal; on blinded gravel bed (m/s); Paving blocks to be not less that 30N/mm2	537	m2		
	Damp proof Membrane				
E	500 gauge Polythene sheet laying on blinded hardcore with 150mm sides and end laps	537	m2		
	Pure Sand blinding				
F	To open excavations; 50mm thick well graded and compacted	537	m2		
	Subgrade Filling				
G	Provide, place and compact approved 150 mm granular material (G15) layer with minimal CBR=25, Compacted to minimum 95% of (of maximum Dry Density) heavy compaction to layers not exceeding 300mm	537	m2		
	PRECAST CONCRETE; MIX (1:2:4); 450MM LONG; BEDDING, JOINTING AND POINTING IN CEMENT MORTAR(1:3)				
	Kerbs; haunching with plain in-situ concrete mix in-situ concrete mix (1:2:4) second side; formwork, excavation work; backfilling and disposal of surplus spoil by spreading over site;including hot poured rubber bitumen between kerb and haunching				
H	600 X 250mm high	145	m		
	DRAINAGE				
	Storm Water Channel				
J	Costruct a box storm water channel, 600 mm wide and 850 mm minimum depth, comprising of 150 mm thick wall and bases in reinforced concrete grade 25, with T8 bars at 200 mm centres and 50 mm blinding in plain concrete grade 15; closed with 650 x 650 x 50mm thick precast concrete cover with A252 mesh; including all excavations, backfilling, disposal and formwork (All per engineers details and specifications)		item		
	PARKING FACILITY				
K	Allow for putting markings on parking lots; strips to be in yellow and white as per Highway codes; 100mm girth strips	45	m		
	Allow for fabrication and erection of mild steel post; sizes W 220 x D 390mm welded on 30 x 30 x 2.5 RHS; fixed concrete footing sizes 125 x 125 x 200mm grade 20 plain; steelworks primed in red oxide and finished in 2 coast of gloss oil paint; including naming the posts				
L	Parking reservations	2	No		
M	Building direction/Exit /Entrance	2	No		
N	Ditto; Assembly point post in Approved specification	1	No		
	SOFT LANDSCAPING				
	Pemba Grasses				
P	Cut, compact, level provide manure and make good land scaping by providing and plant grasses to patterns; Lawns grass(Pemba grasses)	325	M2		
	Trees Tree planting; including vegetable soil; filling, manure, well watering and maintaining for the 9 months until well established.				
Q	Phoenix Palm Trees	2	No		
R	Ashoka Tree	2	No		
	TOTAL EXTERNAL WORKS FOR POLYCLINIC BUILDING				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	RESIDENTIAL BUILDING				
	ELEMENT NO.1- LANDSCAPING				
	HARD LANDSCAPING				
	Earthworks				
	Site Clearance				
A	Clear site vegetation; bushes, curb, undergrowth and general debris; grubbing up roots; filling in voids left by removal of roots with selected imported fill material	551	m2		
	Excavation of top soil				
B	Excavate to remove vegetable soil; average 150mm thick deep and dispose materials away from site to a tip to be approved by the Engineer	551	m2		
	Cut and fill				
C	Cut the over site to reduce levels, level and compact, over 300mm deep	165	m3		
	WALK WAYS/PARKING				
	Precast Interlocking Pavers Block;				
D	200X100X80mm thick; butt joints straight both ways; to falls or cross falls not exceeding 15 degrees from the horizontal; on blinded gravel bed (m/s); Paving blocks to be not less that 30N/mm2	423	m2		
	Damp proof Membrane				
E	500 gauge Polythene sheet laying on blinded hardcore with 150mm sides and end laps	423	m2		
	Pure Sand blinding				
F	To open excavations; 50mm thick well graded and compacted	423	m2		
	Subgrade Filling				
G	Provide, place and compact approved 150 mm granular material (G15) layer with minimal CBR=25, Compacted to minimum 95% of (of maximum Dry Density) heavy compaction to layers not exceeding 300mm	423	m2		
	PRECAST CONCRETE; MIX (1:2:4); 450MM LONG; BEDDING, JOINTING AND POINTING IN CEMENT MORTAR(1:3)				
	Kerbs; haunching with plain in-situ concrete mix in-situ concrete mix (1:2:4) second side; formwork, excavation work; backfilling and disposal of surplus spoil by spreading over site;including hot poured rubber bitumen between kerb and haunching				
H	600 X 250mm high	106	m		
	DRAINAGE				
	Storm Water Channel				
J	Costruct a box storm water channel, 600 mm wide and 850 mm minimum depth, comprising of 150 mm thick wall and bases in reinforced concrete grade 25, with T8 bars at 200 mm centres and 50 mm blinding in plain concrete grade 15; closed with 650 x 650 x 50mm thick precast concrete cover with A252 mesh; including all excavations, backfilling, disposal and formwork (All per engineers details and specifications)		item		
	PARKING FACILITY				
K	Allow for putting markings on parking lots; strips to be in yellow and white as per Highway codes; 100mm girth strips	15	m		
	Allow for fabrication and erection of mild steel post; sizes W 220 x D 390mm welded on 30 x 30 x 2.5 RHS; fixed concrete footing sizes 125 x 125 x 200mm grade 20 plain; steelworks primed in red oxide and finished in 2 coast of gloss oil paint; including naming the posts				
L	Parking reservations	1	No		
M	Building direction/Exit /Entrance	1	No		
N	Ditto; Assembly point post in Approved specification	1	No		
	SOFT LANDSCAPING				
	Pemba Grasses				
P	Cut, compact, level provide manure and make good land scaping by providing and plant grasses to patterns; Lawns grass(Pemba grasses)	128	M2		
	Trees Tree planting; including vegetable soil; filling, manure, well watering and maintaining for the 9 months until well established.				
Q	Phoenix Palm Trees	2	No		
R	Ashoka Tree	2	No		
	TOTAL EXTERNAL WORKS FOR RESIDENTIAL BUILDING				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 2- FENCING				
	Excavation				
A	Excavate foundation trenches starting from stripped level not exceeding 1.5m deep;	78	m3		
B	Ditto; For Pit to received Columns bases	30	m3		
C	Extra over all kinds of excavations irrespective of depth for Breaking up rock	1	m3		
	DISPOSAL OF EXCAVATED MATERIALS				
D	Load and cart away surplus material from excavations and/or stock piles on site for future use as directed by the Architect	108	m3		
	Fillings				
	Backfilling Imported material around foundations				
E	Approved granular fill materials G15 compacted 95% MOD AASHTO in layers not exceeding 150mm thick	76	m3		
	Risk of collapse of excavations				
	Planking and strutting				
F	Allow for maintaining and supporting sides of excavations by provision of planking and strutting and for keeping the same free from fallen materials	1	Item		
	Keeping excavations free of water				
G	Allow for keeping all excavations free of water (except spring or running water) and mud by pumping, baling or other approved means	1	Item		
H	Allow Sum for keeping all excavations free from Spring or running water by pumping, baling or other approved means.	1	Item		
	CONCRETE WORK				
	Plain in-situ concrete in accordance with BS 8110 - 1997				
	Normal; mix Grade 15 at 28 days - 19mm aggregate vibrated strength 15N/mm2 at 28 days				
J	50mm thick Blinding	68	m2		
	Reinforced in-situ concrete in accordance with BS 8810-1997				
	Normal; mix Grade 25 at 28 days-19mm aggregate vibrated strength 30N/mm2 at 28 days				
K	Foundations	68	m3		
L	Column	9	m3		
M	Column bases	26	m3		
N	Ground beam	30	m3		
	REINFORCEMENT				
	Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers; High tensile steel bar reinforcement to B.S. 4661: Grade 460				
	In any location				
P	Various Sizes	10,957	Kg		
	FORMWORK				
	Sawn formwork to:-				
Q	Vertical Sides Foundation	196	m2		
R	Vertical Sides Ground beam	257	m2		
S	Vertical Sides column bases	117	m2		
T	Vertical Sides column	116	m2		
	To Collection				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	DAMP PROOFING				
	Polythene; 500 gauge; in two layers; 150 mm laps Horizontal				
A	over 300 mm wide	428	m		
	WALLING				
	Blockwork				
	Solid concrete block walling with minimum crushing strength of 7Mpa bedded and jointed in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
B	230 mm thick Walls	385	m2		
	PLINTH FINISHES				
	Render; cement and sand (1:4); wood floated; external 15mm one coat work; to concrete or blockwork base; generally to				
C	plinth walls	171	m2		
	Three coats of weather guard paint				
D	Skimming using white cement; prepare and apply three coats of weatherguard paint to rendered plinth wall externally.	171	m2		
	SUPERSTRUCTURE				
	BLOCK WORK				
	Solid concrete block walling with minimum crushing strength of 7Mpa bedded and jointed in cement and sand mortar class 1 in accordance to BS EN 459-1, including 250 x38 x 2mm thick wall ties at 425mm centres where wall meet concrete column or wall				
E	150 mm thick	512	m2		
	Louvered concrete blocks of minimum crushing strength of 5Mpa bedded and jointed with class 11 mortar in accordance to BS EN 459-1 including 250x38x2mm wall ties at 400 c /c where wall meet concrete column or wall				
F	230 mm thick	385	m2		
	Reinforced in-situ concrete in accordance with BS 8810-1997				
	Normal; mix Grade 25 at 28 days-19mm aggregate vibrated strength 30N/mm2 at 28 days				
G	Column	24	m3		
	REINFORCEMENT				
	Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers; High tensile steel bar reinforcement to B.S. 4661: Grade 460				
	In any location				
H	Various Sizes	2,880	Kg		
	FORMWORK				
	Sawn formwork to:-				
J	Vertical Sides columns	324	m2		
	PRE CAST CONCRETE				
	Pre-cast concrete units finished fair on all exposed faces including hoisting into positions and bedding, jointing and pointing as necessary in cement mortar (1:7)				
	Grade 30 (nominal mix 1:1:2; 30 N/mm2 at 28 days)				
K	380 x 100mm copping spayed weathered and check throated	428	m		
	To Collection				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
A	Ditto; Column Copping ; Sizes 350mm x 350mm with Y8	108	No		
	PLASTERING Plaster; 12 mm first coat of cement and sand (1:5); 3 mm second coat of cement lime putty (1:5); steel trowelled; internal 15mm two coat work; to blockwork base; generally to				
B	walls; Internally	897	m2		
C	walls; Externally	897	m2		
	PAINTINGS Prepare surface and apply three coats of weather guard paint Wood floated rendered surfaces; external & internal				
D	Walls, over 300 mm wide	1,794	m2		
	EXPANSION JOINT				
E	Filling expansion joints with Styrofoam before sealant application; sizes 25mm thick x 230mm wide	90	m		
F	Sealant Sikaflex-11 FC to vertical and horizontal joints; to Expansion joints ; 25mm thick x 25mm wide , groove	90	m		
	To Collection				
	COLLECTION Page 7/10 Page 7/11 Page 7/12				
	TOTAL CARRIED TO SUMMARY OF EXTERNAL WORKS				

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	SUMMARY - EXTERNAL WORK				
A	CLASSROOM & ADMINISTRATION BLOCK				
B	MULTIFUNCTIONAL DINING HALL				
C	HOSTEL/DOMITORY BUILDINGS				
D	POLYCLINIC BUILDING				
E	RESIDENTIAL BUILDING				
F	FENCING				
	TOTAL EXTERNAL WORKS -CARRIED TO G.S				

SERVICE WORKS

ELECTICAL INSTALLATIONS

PROPOSED MULTISERVICE PROJECT TO BE BUILT AT KIJITONYAMA, DAR ES SALAAM
ELECTRICAL WORKS BILL OF QUANTITIES

Item	Descriptions	Qty	Unit	Rate (TZS)	Total (TZS)
	1. PRELIMINARIES				
A	Allow for preparation of "As Built Drawings" (A2 paper)	3	Sets		
B	Allow producing operational and maintenance manuals	3	Sets		
C	Allow for maintenance during deffect liabilty period	1	item		
D	Allow for training to users after installations	1	item		
E	Allow for mobilzation to site	1	item		
F	Allow for demolization from site	1	item		
	TOTAL COLLECTION				

Item	Descriptions	Qty	Unit	Rate (TZS)	Total (TZS)
	2. CLASSROOMS BUILDING				
	CABLES; As Euro cables or equal approved FINAL SUB-CIRCUITS AND AUXILIARY INSTALLATIONS Supply & install Cable from Main panel to LVC				
A	95mm²; 4 Core EXLPE/SWA/PVC/Cu to LVC	120	m		
	Cables from LV panel LVC to distribution boards & switchgears				
B	16mm²; 4 Core EXLPE/SWA/PVC/Cu to DBA	15	m		
C	10mm²; 4 Core EXLPE/SWA/PVC/Cu to DBG	15	m		
D	10mm²; 4 Core EXLPE/SWA/PVC/Cu to DBF	50	m		
E	16mm²; 2 Core EXLPE/SWA/PVC/Cu to DBS	15	m		
F	16mm²; 2core Flexible copper cable from isolator to UPS and from UPS to distribution board DBS	18	m		
G	6mm²; 2 Core EXLPE/SWA/PVC/Cu to DBS1	50	m		
H	70mm²; 1 Core PVC/Cu green/yellow earth cable	120	m		
I	10mm²; 1 Core PVC/Cu green/yellow earth cable	45	m		
J	6mm²; 1 Core PVC/Cu green/yellow earth cable	65	m		
K	4mm²; 1 Core PVC/Cu green/yellow earth cable	50	m		
	TRUNKING, CONDUITS AND TRAYS Trunking and fitting; fixing with Screws ; Mashall turflex brand Conduits; Africab make. Supply & install				
L	170x50mm PVC 3 compartment trunking complete with all necessary fittings eg. corners, covers etc	15	m		
M	100x50mm PVC trunking complete with all necessary fittings eg. corners, covers etc	25	m		
N	50mm diameter UPVC conduits with all installation accessories	30	m		
O	32mm diameter UPVC conduits with all installation accessories	400	m		
P	50mm diameter steel flexible conduits with all installation accessories	50	m		
Q	200x50mm perforated cable tray complete with all necessary fittings	30	m		
R	200x50mm meshed cable tray complete with all necessary fittings	5	m		
S	Mult outlets floor pedestal with 2nos twin sockets outlets & RJ45 outlet all other installation accessories	34	Nr		
T	Table top Mult outlets with 2nos twin sockets outlets, HDMI outle, RJ45 outlet & USB outlet with all other installation accessories	1	Nr		
	Page 1				

	Supply and fix the following Control Gear to backgrounds requiring plugging				
	Distribution Boards as Tronic or equal approved ; miniature circuit breakers or clip in HRC rewireable fuses, steel enclosure				
A	6ways ; TPN 200Amp rating ; intergral with 200 Amp TPN MCCB 40kA SPD, Voltmeter and Ammeter indicators, Phase indicators - **Classrooms LV Panel LVC**	1	Nr		
B	8 ways ; TPN 63Amp rating ; intergral with 63/0.3Amp TPN RCD 25kA SPD - Distribution board DBG	1	Nr		
C	8 ways ; TPN 100Amp rating ; intergral with 100/0.3Amp TPN RCD 25kA SPD - Distribution board DBA	1	Nr		
D	10 ways ; SPN 100Amp rating ; intergral with 100/0.3 Amp SPN RCD, 25kA SPD - DBS	1	Nr		
E	8 ways ; SPN 63Amp rating ; intergral with 63/0.3 Amp SPN RCD, 10kA SPD - DBS1	1	Nr		
F	8 ways ; TPN 63Amp rating ; intergral with 63/0.3Amp TPN RCD 25kA SPD - Distribution board DBF	1	Nr		
	FINAL SUB - CIRCUITS AND AUXILLIARY INSTALLATIONS				
	Supply & Install to accessories and equipment ; Cables as Euro Cables; 20mm dia Conduits as Africab, Boxes as Tronics				
	3 x 1core x 1.5mm² copper cable, boxes and upvc conduit; bends etc,				
G	lighting circuits ; light points ; in 303Nr.	303	Nr		
H	lighting switch circuits ; one gang one way points; in 36Nr.	36	Nr		
I	lighting switch circuits ; two gang one way points; in 8Nr.	8	Nr		
J	lighting switch circuits ; one gang two way points; in 10Nr.	10	Nr		
K	lighting switch circuits ; two gang two way points; in 2Nr.	2	Nr		
L	lighting switch circuits ; three gang one way points; in 3Nr.	3	Nr		
	3 x 1 core x 2.5mm^2 cable, boxes and upvc conduit; bends etc,				
M	Raw power circuits ; socket outlet points in 45Nr	45	Nr		
N	Clean power circuits; socket outlet points in 43Nr	43	Nr		
O	circuits to DP switch points ; Fire control panel ; in 1 Nr	1	Nr		
P	circuits to DP switch points ; air conditioning ; in 18Nr	18	Nr		
Q	circuits to DP switch points, hand drier ; in 10Nr. points	10	Nr		
R	Circuits to industrial sockets ; in 2 Nr. points	2	Nr		
	3 x 1 core x 4mm^2 cable, boxes and upvc conduit; bends etc,				
S	Cooker control circuits ; outlet points in 1Nr	1	Nr		

	Supply&Install to fire detection accessories and equipment ;				
	conduits for 3 x 2.5mm^2 "Firetuf " cable or similar approved cable heavy duty upvc conduit ; bends and draw wire etc,				
A	circuits to fire alarm smoke detectors ; in 35Nr	35	Nr		
B	circuits to call points ; in 6Nr. Points	6	Nr		
C	circuits to heat detectors ; in 1 Nr. points	1	Nr		
D	circuits to sounder Alarm ; in 5 Nr. points	5	Nr		
E	circuits to Fire Alarm Panel ; in 1 Nr. points	1	Nr		
	Supply & Install for Data, TV and security surveillance accessories and equipment				
	Upvc conduit, boxes and draw wire for specialists ; bends etc,				
F	circuits for TV outlets ; in 1Nr points	1	Nr		
H	circuits for CCTV by others ; in 15Nr points	15	Nr		
	ACCESSORIES; Supply and install				
	Switches ; Tronics Make				
I	10 amp : one gang ; one way white in colour	36	Nr		
J	10 amp : two gang ; one way white in colour	8	Nr		
K	10 amp : three gang ; one way white in colour	3	Nr		
L	10 amp : one gang ; two way white in colour	10	Nr		
M	10 amp : two gang ; two way white in colour	2	Nr		
	Switch sockets outlets; Tronics make				
N	Twin 13A switch socket outlets, white in colour	45	Nr		
O	Twin 13A switch socket outlets, red in colour	43	Nr		
P	16amp Industrial sockets	2	Nr		
Q	16Amp Industrial sockets plug c/w 3m legth cable	2	Nr		
R	45Amp cooker control outlet	1	Nr		
	Double pole switches ; Tronic make				
S	20 amp ; White in color with red neon; marked FAP	1	Nr		
T	20 amp ; White in color with red neon; marked Hand Drier	10	Nr		
U	20 amp ; White in color with red neon; marked AC	18	Nr		
	Isolating switch fuses rewireable carriers; Tronic type				
V	100amp ; IP65 Single phase and neutral isolator for UPS	1	Nr		
	Contactors controls and time clocks				
W	Masterseal TP 30 amp photo electric switch and contactors	1	Nr		

	LIGHT FITTINGS				
	Supply and install the following				
	Lights as per Tronic Or Tropical Catalogues				
A	4feet LED surface mounted linear flourescent fittings as, c/w diffuser complete with all accessories - Type T	40	Nr		
B	Recessed LED downlights as Tronic lighting 260mm diameter, 4000K, with diffuser and all accessories - Type H	26	Nr		
C	Ceiling mounted one sided emergency exit as lighting direct complete with lamps, chains , 3 legends, 3hrs emergency battery pack and all accessories - Type EXIT 1	19	Nr		
D	IP44, Water proof Recessed LED downlights, 180mm diameter - Type X	46	Nr		
E	IP22 4feet LED surface mounted linear flourescent fittings complete with all accessories - Type L	112	Nr		
F	Surface mounted LED downlights as complete with energy server lamps, diffusser and all other accessories - TYPE D	8	Nr		
G	Outdoor IP65 LED surface mounted downLight complete with diffusser and all accessories - Type E	35	Nr		
H	Outdoor LED IP65 wall mouted Light complete with difusser and all accessories - Type G	17	Nr		
	UNINTERUPTED POWER SUPPLY (UPS)				
	Supply and install AS per EATON/APC/ABB/Gamatronic or Triplite	1	Nr		
I	Stand alone modular 12kVA Single phase in Single phase out, online double conversion, UPS with modules, with 30 minutes standby time, 230V, 50Hz; inclusive of batterries and all other accessories				
	TESTING AND COMMISSIONING				
J	Provide for testing and commissioning the foregoing Installations as per IEE test forms requirements and in accordance with the rules regulations and requirements described in the Specifications. Submit the test results in well documented files in 3 copies	1	Item		
	EARTH PROTECTION SYSTEM				
K	Provide all necessary earth high voltage conductivity electrodes with drive head assemblies and earthing clamps with link to Ligthning air terminal &1cx70mm^2 PVC Yellow/Green for normal power and separate earth 1cx6mm2 PVC Yellow/Green for clean power supply Allow pure electrode to attain 0.5 ohms. Contruct earth pit manhole and the pit to be labelled	1	Item		
	Page 4				

	COLLECTIONS Page 1 Page 2 Page 3 Page 4				
	TOTAL TOTAL COLLECTION				

Item	Descriptions	Qty	Unit	Rate (TZS)	Total (TZS)
	4. MULTIFUNCTIONAL HALL				
	CABLES; As Euro cables or equal approved				
	FINAL SUB-CIRCUITS AND AUXILIARY INSTALLATIONS				
	Supply & install				
	Cable from Main panel to DBM				
A	16mm²; 4 Core EXLPE/SWA/PVC/Cu to DDB	55	m		
B	10mm²; 1 Core PVC/Cu green/yellow earth cable	55	m		
	TRUNKING, CONDUITS AND TRAYS				
	Trunking and fitting; fixing with Screws ; Mashall turflex brand				
	Conduits; Africab make. Supply & install				
C	170x50mm PVC 3 compartment trunking complete with all necessary fittings eg. corners, covers etc	10	m		
D	100x50mm PVC trunking complete with all necessary fittings eg. corners, covers etc	10	m		
E	50mm diameter UPVC conduits with all installation accessories	20	m		
F	32mm diameter UPVC conduits with all installation accessories	25	m		
G	200x50mm perforated cable tray complete with all necessary fittings	10	m		
	Supply and fix the following Control Gear to backgrounds requiring plugging				
	Distribution Boards as Tronic or equal approved ; miniature circuit breakers or clip in HRC rewireable fuses, steel enclosure				
H	8 ways ; TPN 100Amp rating ; intergral with 100/0.3Amp TPN RCD 25kA SPD - **Distribution board DBM**	1	Nr		
	FINAL SUB - CIRCUITS AND AUXILLIARY INSTALLATIONS				
	Supply & Install to accessories and equipment ; Cables as Euro Cables; 20mm dia Conduits as Africab, Boxes as Tronics				
	3 x 1core x 1.5mm² copper cable, boxes and upvc conduit; bends etc,				
A	lighting circuits ; light points ; in 141Nr.	141	Nr		
B	lighting switch circuits ; one gang one way points; in 16Nr.	16	Nr		
D	lighting switch circuits ; three gang one way points; in 3Nr.	3	Nr		
	3 x 1 core x 2.5mm² cable, boxes and upvc conduit; bends etc,				
E	Raw power circuits ; socket outlet points in 25Nr	25	Nr		
G	circuits to DP switch points ; Fire control panel ; in 1 Nr	1	Nr		
H	circuits to DP switch points ; air conditioning ; in 1Nr	1	Nr		
I	circuits to DP switch points, hand drier ; in 4Nr. points	4	Nr		
	3 x 1 core x 4mm² cable, boxes and upvc conduit; bends etc,				
J	Cooker control circuits ; outlet points in 2Nr	2	Nr		
	Page 1				

	Supply&Install to fire detection accessories and equipment ;				
	conduits for 3 x 2.5mm^2 "Firetuf " cable or similar approved cable heavy duty upvc conduit ; bends and draw wire etc,				
A	circuits to fire alarm smoke detectors ; in 6Nr	6	Nr		
B	circuits to fire alarm heat detectors ; in 6Nr	6	Nr		
C	circuits to call points ; in 3Nr. Points	3	Nr		
D	circuits to sounder Alarm ; in 2 Nr. points	2	Nr		
E	circuits to Fire Alarm Panel ; in 1 Nr. points	1	Nr		
	Supply & Install for Data, TV and security surveillance accessories and equipment				
	Upvc conduit, boxes and draw wire for specialists ; bends etc,				
F	circuits for TV outlets ; in 2Nr points	2	Nr		
	ACCESSORIES; Supply and install				
	Switches ; Tronic Make				
G	10 amp : one gang ; one way white in colour	16	Nr		
H	10 amp : three gang ; one way white in colour	3	Nr		
	Switch sockets outlets; Tronic make				
I	Twin 13A switch socket outlets, white in colour	25	Nr		
J	45Amp cooker control outlet	2	Nr		
	Double pole switches ; Tronic make				
K	20 amp ; White in color with red neon; marked FAP	1	Nr		
L	20 amp ; White in color with red neon; marked Hand Drier	4	Nr		
M	20 amp ; White in color with red neon; marked AC	1	Nr		
	Contactors controls and time clocks				
N	Masterseal TP 30 amp photo electric switch and contactors	1	Nr		
	LIGHT FITTINGS				
	Supply and install the following				
	Lights as per NVC, Lighting Direct, Opple & Smartsence Catalogues				
O	4feet LED surface mounted linear flourescent fittings as, c/w diffuser complete with all accessories - Type T	2	Nr		
P	Recessed LED downlights as Tronic lighting 260mm diameter, 4000K, with diffuser and all accessories - Type H	96	Nr		
Q	Ceiling mounted one sided emergency exit as lighting direct complete with lamps, chains , 3 legends, 3hrs emergency battery pack and all accessories - Type EXIT 1	3	Nr		
R	IP44, Water proof Recessed LED downlights, 180mm diameter - Type X	12	Nr		
S	IP22 4feet LED surface mounted linear flourescent fittings complete with all accessories - Type L	10	Nr		
T	Outdoor IP65 LED surface mounted downLight complete with diffusser and all accessories - Type E	6	Nr		
	Page 2				

A	Outdoor LED IP65 wall mouted Light complete with difusser and all accessories - Type G	12	Nr		
	TESTING AND COMMISSIONING				
B	Provide for testing and commissioning the foregoing Installations as per IEE test forms requirements and in accordance with the rules regulations and requirements described in the Specifications. Submit the test results in well documented files in 3 copies	1	Item		
	EARTH PROTECTION SYSTEM				
C	Provide all necessary earth high voltage conductivity electrodes with drive head assemblies and &1cx10mm2 PVC Yellow/Green for normal power. Allow pure Cu electrode to attain 0.5 ohms Contruct earth pit manhole and the pit to be labelled	1	Item		

	COLLECTIONS Page 1 Page 2 Page 3				
	TOTAL TOTAL COLLECTION				

Item	Descriptions	Qty	Unit	Rate (TZS)	Total (TZS)
	3. POLYCLINIC				
	CABLES; As Euro cables or equal approved				
	FINAL SUB-CIRCUITS AND AUXILIARY INSTALLATIONS				
	Supply & install				
	Cable from Main panel to LVP				
A	95mm²; 4 Core EXLPE/SWA/PVC/Cu to LVC	195	m		
	Cables from LV panel LVC to distribution boards & switchgears				
B	25mm²; 4 Core EXLPE/SWA/PVC/Cu to DBM	10	m		
C	10mm²; 4 Core EXLPE/SWA/PVC/Cu to DBP	10	m		
D	10mm²; 2 Core EXLPE/SWA/PVC/Cu to DBC	20	m		
E	10mm²; 2core Flexible copper cable from isolator to UPS and from UPS to distribution board DBC	18	m		
F	70mm²; 1 Core PVC/Cu green/yellow earth cable	30	m		
G	16mm²; 1 Core PVC/Cu green/yellow earth cable	10	m		
H	6mm²; 1 Core PVC/Cu green/yellow earth cable	48	m		
	TRUNKING, CONDUITS AND TRAYS				
	Trunking and fitting; fixing with Screws ; Mashall turflex brand				
	Conduits; Africab make. Supply & install				
I	170x50mm PVC 3 compartment trunking complete with all necessary fittings eg. corners, covers etc	15	m		
J	100x50mm PVC trunking complete with all necessary fittings eg. corners, covers etc	25	m		
K	50mm diameter UPVC conduits with all installation accessories	30	m		
L	32mm diameter UPVC conduits with all installation accessories	25	m		
M	200x50mm perforated cable tray complete with all necessary fittings	10	m		
N	200x50mm meshed cable tray complete with all necessary fittings	5	m		
O	Mult outlets floor pedestal with 2nos twin sockets outlets & RJ45 outlet all other installation accessories	1	Nr		
	Supply and fix the following Control Gear to backgrounds requiring plugging				
	Distribution Boards as Tronic or equal approved ; miniature circuit breakers or clip in HRC rewireable fuses, steel enclosure				
P	4ways ; TPN 200Amp rating ; intergral with 200 Amp TPN MCCB 40kA SPD, Voltmeter and Ammeter indicators, Phase indicators - **Classrooms LV Panel LVP**	1	Nr		
Q	6 ways ; TPN 63Amp rating ; intergral with 63/0.3Amp TPN RCD 25kA SPD - Distribution board DBP	1	Nr		
R	8 ways ; TPN 100Amp rating ; intergral with 100/0.3Amp TPN RCD 25kA SPD - Distribution board DBM	1	Nr		
S	8 ways ; SPN 63Amp rating ; intergral with 63/0.3 Amp SPN RCD, 10kA SPD - DBC	1	Nr		
	Page 1				

	FINAL SUB - CIRCUITS AND AUXILLIARY INSTALLATIONS				
	Supply & Install to accessories and equipment ; Cables as Euro Cables; 20mm dia Conduits as Africab, Boxes as Tronics				
	3 x 1core x 1.5mm² copper cable, boxes and upvc conduit; bends etc,				
A	lighting circuits ; light points ; in 84Nr.	84	Nr		
B	lighting switch circuits ; one gang one way points; in 20Nr.	20	Nr		
C	lighting switch circuits ; one gang two way points; in 6Nr.	6	Nr		
D	lighting switch circuits ; three gang one way points; in 3Nr.	3	Nr		
	3 x 1 core x 2.5mm^2 cable, boxes and upvc conduit; bends etc,				
E	Raw power circuits ; socket outlet points in 34Nr	34	Nr		
F	Clean power circuits; socket outlet points in 20Nr	20	Nr		
G	circuits to DP switch points ; Fire control panel ; in 1 Nr	1	Nr		
H	circuits to DP switch points ; air conditioning ; in 18Nr	18	Nr		
I	circuits to DP switch points, hand drier ; in 2Nr. points	2	Nr		
J	Circuits to industrial sockets ; in 1 Nr. points	1	Nr		
	Supply&Install to fire detection accessories and equipment ;				
	conduits for 3 x 2.5mm^2 "Firetuf " cable or similar approved cable heavy duty upvc conduit ; bends and draw wire etc,				
K	circuits to fire alarm smoke detectors ; in 17Nr	17	Nr		
L	circuits to call points ; in 3Nr. Points	3	Nr		
M	circuits to sounder Alarm ; in 2 Nr. points	2	Nr		
N	circuits to Fire Alarm Panel ; in 1 Nr. points	1	Nr		
	Supply & Install for Data, TV and security surveillance accessories and equipment				
	Upvc conduit, boxes and draw wire for specialists ; bends etc,				
O	circuits for TV outlets ; in 1Nr points	1	Nr		
P	circuits for RJ45 outlets ; in 15Nr points	15	Nr		
Q	circuits for CCTV by others ; in 14Nr points	14	Nr		
	ACCESSORIES; Supply and install				
	Switches ; Tronic Make				
R	10 amp : one gang ; one way white in colour	20	Nr		
S	10 amp : three gang ; one way white in colour	3	Nr		
T	10 amp : one gang ; two way white in colour	6	Nr		
	Switch sockets outlets; Tronic make				
U	Twin 13A switch socket outlets, white in colour	34	Nr		
V	Twin 13A switch socket outlets, red in colour	20	Nr		
W	16amp Industrial sockets	1	Nr		
X	16Amp Industrial sockets plug c/w 3m legth cable	1	Nr		
Y	45Amp cooker control outlet	1	Nr		
	Page 2				

	Double pole switches ; Tronic make				
A	20 amp ; White in color with red neon; marked FAP	1	Nr		
B	20 amp ; White in color with red neon; marked Hand Drier	2	Nr		
C	20 amp ; White in color with red neon; marked AC	18	Nr		
	Isolating switch fuses rewireable carriers; Tronic type				
D	63amp ; IP65 Single phase and neutral isolator for UPS	1	Nr		
	Contactors controls and time clocks				
E	Masterseal TP 30 amp photo electric switch and contactors	1	Nr		
	LIGHT FITTINGS				
	Supply and install the following				
	Lights as per Tronic Or Tropical Catalogues				
F	4feet LED surface mounted linear flourescent fittings as, c/w diffuser complete with all accessories - Type T	8	Nr		
G	Recessed LED downlights as Tronic lighting 260mm diameter, 4000K, with diffuser and all accessories - Type H	36	Nr		
H	Ceiling mounted one sided emergency exit as lighting direct complete with lamps, chains , 3 legends, 3hrs emergency battery pack and all accessories - Type EXIT 1	5	Nr		
I	Ceiling mounted two sided emergency exit as lighting direct complete with lamps, chains , 3 legends, 3hrs emergency battery pack and all accessories - Type EXIT 2	1	Nr		
J	IP44, Water proof Recessed LED downlights, 180mm diameter - Type X	8	Nr		
K	IP22 4feet LED surface mounted linear flourescent fittings complete with all accessories - Type L	1	Nr		
L	Outdoor IP65 LED surface mounted downLight complete with diffusser and all accessories - Type E	17	Nr		
M	Outdoor LED IP65 wall mouted Light complete with difusser and all accessories - Type G	8	Nr		
	UNINTERUPTED POWER SUPPLY (UPS)				
	Supply and install AS per EATON/APC/ABB/Gamatronic or Triplite	1	Nr		
N	Stand alone modular 8kVA Single phase in Single phase out, online double conversion, UPS with modules, with 30 minutes standby time, 230V, 50Hz; inclusive of batterries and all other accessories				
	EARTH PROTECTION SYSTEM				
O	Provide all necessary earth high voltage conductivity electrodes with drive head assemblies and earthing clamps with link to Ligthning air terminal &1cx70mm^2 PVC Yellow/Green for normal power and separate earth 1cx6mm2 PVC Yellow/Green for clean power supply Allow pure electrode to attain 0.5 ohms. Contruct earth pit manhole and the pit to be labelled	1	Item		
	TESTING AND COMMISSIONING				
P	Provide for testing and commissioning the foregoing Installations as per IEE test forms requirements and in accordance with the rules regulations and requirements described in the Specifications. Submit the test results in well documented files in 3 copies	1	Item		
	Page 3				

	COLLECTIONS Page 1 Page 2 Page 3				
	TOTAL TOTAL COLLECTION				

Item	Descriptions	Qty	Unit	Rate (TZS)	Total (TZS)
	5. 2 HOSTELS				
	CABLES; As Euro cables or equal approved				
	FINAL SUB-CIRCUITS AND AUXILIARY INSTALLATIONS				
	Supply & install				
	Cable from Main panel to DBH				
A	10mm²; 4 Core EXLPE/SWA/PVC/Cu to DDH	95	m		
B	6mm²; 1 Core PVC/Cu green/yellow earth cable	95	m		
	TRUNKING, CONDUITS AND TRAYS				
	Trunking and fitting; fixing with Screws ; Mashall turflex brand				
	Conduits; Africab make. Supply & install				
C	170x50mm PVC 3 compartment trunking complete with all necessary fittings eg. corners, covers etc	10	m		
D	100x50mm PVC trunking complete with all necessary fittings eg. corners, covers etc	10	m		
E	50mm diameter UPVC conduits with all installation accessories	20	m		
F	32mm diameter UPVC conduits with all installation accessories	25	m		
G	200x50mm perforated cable tray complete with all necessary fittings	10	m		
	Supply and fix the following Control Gear to backgrounds requiring plugging				
	Distribution Boards as Tronic or equal approved ; miniature circuit breakers or clip in HRC rewireable fuses, steel enclosure				
H	6 ways ; TPN 63Amp rating ; intergral with 63/0.3Amp TPN RCD 25kA SPD - **Distribution board DBH**	1	Nr		
	FINAL SUB - CIRCUITS AND AUXILLIARY INSTALLATIONS				
	Supply & Install to accessories and equipment ; Cables as Euro Cables; 20mm dia Conduits as Africab, Boxes as Tronics				
	3 x 1core x 1.5mm² copper cable, boxes and upvc conduit; bends etc,				
I	lighting circuits ; light points ; in 169Nr.	169	Nr		
J	lighting switch circuits ; one gang one way points; in 7Nr.	7	Nr		
K	lighting switch circuits ; one gang two way points; in 2Nr.	2	Nr		
L	lighting switch circuits ; two gang one way points; in 1Nr.	1	Nr		
M	lighting switch circuits ; two gang two way points; in 16Nr.	16	Nr		
	3 x 1 core x 2.5mm² cable, boxes and upvc conduit; bends etc,				
N	Raw power circuits ; socket outlet points in 20Nr	20	Nr		
O	circuits to DP switch points ; Fire control panel ; in 1 Nr	1	Nr		
P	circuits to DP switch points ; air conditioning ; in 2Nr	2	Nr		
	Page 1				

	Supply&Install to fire detection accessories and equipment ;				
	conduits for 3 x 2.5mm^2 "Firetuf " cable or similar approved cable heavy duty upvc conduit ; bends and draw wire etc,				
A	circuits to fire alarm smoke detectors ; in 14Nr	14	Nr		
B	circuits to call points ; in 4Nr. Points	4	Nr		
C	circuits to sounder Alarm ; in 7 Nr. points	7	Nr		
D	circuits to Fire Alarm Panel ; in 1 Nr. points	1	Nr		
	ACCESSORIES; Supply and install				
	Switches ; Tronic Make				
E	10 amp : one gang ; one way white in colour	7	Nr		
F	10 amp : two gang ; one way white in colour	1	Nr		
G	10 amp : one gang ; two way white in colour	2	Nr		
H	10 amp : two gang ; two way white in colour	16	Nr		
	Switch sockets outlets; Tronic make				
I	Twin 13A switch socket outlets, white in colour	20	Nr		
	Double pole switches ; Tronic make				
J	20 amp ; White in color with red neon; marked FAP	1	Nr		
K	20 amp ; White in color with red neon; marked AC	2	Nr		
	Contactors controls and time clocks				
L	Masterseal TP 30 amp photo electric switch and contactors	1	Nr		
	LIGHT FITTINGS				
	Supply and install the following				
	Lights as per Tronic Or Tropical Catalogues				
M	4feet LED surface mounted linear flourescent fittings as, c/w diffuser complete with all accessories - Type T	2	Nr		
N	Recessed LED downlights as Tronic lighting 260mm diameter, 4000K, with diffuser and all accessories - Type H	117	Nr		
O	Ceiling mounted one sided emergency exit as lighting direct complete with lamps, chains , 3 legends, 3hrs emergency battery pack and all accessories - Type EXIT 1	14	Nr		
P	IP44, Water proof Recessed LED downlights, 180mm diameter - Type X	12	Nr		
Q	Outdoor LED IP65 wall mouted Light complete with difusser and all accessories - Type G	22	Nr		
R	Outdoor IP65 LED surface mounted downLight complete with diffusser and all accessories - Type E	2	Nr		

	TESTING AND COMMISSIONING				
A	Provide for testing and commissioning the foregoing Installations as per IEE test forms requirements and in accordance with the rules regulations and requirements described in the Specifications. Submit the test results in well documented files in 3 copies	1	Item		
	EARTH PROTECTION SYSTEM				
B	Provide all necessary earth high voltage conductivity electrodes with drive head assemblies and &1cx6mm2 PVC Yellow/Green for normal power. Allow pure Cu electrode to attain 0.5 ohms Contruct earth pit manhole and the pit to be labelled	1	Item		

	COLLECTIONS Page 1 Page 2 Page 3				
	TOTAL 1 HOSTEL BUILDING TOTAL COLLECTION FOR 2 HOSTEL BUILDINGS				

Item	Descriptions	Qty	Unit	Rate (TZS)	Total (TZS)
	6. RESIDENTIAL				
	CABLES; As Euro cables or equal approved				
	FINAL SUB-CIRCUITS AND AUXILIARY INSTALLATIONS				
	Supply & install				
	Cable from Main panel				
A	10mm²; 4 Core EXLPE/SWA/PVC/Cu to DBR1 & DBR2	340	m		
B	6mm²; 1 Core PVC/Cu green/yellow earth cable	340	m		
	TRUNKING, CONDUITS AND TRAYS				
	Trunking and fitting; fixing with Screws ; Mashall turflex brand				
	Conduits; Africab make. Supply & install				
C	100x50mm PVC trunking complete with all necessary fittings eg. corners, covers etc	20	m		
D	50mm diameter UPVC conduits with all installation accessories	30	m		
E	32mm diameter UPVC conduits with all installation accessories	10	m		
F	200x50mm perforated cable tray complete with all necessary fittings	10	m		
	Supply and fix the following Control Gear to backgrounds requiring plugging				
	Distribution Boards as Tronic or equal approved ; miniature circuit breakers or clip in HRC rewireable fuses, steel enclosure				
G	6 ways ; TPN 63Amp rating ; intergral with 63/0.3Amp TPN RCD 25kA SPD - **Distribution board DBR1 & DBR2**	2	Nr		
	FINAL SUB - CIRCUITS AND AUXILLIARY INSTALLATIONS				
	Supply & Install to accessories and equipment ; Cables as Euro Cables; 20mm dia Conduits as Africab, Boxes as Tronics				
	3 x 1core x 1.5mm² copper cable, boxes and upvc conduit; bends etc,				
H	lighting circuits ; light points ; in 152Nr.	152	Nr		
I	lighting switch circuits ; one gang one way points; in 12Nr.	12	Nr		
J	lighting switch circuits ; two gang one way points; in 4Nr.	4	Nr		
K	lighting switch circuits ; two gang two way points; in 12Nr.	12	Nr		
	3 x 1 core x 2.5mm^2 cable, boxes and upvc conduit; bends etc,				
L	Raw power circuits ; socket outlet points in 34Nr	34	Nr		
M	circuits to DP switch points ; Fire control panel ; in 1 Nr	1	Nr		
N	circuits to DP switch points ; air conditioning ; in 6Nr	6	Nr		
O	circuits to DP switch points ; water heater ; in 4Nr	4	Nr		
	3 x 1 core x 4mm^2 cable, boxes and upvc conduit; bends etc,				
P	Cooker control circuits ; outlet points in 2Nr	2	Nr		

	Supply&Install to fire detection accessories and equipment ;				
	conduits for 3 x 2.5mm^2 "Firetuf " cable or similar approved cable heavy duty upvc conduit ; bends and draw wire etc,				
A	circuits to fire alarm Heat detectors ; in 2Nr	2	Nr		
B	circuits to call points ; in 4Nr. Points	4	Nr		
C	circuits to sounder Alarm ; in 2 Nr. points	2	Nr		
D	circuits to Fire Alarm Panel ; in 1 Nr. points	1	Nr		
	Supply & Install for Data, TV and security surveillance accessories and equipment				
	Upvc conduit, boxes and draw wire for specialists ; bends etc,				
E	circuits for TV outlets ; in 2Nr points	2	Nr		
	ACCESSORIES; Supply and install				
	Switches ; Tronic Make				
F	10 amp : one gang ; one way white in colour	12	Nr		
G	10 amp : two gang ; one way white in colour	4	Nr		
H	10 amp : two gang ; two way white in colour	12	Nr		
	Switch sockets outlets; Tronic make				
I	Twin 13A switch socket outlets, white in colour	30	Nr		
J	Shaver unit outlet	4	Nr		
K	45Amp cooker control outlet	2	Nr		
	Double pole switches ; Tronic make				
L	20 amp ; White in color with red neon; marked FAP	1	Nr		
M	20 amp ; White in color with red neon; marked AC	6	Nr		
N	20 amp ; White in color with red neon; marked water heater	4	Nr		
	LIGHT FITTINGS				
	Supply and install the following				
	Lights as per Tronic Or Tropical Catalogues				
O	Ceiling mounted decorative indoor chandelier lights with all accessories catalogue or equal approved - Type C	2	Nr		
P	Recessed LED downlights as Tronic lighting 260mm diameter, 4000K, with diffuser and all accessories - Type H	38	Nr		
Q	LED surface mounted WHB mirror light complete with all other accessories - TYPE J	4	Nr		
R	IP44, Water proof Recessed LED downlights, 180mm diameter - Type X	4	Nr		
S	Outdoor LED IP65 wall mouted Light complete with difusser and all accessories - Type G	8	Nr		
T	Outdoor IP65 LED surface mounted downLight complete with diffusser and all accessories - Type E	4	Nr		
U	Decorative wall light as EGLO catalogue Imperial 82744 with energy server lamps and all other accessories - TYPE W	4	Nr		
V	Recessed LED downlights as Tronic lighting 115mm diameter, 4000K, with diffuser and all accessories - Type B	4	Nr		
	Page 2				

A	Bed side table light complete with LED bulbs and all other accessories -Type A	8	Nr		
	TESTING AND COMMISSIONING				
B	Provide for testing and commissioning the foregoing Installations as per IEE test forms requirements and in accordance with the rules regulations and requirements described in the Specifications. Submit the test results in well documented files in 3 copies	1	Item		
	EARTH PROTECTION SYSTEM				
C	Provide all necessary earth high voltage conductivity electrodes with drive head assemblies and &1cx6mm2 PVC Yellow/Green for normal power. Allow pure Cu electrode to attain 0.5 ohms Contruct earth pit manhole and the pit to be labelled	1	Item		
	Page 3				

	COLLECTIONS Page 1 Page 2 Page 3				
	TOTAL TOTAL COLLECTION				

Item	Descriptions	Qty	Unit	Rate (TZS)	Total (TZS)
	7. GUARD HUT				
	CABLES; As Euro cables or equal approved Supply & Install				
	FINAL SUB-CIRCUITS AND AUXILIARY INSTALLATIONS				
	Cable from MainLV Panel MPB to distribution boards/switch gears				
A	6mm²; 2 Core EXLPE/SWA/PVC/Cu to DBT	190	m		
B	6mm²; 1 Core PVC/Cu green/yellow earth cable	190	m		
	TRUNKING, CONDUITS AND TRAYS				
	Trunking and fitting; fixing with Screws ; As Marshall tuflex Conduits; Africab make. Supply & install				
C	100x50mm PVC trunking complete with all necessary fittings eg. corners, covers etc	20	m		
D	50mm diameter UPVC conduits with all installation accessories	20	m		
	Supply and fix the following Control Gear to backgrounds requiring plugging				
	Distribution Boards as Tronic or equal approved ; miniature circuit breakers or clip in HRC rewireable fuses , steel enclosure				
E	6 ways ; SPN 63 Amp rating ; intergral with 63/0.3 Amp SPN RCD 10kA SPD - **Distribution board DBT**	1	Nr		
	FINAL SUB - CIRCUITS AND AUXILLIARY INSTALLATIONS				
	Supply & Install to accessories and equipment				
	Cables as Euro Cables; 25mm dia Conduits as Africab, Boxes as Tronics				
	3 x 1core x 1.5mm² copper cable, boxes and upvc conduit; bends etc,				
F	lighting circuits ; light points ; in 6Nr.	6	Nr		
G	lighting switch circuits ; one gang one way points; in 1Nr.	1	Nr		
H	lighting switch circuits ; three gang one way points; in 1Nr.	1	Nr		
	3 x 1 core x 2.5mm² cable, boxes and upvc conduit; bends etc,				
I	Raw power circuits ; socket outlet points in 1Nr	1	Nr		
	ACCESSORIES; Supply and install				
	Switches ; Tronic make				
J	10 amp : three gang ; one way white in colour	1	Nr		
K	10 amp : one gang ; one way white in colour	1	Nr		
	Switch sockets outlets; Tronic type				
L	Twin 13A switch socket outlets, white in colour	1	Nr		

	LIGHT FITTINGS; Supply and install the following **Lights as per Tronic Or Tropical Catalogues**				
A	IP65 wall mounted LED Floodlights, 50Watts, with mounting brackets and all other accessories - TYPE Y	1	Nr		
B	Outdoor LED IP65 wall mouted Light complete with difusser and all accessories - Type G	3	Nr		
C	Recessed LED downlights as Tronic lighting 260mm diameter, 4000K, with diffuser and all accessories - Type H	1	Nr		
D	IP44, Water proof Recessed LED downlights, 180mm diameter - Type X	1	Nr		
	EARTH PROTECTION SYSTEM				
E	Provide all necessary earth high voltage conductivity electrodes with drive head assemblies and &1cx6mm2 PVC Yellow/Green for normal power. Allow pure Cu electrode to attain 0.5 ohms Contruct earth pit manhole and the pit to be labelled	1	Item		
	Page 2				

	COLLECTIONS Page 1 Page 2				
	TOTAL FOR 1 GUARD HOUSE TOTAL COLLECTION FOR 3 GUARD HOUSES				

Item	Descriptions	Qty	Unit	Rate (TZS)	Total (TZS)
	8. SITE PLAN				
	CABLES; As Euro cables or equal approved				
	Supply & Install				
	Cable from Tanesco supply to the the transformer,				
	Cable through trench then on cable tray				
A	50mm²; 3Core /Cu 33kV cable to transformer	60	m		
	Cable from Transformer & Generator to main panel MPB				
B	185mm²; 1 Core EXLPE/SWA/PVC/Cu From Transdormer to MPB	1 360	m		
C	300mm² ; 4core EXLPE/SWA/PVC/Cu cable generator to C/o switch	25	m		
D	240mm²; 1 Core PVC/Cu green/yellow earth cable	110	m		
E	2.5mm²; 3 Core EXLPE/SWA/PVC/Cu to external lights/signages	400	m		
	TRUNKING, CONDUITS AND TRAYS				
	Trunking and fitting; fixing with Screws ; As Marshall tuflex				
	Conduits; Africab make. Supply & install				
F	50mm diameter UPVC conduits with all installation accessories	120	m		
G	100mm diameter UPVC conduits with all installation accessories	850	m		
H	200x50mm Galvanised cable tray complete with all necessary fittings	40	m		
	Supply and fix the following Control Gear to backgrounds requiring plugging				
	Distribution Boards as Tronic or equal approved ;				
	miniature circuit breakers or clip in HRC rewireable fuses , steel enclosure				
I	10ways ; TPN 500Amp rating ; intergral with 500 Amp TPN MCCB 80kA SPD, Voltmeter and Ammeter indicators, Phase indicators	1	Nr		
	Main LV Panel MPB				
	FINAL SUB - CIRCUITS AND AUXILLIARY INSTALLATIONS				
	Supply & Install to accessories and equipment				
	Cables as Euro Cables; 20mm dia Conduits as Africab, Boxes as Tronics				
	3 x 1core x 1.5mm² copper cable, boxes and upvc conduit; bends etc,				
J	lighting circuits ; light points ; in 5Nr.	5	Nr		
	Contactors controls and time clocks				
K	Masterseal TP 30 amp photo electric switch and contactors	3	Nr		
	Page 1				

	LIGHT FITTINGS; Supply and install the following **Lights as per Tronic Or Tropical Catalogues**				
A	IP65, weather proof street light, with 5m steel pole as per **Tronics** come with mounting brackets, 5m steel pole, base and all other accessories - TYPE Z	11	Nr		
B	IP65, weather proof Bolard garden light, 1m Height, as per Tronics, come with mounting brackets, 5m steel pole, base and all other accessories - TYPE Z	8	Nr		
C	IP65 Pole mounted LED Floodlights as per Tropical mounted on 10m steel pole, C/w mounting brackets, 10m steel pole, base and all other accessories - TYPE Y	6	Nr		
	CABLE ROUTE **Excavating trenches in compacted fill to receive the abve bed and sorround; levellling and compaction in layers;disposal of excavated material off site**				
D	450mm wide x average 800mm deep	480	m		
E	Warning tape; detectable identoline warning Tape-electric buried above electric cables at 500m deep from ground level	480	m		
F	600x600mm Electrical cable inspection manholes	14	Nr		
	TRANSFORMER **Supply, install and set to work**				
G	3phase, 33/0.4kV, 50Hz, 315kVA Power transformer as TANELEC or equal aproved	1	Nr		
H	Cable Lugs	32	Nr		
I	LV meter cabinet	1	Nr		
J	33kV Drop out fuse isolators	3	Nr		
K	33kV lightning/surge arrestors	3	Nr		
L	Supply and install all other accessories for transformer connection and the earthing system to make sure the transformer is working properly	1	Nr		
	GENERATOR **Supply and install**				
M	3 Phase, 1500rpm, 415V, 50hz, 250kVA prime generator, weather proof sound proof, exhaust system; control panel , autostart stop; batteries, charging unit with catapillar/Perkins engine or equal approved	1	Nr		
N	500A Automatic change over switch, catapilar	1	Nr		
O	Allow for generator earthing as per IEE standard	1	item		
	TANESCO POWER SUPPLY				
P	Allow for payment to Tanesco for application, installations and commisioning of HT meter with all accessories; HT line extension with all accessories i.e cables, poles, stays etc	1	item		
	Page 2				

	EARTH PROTECTION SYSTEM - MAIN PANEL				
A	Provide all necessary earth high voltage conductivity electrodes with drive head assemblies and &1cx240mm2 PVC Yellow/Green for normal power. Allow pure Cu electrode to attain 0.5 ohms Contruct earth pit manhole and the pit to be labelled	1	Item		
	TESTING AND COMMISSIONING - WHOLE INSTALLATIONS				
B	Provide for testing and commissioning the foregoing Installations as per IEE test form requirements and in accordance with the rules, regulations and requirements described in the specifications. Submit Submit well documented results put in files	1	Item		
	Page 3				

	COLLECTIONS Page 1 Page 2 Page 3				
	TOTAL COLLECTION				

Item	Descriptions	Total (TZS)
	SUMMARY 1. PRELIMINARY 2. CLASSROOMS BUILDING 3. POLYCLINIC 4. MULTIFUNCTIONAL HALL 5. HOSTELS 6. RESIDENTIALS 7. GUARD HUT 8. SITE PLAN	
	TOTAL TOTAL COLLECTION	

STRUCTURED CABLING

Item	Description	Unity	Qty	Rate (TZS)	Amount (TZS)
	1. PRELIMINARIES				
A	Allow for working drawings	item	1		
B	Allow for preparation of "As Built Drawings" (A2 paper)	sets	3		
C	Allow for producing operational and maintenance Manuals	sets	3		
D	Allow for maintenance during defect liability	item	1		
E	Allow for training to users after installations	item	1		
	TOTAL COLLECTION				

Item	Description	Qty	Unit	Rate (TZS)	Amount (TZS)
	2. POLYCLINIC				
	Supply and Install Data Points compromising category 6A 4-pr UTP cable, solid with Low Smoke Zero Halogen (LSZH) outer jacket routed in trunking /sleeves from Server to the outlets (outdoor cables to be used for outdoor environments)				
	Cables to be as Siemon				
A	Circuits to RJ45 for data installation in 15 points	15	Nr		
B	Circuits to RJ45 for voice installation in 15 points	15	Nr		
	EQUIPMENT				
	Supply and fix the following data & voice switches,cabinet,patch panel and voice panel etc				
C	supply and install the router with ADSL card	1	Nr		
D	24 Ethernet 10/100 ports (POE) with 2 10/100/1000TX and 2 Small Form-Factor Pluggable (SFP) uplinks, WS-C2960X-48FPS-L, SMARTNET 8X5XNBD Catalyst 2960-X 24 G, AC Power Cord (South Africa) C13 BS 546 1.8m,Catalyst 2960-X FlexStack Plus Stacking Module, preferable Cisco Catalyst Catalyst 2960-X 24 GigE PoE 740W 4 x 1G SFP LAN Base or better	1	Nr		
E	Category 6A, 24Port patch panel, Complete with real cable manager, ports must be keyable to eliminate accidential disconnection of patch cords as Siemon make	2	Nr		
F	42U floor standing Data cabinet, 1070x600mm in size, c/w cooling fans & brash panels, to host switches, patch panels c/w 2NOS 12 ways 16Amp PDU, cable tidy, lockable meshed door & all other necessary accessories as Giganet	1	Nr		
	ACCESSORIES				
	Supply and install Switches & Cables; As Siemon make				
G	Double Cat 6A RJ45 outlets (BS Standard) complete with faceplates spring loaded shutter, field RJ45 modular and back box) Data and Voice	15	Nr		
	CABLES				
	Supply and install Cables as Siemon make				
H	1m Patch Codes CAT 6A (RJ45-RJ45) blue in colour	15	Nr		
I	1m Patch Codes CAT 6A (RJ45-RJ45) grey in colour	15	Nr		
J	3m UTP Cat 6A drop cables (RJ45-RJ45), grey in colour for data	15	Nr		
K	3m UTP Cat 6A drop cables (RJ45-RJ45), blue in colour for voice	15	Nr		
	Page 1				

	TELEPHONE				
	Supply and install as PANASONIC make				
A	Supply & install PABX hybrid expandable type 24 lines with additional of one card with 8 lines capacity manufactured by PANASONIC	1	Item		
B	PANASONIC Telephone operator console	1	Nr		
C	PANASONIC Telephone hand sets with digital display	1	Nr		
D	PANASONIC Telephone hand sets	11	Nr		
E	Provide sum for application of telephone lines	1	Item		
	TESTING AND COMMISSIONING				
F	Provide for testing and commissioning the foregoing installations in accordance with the rules regulations. Providing Fluke test result page of all points. Parameters to be tested includes Wire map, Cable length, propagation delay, delay skew, insertion loss return loss, NEXT, attenuation etc	1	Item		

	COLLECTION Page 1 Page 2				
	TOTAL TOTAL COLLECTION				

Item	Description	Amount (TZS)
	SUMMARY 1. PRELIMINARY 3. POLYCLINIC	
	TOTAL **TOTAL COLLECTION**	

CCTV INSTALLATION

PRPOSED MULTISERVICES PROJECT AT KIJITONYAMA, DAR ES SALAAM
CCTV BILL OF QUANTITIES

Item	Description	Unity	Qty	Rate (TZS)	Amount (TZS)
	1. PRELIMINARIES				
A	Allow for working drawings	item	1		
B	Allow for preparation of "As Built Drawings" (A2 paper)	sets	3		
C	Allow for producing operational and maintenance Manuals	sets	3		
D	Allow for maintenance during defect liability	item	1		
E	Allow for training to users after installations	item	1		
	TOTAL COLLECTION				

PROPOSED CHURCH OF JESUS CHRIST OF LATTER DAYS OF SAINTS, NJIRO, ARUSHA
CCTV INSTALLATIONS BILL OF QUANTITIES

Item	Description	Unit	Qty	Rate (TZS)	Amount (TZS)
	1. CLASSROOMS BUILDING				
	Supply, install, test and commission the following as per HIK vision, UK IP cctv system :				
A	4MP, Progessive scan Day/Night Network/IP colorVu indoor camera, Fixed focal lens, Resolution 2560 x 1440, IP67, 1/3" Progressive Scan CMOS, Efficient H-265+, shutter time 1/3s to 1/100,000s, Vandal-Proof, 2.8 ~ 4mm @ F1.1, 0.001 lux@ (F1.1, AGC ON), 0 lux with light, 20m IR, 24/7 colour imaging, PoE, 3D DNR, Digital WDR, Pan 0deg to 360deg, tilt 0deg to 75deg, rotate 0deg to 360deg, Dual Stream (with motion sensors to be recorded when human or vehicle motion is detected) - model DS-2CD1347G2-L(UF)	Nr	6		
B	4MP, Progessive scan Day/Night Network/IP colorVu outdoor bullet camera, Fixed focal lens, Resolution 2560 x 1440, IP67, built in microphone, 1/3" Progressive Scan CMOS, Efficient H-265+, shutter time 1/3s to 1/100,000s, Vandal-Proof, 2.8 ~ 4mm @ F1.1, 0.001 lux@ (F1.1, AGC ON), 0 lux with light, 20m IR, 24/7 colour imaging, PoE, 3D DNR, Digital WDR, Pan 0deg to 360deg, tilt 0deg to 90deg, rotate 0deg to 360deg, Dual Stream (with motion sensors to be recorded when human or vehicle motion is detected) - model DS-2CD2047G2-L(UF)	Nr	9		
C	32 Channel NVR. H.265+/H.265/H.264+/H.264 video, Dual-Stream, Multi-channel synchro playback, 16 POE Interphase, up to 16-ch IP camera inputs @4MP, up to 400Mbps incoming bandwith, 400Mbps outgoing bandwith, VGA, HDMI & CVBS output, 3*USB 2.0, RS485, RS232, Gigabit NIC, with alarm I/O and Mobile Surveillance ApplicationFront panel operation, 10/100/1000Mbps Ethernet Interphase, IR remote control and mouse operation, 1.5U case 19" with 10TB Hard Disk for each HDD & CMS Software (with All channel motion sensors to record when there the motion is detected), intergrated with POE - model No. DS-9664NXI-18/S	Nr	1		
D	Category 6A, 24 -Port patch panel, Complete with real cable manager, ports must be keyable to eliminate accidential disconnection of patch cords for data - Siemons make	Nr	1		
E	0.5m Patch Codes CAT 6A (RJ45-RJ45), Siemons make - blue in colour	Nr	15		
F	Cat 6A, POE, 4-pair Unshielded Twisted Pair cable, 24AWG solid bare copper conductor, 350Mhz for Network Video Surveillance - Siemons make	Lm	675		
	Page 1				

PROPOSED CHURCH OF JESUS CHRIST OF LATTER DAYS OF SAINTS, NJIRO, ARUSHA
CCTV INSTALLATIONS BILL OF QUANTITIES

Item	Description	Unit	Qty	Rate (TZS)	Amount (TZS)
A	Test the entire installation for coninuity and commissioning	Sum	1		
B	HIK Vision POE switch, 24 port, 24 x 10/100 + 1 x 10/100 uplink + 2 x 1000M combo port, POE Complient	Nr	1		
C	55" high resolution colour LCD monitor, Samsung	Nr	1		
D	HDMI cables with plugs and all accessories	Lm	120		
E	CAT 6A RJ45 connectors	Nr	4		
F	8TB survilliance hard disk	Nr	2		
G	All other installation Accessories for complete functioning of the system	Sum	1		
	Page 2				

PROPOSED CHURCH OF JESUS CHRIST OF LATTER DAYS OF SAINTS, NJIRO, ARUSHA
CCTV INSTALLATIONS BILL OF QUANTITIES

Item	Description	Unit	Qty	Rate (TZS)	Amount (TZS)
	COLLECTION Page 1 Page 2				
	TOTAL **TOTAL COLLECTION**				

Item	Description	Unit	Qty	Rate (TZS)	Amount (TZS)
	2. POLYCLINIC				
	Supply, install, test and commission the following as per HIK vision, UK IP cctv system :				
A	4MP, Progessive scan Day/Night Network/IP colorVu indoor camera, Fixed focal lens, Resolution 2560 x 1440, IP67, 1/3" Progressive Scan CMOS, Efficient H-265+, shutter time 1/3s to 1/100,000s, Vandal-Proof, 2.8 ~ 4mm @ F1.1, 0.001 lux@ (F1.1, AGC ON), 0 lux with light, 20m IR, 24/7 colour imaging, PoE, 3D DNR, Digital WDR, Pan 0deg to 360deg, tilt 0deg to 75deg, rotate 0deg to 360deg, Dual Stream (with motion sensors to be recorded when human or vehicle motion is detected) - model DS-2CD1347G2-L(UF)	Nr	10		
B	4MP, Progessive scan Day/Night Network/IP colorVu outdoor bullet camera, Fixed focal lens, Resolution 2560 x 1440, IP67, built in microphone, 1/3" Progressive Scan CMOS, Efficient H-265+, shutter time 1/3s to 1/100,000s, Vandal-Proof, 2.8 ~ 4mm @ F1.1, 0.001 lux@ (F1.1, AGC ON), 0 lux with light, 20m IR, 24/7 colour imaging, PoE, 3D DNR, Digital WDR, Pan 0deg to 360deg, tilt 0deg to 90deg, rotate 0deg to 360deg, Dual Stream (with motion sensors to be recorded when human or vehicle motion is detected) - model DS-2CD2047G2-L(UF)	Nr	4		
C	32 Channel NVR. H.265+/H.265/H.264+/H.264 video, Dual-Stream, Multi-channel synchro playback, 16 POE Interphase, up to 16-ch IP camera inputs @4MP, up to 400Mbps incoming bandwith, 400Mbps outgoing bandwith, VGA, HDMI & CVBS output, 3*USB 2.0, RS485, RS232, Gigabit NIC, with alarm I/O and Mobile Surveillance ApplicationFront panel operation, 10/100/1000Mbps Ethernet Interphase, IR remote control and mouse operation, 1.5U case 19" with 10TB Hard Disk for each HDD & CMS Software (with All channel motion sensors to record when there the motion is detected), intergrated with POE - model No. DS-9664NXI-18/S	Nr	1		
D	Category 6A, 24 -Port patch panel, Complete with real cable manager, ports must be keyable to eliminate accidential disconnection of patch cords for data - Siemons make	Nr	1		
E	0.5m Patch Codes CAT 6A (RJ45-RJ45), Siemons make - blue in colour	Nr	14		
F	Cat 6A, POE, 4-pair Unshielded Twisted Pair cable, 24AWG solid bare copper conductor, 350Mhz for Network Video Surveillance - Siemons make	Lm	490		
	Page 1				

A	Test the entire installation for coninuity and commissioning	Sum	1		
B	HIK Vision POE switch, 24 port, 24 x 10/100 + 1 x 10/100 uplink + 2 x 1000M combo port, POE Complient	Nr	1		
C	55" high resolution colour LCD monitor, Samsung	Nr	1		
D	HDMI cables with plugs and all accessories	Lm	90		
E	CAT 6A RJ45 connectors	Nr	4		
F	8TB survilliance hard disk	Nr	2		
G	All other installation Accessories for complete functioning of the system	Sum	1		

	COLLECTION Page 1 Page 2	
	TOTAL **TOTAL COLLECTION**	

Item	Description	Amount (TZS)
	SUMMARY 1. PRELIMINARY 2. CLASSROOMS BUILDING 3. POLYCLINIC	
	TOTAL **TOTAL COLLECTION**	

PLUMBING INSTALLATION

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (TZS)
	SCHEDULE NO.1 - PRELIMINARIES ALL works to be carried out in accordance with Tanzania regulations. The Contractor should visit site before pricing. The Contractor should read all drawings and specifications provided in conjuction with all relevant architectural and structural drawings. The Contractor will require to submit the proof of the catalogue technical specfications that will match with manufacturer equipments. Where trade names of manufacturer's catalogue numbers are mentioned in the Specification, the reference is intended as a guide to the type of article or materials required. Alternate brands of quality or equal and approved quality will be acceptable.				
A	Allow for preparation of 'As built Drawings' (A2 paper, soft & hard copies)	sets	2		
B	Allow for producing operational and maintenance manuals	sets	2		
	TOTAL FOR SCHEDULE NO. 1 - PRELIMINARIES CARRIED TO SUMMARY				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (TZS)
	SCHEDULE NO. 2 - WATER SUPPLY AND DRAINAGE INSTALLATIONS				
	WATER SUPPLY				
A	Allow for water supply system from the authority mains including supply and laying of 50mm diameter HDPE pipe and flow meter into under-ground water tanks including fittings include fittings and accessories excavations, back filling and disposal.	Item	1		
B	Allow for HDPE 40mm diameter inlet pipe from the borehole to underground water tanks, complete with connectors, elbows, reducers and all other fittings and accessories.	Lm	50		
	Borehole Development				
C	Allow for drilling and development of borehole complete with installation of submersible pump and all its components including electrical cabling, HDPE piping, lab water testing and reporting, installation of discharge piping to the elevated tanks, water softeners and all other associated fittings and accessories.	Item	1		
D	Allow for construction of 9m high concrete water tank to accommodate 4 Nos of 3000 liters complete with all plumbing and mechanical provisions.	Nos.	1		
E	Allow for supply and installation of elevated water tanks with capacity 5000 liters, complete with overflow and vent pipes, valves, float switch and hoisted in the position indicated in the drawings complete with plumbing and all mechanical provisions.	Nos	5		
	Water supply piping				
	Green pipe pipes (PP-R, PN-25) **(all diameter is internal)**				
F	100mm dia. Water supply pipe including fittings and accessories (elbows, Tees, connectors, bends etc).	LM	120		
G	75mm dia. Water supply pipe including fittings and accessories	LM	90		
H	65mm dia. Water supply pipe including fittings and accessories	LM	115		
I	50mm dia. Water supply pipe including fittings and accessories	LM	120		
J	40mm diameter	LM	85		
K	32mm diameter	LM	90		
L	25mm diameter	LM	130		
M	Supply and fix 25mm dia. Stop valves with hand wheel, polished by manufacturer. The valves should comply with the specifications.	Nos	15		
O	Ditto but with dia 32mm	Nos	24		
P	Ditto but with dia 40mm	Nos	12		
Q	Ditto but with dia 50mm	Nos	10		
R	Ditto but with dia 65mm	Nos	14		
S	Ditto but with dia 75mm	Nos	14		
T	Ditto but with dia 100mm	Nos	12		
A	Supply and install 1m high galvanized steel stand alone irrigation point with 20mm dia tap outlet complete with chromed water faucets.	Nos.	16		
	TO COLLECTION				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY		
	<u>External Sewerage:</u>				
A	Allow for construction of foul water manholes of internal dimension 600 x 600mm, depth to invert level not exceeding 1000mm complete with air tight heavy duty cast iron frame (recessed trays) and the cover to match with external paving.	Nos.	12		
B	Ditto but Gully trap with dimension 400x400mm	Nos	4		
C	Excavate trench not exceeding 1000mm deep and average width 900mm for laying sewerage pipes not exceeding 150mm diameter from the sanitary fitting or stack pipes to manholes/gully trap including back filling.	LM	60		
	Allow for supply, install and commissioning foul water for external sewerage as follows:				
D	100mm diameter	LM	60		
	COLLECTION				
	Page 1/1				
	Page 2/2				
	TOTAL FOR PLUMBING INSTALLATIONS CARRIED TO SUMMARY				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (TZS)
	CLASSROOM - WATER SUPPLY AND DRAINAGE INSTALLATIONS				
	Water supply piping				
	Green pipe pipes (PP-R, PN-20) (all diameter is internal)				
A	50mm dia. Water supply pipe including fittings and accessories (elbows, Tees, connectors, bends etc).	LM	85		
B	40mm diameter	LM	55		
C	32mm diameter	LM	60		
D	25mm diameter	LM	65		
E	20mm diameter	LM	55		
F	15mm diameter	LM	120		
G	Supply and install 12mm flexible pipe connectors to wash hand basins (WHB), WC'S SH and KS	Nos.	152		
H	Supply and fix 15mm dia. Angle valves with hand wheel, polished by manufacturer. The valves should comply with the specifications.	Nos	90		
I	Supply and fix 15mm dia. Stop valves with hand wheel, polished by manufacturer. The valves should comply with the specifications.	Nos	65		
J	Ditto but with dia 20mm	Nos	60		
K	Ditto but with dia 25mm	Nos	44		
L	Ditto but with dia 32mm	Nos	32		
M	Ditto but with dia 40mm	Nos	8		
N	Ditto but with dia 50mm	Nos	8		
	TO COLLECTION				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY		
	Sewerage Piping				
A	Supply and install 100mm dia. Pipe (**uPVC class B**) for foul/waste water pipes including fittings and standard holder bats fixing to wall or slab requiring plugging inside buiing	LM	56		
B	Ditto but with dia 50mm	LM	25		
C	Ditto but with dia 40mm	LM	85		
D	Ditto but with dia 32mm	LM	190		
E	Allow for elbows, bends connector traps etc to suite the above installation.	Item	1		
F	Supply and install vent pipes (dia 100mm)	LM	45		
	ROOF TOP WATER BOOST PUMP				
	InlineBooster pump				
G	Supply and install roof top inline booster pump set with capacity 3m3/hr at 1.5bar complete overrun protection, auto pneumatic switch and all the necessary accessories.	Nos	2		
H	Allow for elevated tanks interconnected wash-out valves with spout at the last tank for cleaning purposes	Nos	4		
I	Allow for supply and installation of elevated water tanks with capacity 3000 liters, complete with overflow and vent pipes, valves, float switch and hoisted in the position indicated in the drawings complete with plumbing and all mechanical provisions.	Nos	6		
	External Sewerage:				
J	Allow for construction of foul water manholes of internal dimension 600 x 600mm, depth to invert level not exceeding 1000mm complete with air tight heavy duty cast iron frame (recessed trays) and the cover to match with external paving.	Nos.	20		
K	Ditto but Gully trap with dimension 400x400mm	Nos	14		
L	Excavate trench not exceeding 1000mm deep and average width 900mm for laying sewerage pipes not exceeding 150mm diameter from the sanitary fitting or stack pipes to manholes/gully trap including back filling.	LM	130		
	Allow for supply, install and commissioning foul water for external sewerage as follows:				
M	100mm diameter	LM	130		
N	Allow for construction of septic tank to accommodate 100 users complete with suitable invert levels, vents, manholes and covers as per drawings	Nos	1		
O	Allow for construction of soak pit to accommodate 100 users complete with suitable invert levels, vents, manholes and covers as per drawings	Nos	1		
	TO COLLECTION				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY		
	SANITARY APPLIANCES				
	Sanitary Appliances as per specifications and schedule of sanitary fitting as per RAK/CASTEWARE ANY APPROVED ALTERNATIVES				
A	Supply and Install Floor Standing WC type, manufactured by CASTEWARE complete with seat cover , s/p-trap and all other accessories. The colours to be white.	Nos.	25		
B	Supply and Install wash hand basin (WHB) Semi pedestrian type manufactured by CASTEWARE completes with coated chromium trap, granite/mable top and any other associated accessories. The colours to be white	Nos.	25		
C	Supply and Install heavy duty toilet roll holders.	Nos.	25		
D	Supply and Install mirror to be fixed in WHB area complete with associated accessories. To be approved by Engineer/ Architect .	Nos.	25		
E	Supply and install douche spray as per RAK Specifications.	Nos.	25		
F	Supply and install Multiple inlets floor drain complete with heavy plastic duty cover. The colour to be approved on site.	Nos.	32		
G	Supply and install WHB mixer manufactured by RAK complete with all associated accessories.	No.	4		
H	Supply and install urinal bowls with concealed auto flush complete with caped drain port and all other necessary fittings and accessories as per CASTLEWARE	No.	10		
I	Supply and install Disabled WC RH - DOC M complete with traps, seat covers, grab bars, support handles, WHB and mixer foot rest pedals, dotche spray, toilet paper holders and all other fittings and accessories	No.	4		
	TO COLLECTION				
ITEM	DESCRIPTION	UNIT	QTY		

PLUMBING WORKS

	FIRE FIGHTING **Fire fighting equipments as per specifications and schedule of NAFFCO.**				
A	CO_2, 5kg cylinder as manufactured by NAFFCO	Nos.	14		
B	CO_2, 9kg cylinder as manufactured by NAFFCO	Nos.	14		
	COLLECTION				
	Page 1/1 **Page 2/2** **Page 3/3** **Page 4/4**				
	TOTAL FOR PLUMBING INSTALLATIONS CARRIED TO SUMMARY				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (TZS)
	DINNING - WATER SUPPLY AND DRAINAGE INSTALLATIONS				
	Water supply piping				
	Green pipe pipes (PP-R, PN-20)				
	(all diameter is internal)				
A	50mm dia. Water supply pipe including fittings and accessories (elbows, Tees, connectors, bends etc).	LM	55		
B	40mm diameter	LM	40		
C	32mm diameter	LM	40		
D	25mm diameter	LM	50		
E	20mm diameter	LM	44		
F	15mm diameter	LM	90		
G	Supply and install 12mm flexible pipe connectors to wash hand basins (WHB), WC'S SH and KS	Nos.	48		
H	Supply and fix 15mm dia. Angle valves with hand wheel, polished by manufacturer. The valves should comply with the specifications.	Nos	36		
I	Supply and fix 15mm dia. Stop valves with hand wheel, polished by manufacturer. The valves should comply with the specifications.	Nos	32		
J	Ditto but with dia 20mm	Nos	14		
K	Ditto but with dia 25mm	Nos	14		
L	Ditto but with dia 32mm	Nos	16		
M	Ditto but with dia 40mm	Nos	5		
N	Ditto but with dia 50mm	Nos	6		
	TO COLLECTION				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY		
	Sewerage Piping				
A	Supply and install 100mm dia. Pipe (**uPVC class B**) for foul/waste water pipes including fittings and standard holder bats fixing to wall or slab requiring plugging inside buiding	LM	44		
B	Ditto but with dia 50mm	LM	30		
C	Ditto but with dia 40mm	LM	60		
D	Ditto but with dia 32mm	LM	80		
E	Allow for elbows, bends connector traps etc to suite the above installation.	Item	1		
F	Supply and install vent pipes (dia 100mm)	LM	45		
	External Sewerage:				
G	Allow for construction of foul water manholes of internal dimension 600 x 600mm, depth to invert level not exceeding 1000mm complete with air tight heavy duty cast iron frame (recessed trays) and the cover to match with external paving.	Nos.	12		
H	Ditto but Gully trap with dimension 400x400mm	Nos	9		
I	Excavate trench not exceeding 1000mm deep and average width 900mm for laying sewerage pipes not exceeding 150mm diameter from the sanitary fitting or stack pipes to manholes/gully trap including back filling.	LM	45		
J	Allow for supply, install and commissioning foul water for external sewerage as follows:				
K	100mm diameter	LM	45		
L	Allow for construction of septic tank to accommodate 100 users complete with suitable invert levels, vents, manholes and covers as per drawings	Nos	1		
M	Allow for construction of soak pit to accommodate 100 users complete with suitable invert levels, vents, manholes and covers as per drawings	Nos	1		
	TO COLLECTION				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY		
	SANITARY APPLIANCES				
	Sanitary Appliances as per specifications and schedule of sanitary fitting as per RAK/CASTEWARE ANY APPROVED ALTERNATIVES				
A	Supply and Install Floor Standing WC type, manufactured by CASTEWARE complete with seat cover , s/p-trap and all other accessories. The colours to be white.	Nos.	6		
B	Supply and Install wash hand basin (WHB) Semi pedestrian type manufactured by CASTLEWARE completes with coated chromium trap, granite/mable top and any other associated accessories. The colours to be white	Nos.	12		
C	Supply and Install heavy duty toilet roll holders.	Nos.	6		
D	Supply and Install mirror to be fixed in WHB area complete with associated accessories. To be approved by Engineer/ Architect .	Nos.	12		
E	Supply and install douche spray as per RAK Specifications.	Nos.	6		
F	Supply and install Multiple inlets floor drain complete with heavy plastic duty cover. The colour to be approved on site.	Nos.	8		
G	Supply and install WHB mixer manufactured by RAK complete with all associated accessories.	No.	12		
H	Supply and install urinal bowls with concealed auto flush complete with caped drain port and all other necessary fittings and accessories as per CASTLEWARE	No.	2		
I	Supply and install kitchen sink single drain single bowl as per JAGUAR complete with drain port with chained cap and chrome kitchen mixer. Sample to be approved prior to supplying	No.	2		
	TO COLLECTION				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY		
	FIRE FIGHTING				
	Fire fighting equipments as per specifications and schedule of NAFFCO.				
A	CO_2, 5kg cylinder as manufactured by NAFFCO	Nos.	5		
B	CO_2, 9kg cylinder as manufactured by NAFFCO	Nos.	5		
	COLLECTION				
	Page 1/1				
	Page 2/2				
	Page 3/3				
	Page 4/4				
	TOTAL FOR PLUMBING INSTALLATIONS CARRIED TO SUMMARY				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (TZS)
	HOSTEL - WATER SUPPLY AND DRAINAGE INSTALLATIONS				
	Water supply piping				
	Green pipe pipes (PP-R, PN-20) (all diameter is internal)				
A	65mm dia. Water supply pipe including fittings and accessories (elbows, Tees, connectors, bends etc).	LM	60		
B	50mm dia. Water supply pipe including fittings and accessories (elbows, Tees, connectors, bends etc).	LM	65		
C	40mm diameter	LM	80		
D	32mm diameter	LM	60		
E	25mm diameter	LM	55		
F	20mm diameter	LM	35		
G	15mm diameter	LM	80		
H	Supply and install 12mm flexible pipe connectors to wash hand basins (WHB), WC'S SH and KS	Nos.	180		
I	Supply and fix 15mm dia. Angle valves with hand wheel, polished by manufacturer. The valves should comply with the specifications.	Nos	95		
J	Supply and fix 15mm dia. Stop valves with hand wheel, polished by manufacturer. The valves should comply with the specifications.	Nos	80		
K	Ditto but with dia 20mm	Nos	45		
L	Ditto but with dia 25mm	Nos	54		
M	Ditto but with dia 32mm	Nos	24		
N	Ditto but with dia 40mm	Nos	20		
P	Ditto but with dia 50mm	Nos	12		
	TO COLLECTION				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY		
	Sewerage Piping				
A	Supply and install 100mm dia. Pipe (**uPVC class B**) for foul/waste water pipes including fittings and standard holder bats fixing to wall or slab requiring plugging inside buiding	LM	84		
B	Ditto but with dia 50mm	LM	50		
C	Ditto but with dia 40mm	LM	75		
D	Ditto but with dia 32mm	LM	60		
E	Allow for elbows, bends connector traps etc to suite the above installation.	Item	1		
F	Supply and install vent pipes (dia 100mm)	LM	40		
	External Sewerage:				
G	Allow for construction of foul water manholes of internal dimension 600 x 600mm, depth to invert level not exceeding 1000mm complete with air tight heavy duty cast iron frame (recessed trays) and the cover to match with external paving.	Nos.	14		
H	Ditto but Gully trap with dimension 400x400mm	Nos	10		
I	Excavate trench not exceeding 1000mm deep and average width 900mm for laying sewerage pipes not exceeding 150mm diameter from the sanitary fitting or stack pipes to manholes/gully trap including back filling.	LM	40		
J	Allow for supply, install and commissioning foul water for external sewerage as follows:				
K	100mm diameter	LM	40		
L	Allow for construction of septic tank to accommodate 100 users complete with suitable invert levels, vents, manholes and covers as per drawings	Nos	1		
M	Allow for construction of soak pit to accommodate 100 users complete with suitable invert levels, vents, manholes and covers as per drawings	Nos	1		
	TO COLLECTION				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY		
	SANITARY APPLIANCES				
	Sanitary Appliances as per specifications and schedule of sanitary fitting as per RAK/CASTEWARE ANY APPROVED ALTERNATIVES				
A	Supply and Install Floor Standing WC type, manufactured by CASTEWARE complete with seat cover , s/p-trap and all other accessories. The colours to be white.	Nos.	4		
B	Supply and Install wash hand basin (WHB) Semi pedestrian type manufactured by CASTLEWARE completes with coated chromium trap, granite/mable top and any other associated accessories. The colours to be white	Nos.	12		
C	Supply and Install heavy duty toilet roll holders.	Nos.	4		
D	Supply and Install mirror to be fixed in WHB area complete with associated accessories. To be approved by Engineer/ Architect .	Nos.	4		
E	Supply and install douche spray as per RAK Specifications.	Nos.	4		
F	Supply and install Multiple inlets floor drain complete with heavy plastic duty cover. The colour to be approved on site.	Nos.	20		
G	Supply and install WHB mixer manufactured by RAK complete with all associated accessories.	No.	12		
H	Supply and install urinal bowls with concealed auto flush complete with caped drain port and all other necessary fittings and accessories as per CASTLEWARE	No.	6		
I	Supply and install cleaning sink single drain single bowl as per RAK complete with drain port with chained cap and chrome kitchen mixer. Sample to be approved prior to supplying	No.	12		
J	Supply and install Disabled WC RH - DOC M complete with traps, seat covers, grab bars, support handles, WHB and mixer foot rest pedals, dotche spray, toilet paper holders and all other fittings and accessories	No.	2		
K	Supply and install shower set comprises of rigid chromed shower rod, chrome shower head of 200mm diameter.	No.	8		
L	Supply and install shower mixer as per JAGUAR complete with cold and hot connections, adjustable faucets and detachable handshower.	No.	8		
	TO COLLECTION				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY		
	FIRE FIGHTING Fire fighting equipments as per specifications and schedule of NAFFCO.				
A	CO_2, 5kg cylinder as manufactured by NAFFCO	Nos.	4		
B	CO_2, 9kg cylinder as manufactured by NAFFCO	Nos.	4		
	COLLECTION				
	Page 1/1 Page 2/2 Page 3/3 Page 4/4				
	SUB TOTAL FOR ONE BLOCK				
	TOTAL FOR TWO BLOCK				
	TOTAL FOR PLUMBING INSTALLATIONS CARRIED TO SUMMARY				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (TZS)
	POLYCLINIC - WATER SUPPLY AND DRAINAGE INSTALLATIONS				
	Water supply piping				
	Green pipe pipes (PP-R, PN-20)				
	(all diameter is internal)				
A	50mm dia. Water supply pipe including fittings and accessories (elbows, Tees, connectors, bends etc).	LM	50		
B	40mm diameter	LM	45		
C	32mm diameter	LM	40		
D	25mm diameter	LM	80		
E	20mm diameter	LM	55		
F	15mm diameter	LM	90		
G	Supply and install 12mm flexible pipe connectors to wash hand basins (WHB), WC'S SH and KS	Nos.	54		
H	Supply and fix 15mm dia. Angle valves with hand wheel, polished by manufacturer. The valves should comply with the specifications.	Nos	24		
I	Supply and fix 15mm dia. Stop valves with hand wheel, polished by manufacturer. The valves should comply with the specifications.	Nos	21		
J	Ditto but with dia 20mm	Nos	16		
K	Ditto but with dia 25mm	Nos	14		
L	Ditto but with dia 32mm	Nos	12		
M	Ditto but with dia 40mm	Nos	5		
N	Ditto but with dia 50mm	Nos	4		
	TO COLLECTION				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY		
	Sewerage Piping				
A	Supply and install 100mm dia. Pipe (**uPVC class B**) for foul/waste water pipes including fittings and standard holder bats fixing to wall or slab requiring plugging inside builing	LM	74		
B	Ditto but with dia 50mm	LM	35		
C	Ditto but with dia 40mm	LM	56		
D	Ditto but with dia 32mm	LM	85		
E	Allow for elbows, bends connector traps etc to suite the above installation.	Item	1		
F	Supply and install vent pipes (dia 100mm)	LM	45		
	ROOF TOP WATER BOOST PUMP				
	InlineBooster pump				
G	Supply and install roof top inline booster pump set with capacity 3m3/hr at 1.5bar complete overrun protection, auto pneumatic switch and all the necessary accessories.	Nos	2		
H	Allow for elevated tanks interconnected wash-out valves with spout at the last tank for cleaning purposes	Nos	2		
I	Allow for supply and installation of elevated water tanks with capacity 3000 liters, complete with overflow and vent pipes, valves, float switch and hoisted in the position indicated in the drawings complete with plumbing and all mechanical provisions.	Nos	2		
	External Sewerage:				
J	Allow for construction of foul water manholes of internal dimension 600 x 600mm, depth to invert level not exceeding 1000mm complete with air tight heavy duty cast iron frame (recessed trays) and the cover to match with external paving.	Nos.	18		
K	Ditto but Gully trap with dimension 400x400mm	Nos	12		
L	Excavate trench not exceeding 1000mm deep and average width 900mm for laying sewerage pipes not exceeding 150mm diameter from the sanitary fitting or stack pipes to manholes/gully trap including back filling.	LM	60		
	Allow for supply, install and commissioning foul water for external sewerage as follows:				
M	100mm diameter	LM	60		
N	Allow for construction of septic tank to accommodate 100 users complete with suitable invert levels, vents, manholes and covers as per drawings	Nos	1		
O	Allow for construction of soak pit to accommodate 100 users complete with suitable invert levels, vents, manholes and covers as per drawings	Nos	1		
	TO COLLECTION				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY		
	SANITARY APPLIANCES				
	Sanitary Appliances as per specifications and schedule of sanitary fitting as per RAK/CASTEWARE ANY APPROVED ALTERNATIVES				
A	Supply and Install Floor Standing WC type, manufactured by CASTEWARE complete with seat cover , s/p-trap and all other accessories. The colours to be white.	Nos.	3		
B	Supply and Install wash hand basin (WHB) Semi pedestrian type manufactured by CASTLEWARE completes with coated chromium trap, granite/mable top and any other associated accessories. The colours to be white	Nos.	4		
C	Supply and Install heavy duty toilet roll holders.	Nos.	3		
D	Supply and Install mirror to be fixed in WHB area complete with associated accessories. To be approved by Engineer/ Architect .	Nos.	4		
E	Supply and install douche spray as per RAK Specifications.	Nos.	3		
F	Supply and install Multiple inlets floor drain complete with heavy plastic duty cover. The colour to be approved on site.	Nos.	12		
G	Supply and install WHB mixer manufactured by RAK complete with all associated accessories.	No.	4		
H	Supply and install Disabled WC RH - DOC M complete with traps, seat covers, grab bars, support handles, WHB and mixer foot rest pedals, dotche spray, toilet paper holders and all other fittings and accessories	No.	2		
I	Supply and install shower set comprises of rigid chromed shower rod, chrome shower head of 200mm diameter.	No.	2		
J	Supply and install shower mixer as per JAGUAR complete with cold and hot connections, adjustable faucets and detachable handshower.	No.	2		
K	Supply and install Clinical sinks complete with water faucet, chemical resistant bottle trap, drain cap and all other fittings and accessories	No.	10		
	TO COLLECTION				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY		
	FIRE FIGHTING				
	Fire fighting equipments as per specifications and schedule of NAFFCO.				
A	CO_2, 5kg cylinder as manufactured by NAFFCO	Nos.	4		
B	CO_2, 9kg cylinder as manufactured by NAFFCO	Nos.	4		
	COLLECTION				
	Page 1/1				
	Page 2/2				
	Page 3/3				
	Page 4/4				
	TOTAL FOR PLUMBING INSTALLATIONS CARRIED TO SUMMARY				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (TZS)
	RESIDENTIAL HOUSES (2NOS) - WATER SUPPLY AND DRAINAGE INSTALLATIONS				
	Water supply piping				
	Green pipe pipes (PP-R, PN-20)				
	(all diameter is internal)				
A	50mm dia. Water supply pipe including fittings and accessories (elbows, Tees, connectors, bends etc).	LM	45		
B	40mm diameter	LM	40		
C	32mm diameter	LM	30		
D	25mm diameter	LM	60		
E	20mm diameter	LM	60		
F	15mm diameter	LM	75		
G	Supply and install 12mm flexible pipe connectors to wash hand basins (WHB), WC'S SH and KS	Nos.	24		
H	Supply and fix 15mm dia. Angle valves with hand wheel, polished by manufacturer. The valves should comply with the specifications.	Nos	22		
I	Supply and fix 15mm dia. Stop valves with hand wheel, polished by manufacturer. The valves should comply with the specifications.	Nos	14		
J	Ditto but with dia 20mm	Nos	8		
K	Ditto but with dia 25mm	Nos	6		
L	Ditto but with dia 32mm	Nos	6		
M	Ditto but with dia 40mm	Nos	4		
N	Ditto but with dia 50mm	Nos	2		
	TO COLLECTION			**TZS**	

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (TZS)
	<u>Sewerage Piping</u>				
A	Supply and install 100mm dia. Pipe (**uPVC class B**) for foul/waste water pipes including fittings and standard holder bats fixing to wall or slab requiring plugging inside builing	LM	60		
B	Ditto but with dia 50mm	LM	45		
C	Ditto but with dia 40mm	LM	40		
D	Ditto but with dia 32mm	LM	60		
E	Allow for elbows, bends connector traps etc to suite the above installation.	Item	1		
F	Supply and install vent pipes (dia 100mm)	LM	22		
	<u>Rainwater Piping</u> Supply and install rainwater Pipe System (uPVC class B) WHITE pipes (white) including elbow,sockets, TEEs and all other necessary fittings and accessories				
G	100mm diameter	LM	40		
	<u>External Sewerage:</u>				
H	Allow for construction of foul water manholes of internal dimension 600 x 600mm, depth to invert level not exceeding 1000mm complete with air tight heavy duty cast iron frame (recessed trays) and the cover to match with external paving.	Nos.	18		
I	Ditto but Gully trap with dimension 400x400mm	Nos	12		
J	Excavate trench not exceeding 1000mm deep and average width 900mm for laying sewerage pipes not exceeding 150mm diameter from the sanitary fitting or stack pipes to manholes/gully trap including back filling.	LM	60		
	Allow for supply, install and commissioning foul water for external sewerage as follows:				
K	100mm diameter	LM	60		
L	Allow for construction of septic tank to accommodate 25 users complete with suitable invert levels, vents, manholes and covers as per drawings	Nos	1		
M	Allow for construction of soak pit to accommodate 25 users complete with suitable invert levels, vents, manholes and covers as per drawings	Nos	1		
	TO COLLECTION			TZS	

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (TZS)
	SANITARY APPLIANCES				
	Sanitary Appliances as per specifications and schedule of sanitary fitting as per RAK/CASTEWARE ANY APPROVED ALTERNATIVES				
A	Supply and Install Floor Standing WC type, manufactured by CASTEWARE complete with seat cover , s/p-trap and all other accessories. The colours to be white.	Nos.	4		
B	Supply and Install wash hand basin (WHB) Semi pedestrian type manufactured by CASTLEWARE completes with coated chromium trap, granite/mable top and any other associated accessories. The colours to be white	Nos.	4		
C	Supply and Install heavy duty toilet roll holders.	Nos.	4		
D	Supply and Install mirror to be fixed in WHB area complete with associated accessories. To be approved by Engineer/ Architect .	Nos.	4		
E	Supply and install douche spray as per RAK Specifications.	Nos.	4		
F	Supply and install Multiple inlets floor drain complete with heavy plastic duty cover. The colour to be approved on site.	Nos.	10		
G	Supply and install WHB mixer manufactured by RAK complete with all associated accessories.	No.	4		
I	Supply and install shower set comprises of rigid chromed shower rod, chrome shower head of 200mm diameter.	No.	4		
J	Supply and install shower mixer as per JAGUAR complete with cold and hot connections, adjustable faucets and detachable handshower.	No.	4		
L	Supply and install kitchen sink single drain single bowl as per JAGUAR complete with drain port with chained cap and chrome kitchen mixer. Sample to be approved prior to supplying	No.	2		
M	Supply and install 30 liters electric water heater complete with auto thermostat, flexible pipe connectors options, temperature indicator and all other necesssary fittings and accessories as per ARISTON	No.	4		
	TO COLLECTION			TZS	

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (TZS)
	FIRE FIGHTING **Fire fighting equipments as per specifications and schedule of NAFFCO.**				
A	CO_2, 5kg cylinder as manufactured by NAFFCO	Nos.	2		
B	CO_2, 9kg cylinder as manufactured by NAFFCO	Nos.	2		
C	1m long Fire Blanket as per NAFFCO	Nos.	2		
	COLLECTION				
	Page 1/1 **Page 2/2** **Page 3/3** **Page 4/4**				
	TOTAL FOR PLUMBING INSTALLATIONS CARRIED TO SUMMARY				

PLUMBING WORKS

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (TZS)
	SUMMARY				
1	SCHEDULE No. 1 - PRELIMINARIES				
2	SCHEDULE No. 2 - EXTERNAL PLUMBING INSTALLATIONS				
3	SCHEDULE No. 3 - CLASSROOM				
4	SCHEDULE No. 4 -DINNING				
5	SCHEDULE No. 5 - HOSTEL (2 NOS)				
6	SCHEDULE No. 6 - POLYCLINIC				
7	SCHEDULE No. 7 - RESIDENTIAL				
8	TOTAL FOR PLUMBING INSTALLATIONS CARRIED TO MAIN SUMMARY SHEET				

MECHANICAL INSTALLATION

AIR CONDITION INSTALLATIONS BILL OF QUANTITIES

SCHEDULE NO. 1 - PRELIMINARIES

					AMOUNT
ITEM	DESCRIPTION	UNIT	QTY	RATE (Tshs)	(Tshs)
	ALL works to be carried out in accordance with Tanzania regulations The Contractor will require to submit the proof of the catalogue technical spectications that will match with manufacturer euipments. The test should be done before and after installation. The test will be Energy efficient ratio (EER), Power consuptionair flow and other necessary items. Where trade names of manufacturer's catalogue numbers are mentioned in the Specification, the reference is intended as a guide to the type of article or quality or materials required. Alternate brands of equal and approved quality will be acceptable.				
1.1	Allow for "As Built Drawings" (A3 Paper). and manuals submitted to client	Sets	2		
1.2	Allow for "User Manuals" and Maintenance Manuals	Sets	2		
TOTAL FOR SCHEDULE NO. 1 CARRIED TO SUMMARY SHEET					

AIR CONDITION INSTALLATIONS BILL OF QUANTITIES

SCHEDULE NO. 2 - AIRCONDITIONING INSTALLATIONS - CLASSROOMS

					AMOUNT
ITEM	DESCRIPTION	UNIT	QTY	RATE (Tshs)	(Tshs)
	Supply, install, test and commission the split A/C units (INVERTER) Manufactured by Hisense/LG/Samsung or Toshiba. The outdoor units should operate up to 46oC DB temperature. However Other Manufacturer approved equal will be accepted.				
2.1	Single split air conditioners system (Indoor & Outdoor units) Hi-Wall type indoor unit of capacity 24,000 Btu/hr complete with wired remote controller.	Nos	2		
2.2	Ditto but with capacity 18,000 Btu/hr	Nos	1		
	Refrigerant Piping. Supply, install, test and commission copper piping for liquid and vapour refrigerants, run in vertical/horizontal trunk including all joints and connection to indoor and outdoor units insulated with "Armaflex" or similar to be approved and charged with R 410A refrigerant gas.				
2.3	For connecting one indoor A/C unit with one outdoor unit (24,000 Btu/hr cooling), liquid and vapour line	LM	20		
2.4	For connecting one indoor A/C unit with one outdoor unit (18,000 Btu/hr cooling), liquid and vapour line	LM	10		
	Sub total carried forward				

AIR CONDITION INSTALLATIONS BILL OF QUANTITIES

SCHEDULE NO. 2 - AIRCONDITIONING INSTALLATIONS - CLASSROOMS

ITEM	DESCRIPTION	UNIT	QTY	RATE (Tshs)	AMOUNT (Tshs)
	Sub total brought forward				
	Condensate Drainage System Supply, install, test and commision condensate drainage system in PVC pipe in accordance with BS 3505 and 4634. All pipes to be insulated with 10mm rock wool or styropur and provided with vapour barrier and installing at a slope of 1:50 Allow for all joints and necessary fittings.				
2.5	Dia 25 mm	LM	20		
	Split units Wiring				
2.6	Supply and installation of wiring and power connection from Isolators to the Split AC outdoor units mounted on the exterior wall	Nos	3		
	Mounting bracket				
2.7	Allow for MS mounting bracket 10mm thick Galvanized bracket	Nos.	3		
2.8	Supply, install, test and commision ceiling fan with capacity 13860m3/hr, complete with fan regulator and switches	Nos.	36		
TOTAL CARRIED TO SUMMARY SHEET					

AIR CONDITION INSTALLATIONS BILL OF QUANTITIES

SCHEDULE NO. 3 - AIRCONDITIONING INSTALLATIONS - DINNING

					AMOUNT
ITEM	DESCRIPTION	UNIT	QTY	RATE (Tshs)	(Tshs)
3.1	Supply, install, test and commision ceiling fan with capacity 13860m3/hr, complete with fan regulator and switches	Nos.	38		
TOTAL CARRIED TO SUMMARY SHEET					

AIR CONDITION INSTALLATIONS BILL OF QUANTITIES

SCHEDULE NO. 4 - AIRCONDITIONING INSTALLATIONS - HOSTEL

					AMOUNT
ITEM	DESCRIPTION	UNIT	QTY	RATE (Tshs)	(Tshs)
4.1	Supply, install, test and commision ceiling fan with capacity 13860m3/hr, complete with fan regulator and switches	Nos.	22		
TOTAL CARRIED TO SUMMARY SHEET					

AIR CONDITION INSTALLATIONS BILL OF QUANTITIES
SCHEDULE NO. 5 - AIRCONDITIONING INSTALLATIONS - POLYCLINIC

ITEM	DESCRIPTION	UNIT	QTY	RATE (Tshs)	AMOUNT (Tshs)
	Supply, install, test and commission the split A/C units (INVERTER) Manufactured by Hisense/LG/Samsung or Toshiba. The outdoor units should operate up to 46oC DB temperature. However Other Manufacturer approved equal will be accepted.				
5.1	Single split air conditioners system (Indoor & Outdoor units) Hi-Wall type indoor unit of capacity 12,000 Btu/hr complete with wired remote controller.	Nos	3		
5.2	Ditto but with capacity 9,000 Btu/hr	Nos	2		
	Refrigerant Piping. Supply, install, test and commission copper piping for liquid and vapour refrigerants, run in vertical/horizontal trunk including all joints and connection to indoor and outdoor units insulated with "Armaflex" or similar to be approved and charged with R 410A refrigerant gas.				
5.3	For connecting one indoor A/C unit with one outdoor unit (12,000 Btu/hr cooling), liquid and vapour line	LM	36		
5.4	For connecting one indoor A/C unit with one outdoor unit (9,000 Btu/hr cooling), liquid and vapour line	LM	24		
	Sub total carried forward				

AIR CONDITION INSTALLATIONS BILL OF QUANTITIES
SCHEDULE NO. 5 - AIRCONDITIONING INSTALLATIONS - POLYCLINIC

ITEM	DESCRIPTION	UNIT	QTY	RATE (Tshs)	AMOUNT (Tshs)
	Sub total brought forward				
	Condensate Drainage System Supply, install, test and commision condensate drainage system in PVC pipe in accordance with BS 3505 and 4634. All pipes to be insulated with 10mm rock wool or styropur and provided with vapour barrier and installing at a slope of 1:50 Allow for all joints and necessary fittings.				
5.7	Dia 25 mm	LM	40		
	Split units Wiring				
5.8	Supply and installation of wiring and power connection from Isolators to the Split AC outdoor units mounted on the exterior wall	Nos	5		
	Mounting bracket				
5.9	Allow for MS mounting bracket 10mm thick Galvanized bracket	Nos.	5		
	Extraction				
5.10	Supply, install, test and commision wall mounted extract fan with capacity 300m3/hr complete with non return dampers, regulators and switches	Nos.	28		
5.11	Supply, install, test and commision ceiling fan with capacity 13860m3/hr, complete with fan regulator and switches	Nos.	16		
TOTAL CARRIED TO SUMMARY SHEET					

AIR CONDITION INSTALLATIONS BILL OF QUANTITIES

SCHEDULE NO. 6 - AIRCONDITIONING INSTALLATIONS - RESIDENTIAL

					AMOUNT
ITEM	DESCRIPTION	UNIT	QTY	RATE (Tshs)	(Tshs)
6.1	Supply, install, test and commision ceiling fan with capacity 13860m3/hr, complete with fan regulator and switches	Nos.	7		
TOTAL CARRIED TO SUMMARY SHEET					

AIR CONDITION INSTALLATIONS BILL OF QUANTITIES

SUMMARY SHEET

ITEM	DESCRIPTION	AMOUNT (Tshs)
1	Schedule No. 1 - Preliminaries	
2	Schedule No. 2 - Air-conditioning Installations - Classroom	
3	Schedule No. 3 - Air-conditioning Installations - Dinning	
4	Schedule No. 4 - Air-conditioning Installations - Hostel	
5	Schedule No. 5 - Air-conditioning Installations - Polyclinic	
6	Schedule No. 6 - Air-conditioning Installations - Residential	
	Sub-total	
Total for Air Conditioning Installations (excl of VAT)		

FIRE DETECTION INSTALLATION

PROPOSED MULTISERVICES PROJECT TO BE BUILT AT KIJITONYAMA DAR ES SALAAM
FIRE DETECTION SYSTEM BILL OF QUANTITIES

Item	Description	Unity	Qty	Rate (TZS)	Amount (TZS)
	1. PRELIMINARIES Contractor will be required to submit the precise approved certificates from the Equipments Manufacturer of FIRE detection products for authentification.				
A	Allow for working drawings	item	1		
B	Allow for preparation of "As Built Drawings" (A2 paper)	sets	3		
C	Allow for producing operational and maintenance Manuals	sets	3		
D	Allow for maintenance during defect liability	item	1		
E	Allow for training to users after installations	item	1		
	TOTAL COLLECTION				

Item	Description	Unity	Qty	Rate (TZS)	Amount (TZS)
	2. CLASSROOMS BUILDING				
	Supply, install, set to work and test Fire alarms equipment and accessories , AS PER GST				
A	Wireless Stand alone smoke detector, C/w with alarm sounder, battery, brackets, optical sensor & alarm silecing button	Nr	30		
	TOTAL COLLECTION				

Item	Description	Unity	Qty	Rate (TZS)	Amount (TZS)
	3. POLYCLINIC				
	Supply, install, set to work and test Fire alarms equipment and accessories , AS PER GST				
A	Addressable four loop fire detection and alarm control panel	Nr	1		
B	Addressable Optical smoke detector	Nr	17		
C	Addressable Optical heat detector	Nr	1		
D	Addressablel Manual call points('Break Glass)	Nr	3		
E	Addressable Fire alarm sounder with beacon	Nr	2		
F	Fire alarms cabling wired using 2cx1.5mm pirelli fire cable from fire detection panel wired in loop to all detection points, including all installation accessories for all points; in 15Nr points	Nr	23		
	TOTAL COLLECTION				

Item	Description	Unity	Qty	Rate (TZS)	Amount (TZS)
	5. HOSTELS **Supply, install, set to work and test Fire alarms equipment and accessories , AS PER GST**				
A	Wireless Stand alone smoke detector, C/w with alarm sounder, battery, brackets, optical sensor & alarm silecing button	Nr	14		
	TOTAL FOR 1 HOSTEL				
	TOTAL FOR 2 HOSTELS				

Item	Description	Unity	Qty	Rate (TZS)	Amount (TZS)
	4. POLYCLINIC **Supply, install, set to work and test Fire alarms equipment and accessories , AS PER GST**				
A	Wireless Stand alone smoke detector, C/w with alarm sounder, battery, brackets, optical sensor & alarm silecing button	Nr	6		
B	Wireless Stand alone heat detector, C/w with alarm sounder, battery, brackets, optical sensor & alarm silecing button	Nr	6		
	TOTAL COLLECTION				

Item	Description	Unity	Qty	Rate (TZS)	Amount (TZS)
	6. RESIDENTIALS **Supply, install, set to work and test Fire alarms equipment and accessories , AS PER GST**				
A	Wireless Stand alone smoke detector, C/w with alarm sounder, battery, brackets, optical sensor & alarm silecing button	Nr	2		
	TOTAL COLLECTION				

Item	Description	Unity	Qty	Rate (TZS)	Amount (TZS)
	7. GUARD HOUSE **Supply, install, set to work and test Fire alarms equipment and accessories , AS PER GST**				
A	Wireless Stand alone smoke detector, C/w with alarm sounder, battery, brackets, optical sensor & alarm silecing button	Nr	1		
	TOTAL FOR 1 GUARD HOUSE **TOTAL FOR 3 GUARD HOUSES**				

Item	Description	Amount (TZS)
	SUMMARY 1. PRELIMINARY 2. CLASSROOMS BUILDING 3. POLYCLINIC 4. MULTIFUNCTIONAL HALL 5. HOSTELS 6. RESIDENTIAL 7. GUARD HOUSE	
	TOTAL **TOTAL COLLECTION**	

	SUMMARY FOR SERIVICE WORKS		
			TSHS.
A	ELEMENT NUMBER 1 -ELECTRICAL INSTALLATION		
B	ELEMENT NUMBER 2- STRUCTURED CABLING		
C	ELEMENT NUMBER 3 - CCTV INSTALLATION		
D	ELEMENT NUMBER 4 - PLUMBING INSTALLATION		
E	ELEMENT NUMBER 5 - MECHANICAL INSTALLATION		
F	ELEMENT NUMBER 6 - FIRE DETECTION INSTALLATION		
	FIXED TENDER SUM CARRIED TO FORM OF TENDER	TSHS.	

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	BILL NO. 9 - DAYWORKS				
	LABOUR				
	In accordance with the relevant clauses of the Conditions of Contract, the Contractor shall be paid dayworks rates for extra work that cannot properly be measured and valued and the Contractor is to insert in the space provided below the basic rates and cost of labour as described hereunder				
A	Mason	Hrs.	8		
B	Carpenter	Hrs.	8		
C	Joiner	Hrs.	8		
D	Welder	Hrs.	8		
E	Plumber	Hrs.	8		
F	Plasterer	Hrs.	8		
G	Glazier	Hrs.	8		
H	Painter	Hrs.	8		
J	Labourer (Skilled)	Hrs.	8		
K	Labourer (Unskilled)	Hrs.	8		
L	Net basic rate for Labour				
M	To the basic net rate of labour used for work carried out on dayworks, an addition of ..... per cent which is to include for task work and incentive schemes, tools, standing scaffolding, supervision, insurance, transport, profit and overheads	Item	1		
	MATERIALS				
	In accordance with the relevant clauses of the Conditions of Contract, the Contractor shall be paid dayworks rates for extra work that cannot properly be measured and valued and the Contractor is to insert in the space provided below the basic rates and cost of materials as described hereunder				
N	Cement	t	1		
P	Sand (Fine aggregate)	m3	1		
Q	Aggregate (12mm)	m3	1		
R	Aggregate (19mm)	m3	1		
	To Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	Aggregate (37mm)	m3	1		
B	Steel reinforcement (mild steel)	kg	1		
C	Steel reinforcement (high tension)	kg	1		
D	Xypex Concentrate	kg	1		
E	Xypex ADMIX C-1000	kg	1		
F	Sawn timber (podocarpus)	m3	1		
G	Wrought timber (mahogany)	m3	1		
H	Wrought timber (mvule)	m3	1		
J	Paint, gloss	ltr	1		
K	Paint, matt	ltr	1		
L	Paint, emulsion	ltr	1		
M	Paint, linseed oil	ltr	1		
N	Paint, wood preservative	ltr	1		
P	Net basic rate for Labour				
Q	To the basic net rate of materials used for work carried out on dayworks, an addition of ..... per cent which is to include for unloading and storing as necessary, the use of hand plant and machinery etc. available on site, profit and overheads	SUM	1		
	PLANT				
	In accordance with the relevant clauses of the Conditions of Contract, the Contractor shall be paid dayworks rates for extra work that cannot properly be measured and valued and the Contractor is to insert in the space provided below the basic rates and cost of plant as described hereunder				
R	Portable compressor with two breakers or equivalent with 15000mm hose and ancillary equipment	Hrs.	8		
S	Dump truck (1.25T)	Hrs.	8		
T	Lorry, seven ton tipper	Hrs.	8		
V	Concrete mixer (14/10) complete for weight batch mixing	Hrs.	8		
	To Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	50mm Self priming centrifugal pump with hose and ancillary equipment	Hrs.	8		
B	Block making machine	Hrs.	8		
C	Tractor (rubber tyred), 2-wheel drive (40-60 b.h.p.)	Hrs.	8		
D	Wood working machine	Hrs.	8		
	Net basic rate for Plant				
E	To the basic net rate of plant used for work carried out on dayworks, an addition of ..... per cent which is to include for driver and/or attendant, fuel and consumable stores, supervision, insurance, profit and overheads	SUM	1		
	To Collection				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	SUMMARY-DAYWORSK				
	Page 8/1				
	Page 8/2				
	Page 8/3				
	TOTAL TO SUMMARY				

BILL NR. 9 - PRIME COST AND PROVISIONAL SUMS

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	BILL NO. 10 - PRIME COST SUMS AND PROVISIONAL SUMS				
	Bidder should fill in percentages (%) charged for profit and general attendances to Nominated Sub-contractors/suppliers.				
	PROVISIONAL SUMS				
A	Allow Contingency for main works to be spent upon Employer's Approval.	SUM	1		281,000,000.00
B	Allow cost for Construction of Guard House 3nos	SUM	1		45,000,000.00
C	Allow for Fixtures and fittings for domitory buildings (2nos)	SUM	1		80,000,000.00
D	Allow for construction of netball/ football pitch (4nos)	SUM	1		150,000,000.00
E	Allow for construction of entry/exit gates with and including their supporting structures (3nos)	SUM	1		30,000,000.00
	TOTAL CARRIED TO GENERAL SUMMARY				

GENERAL SUMMARY

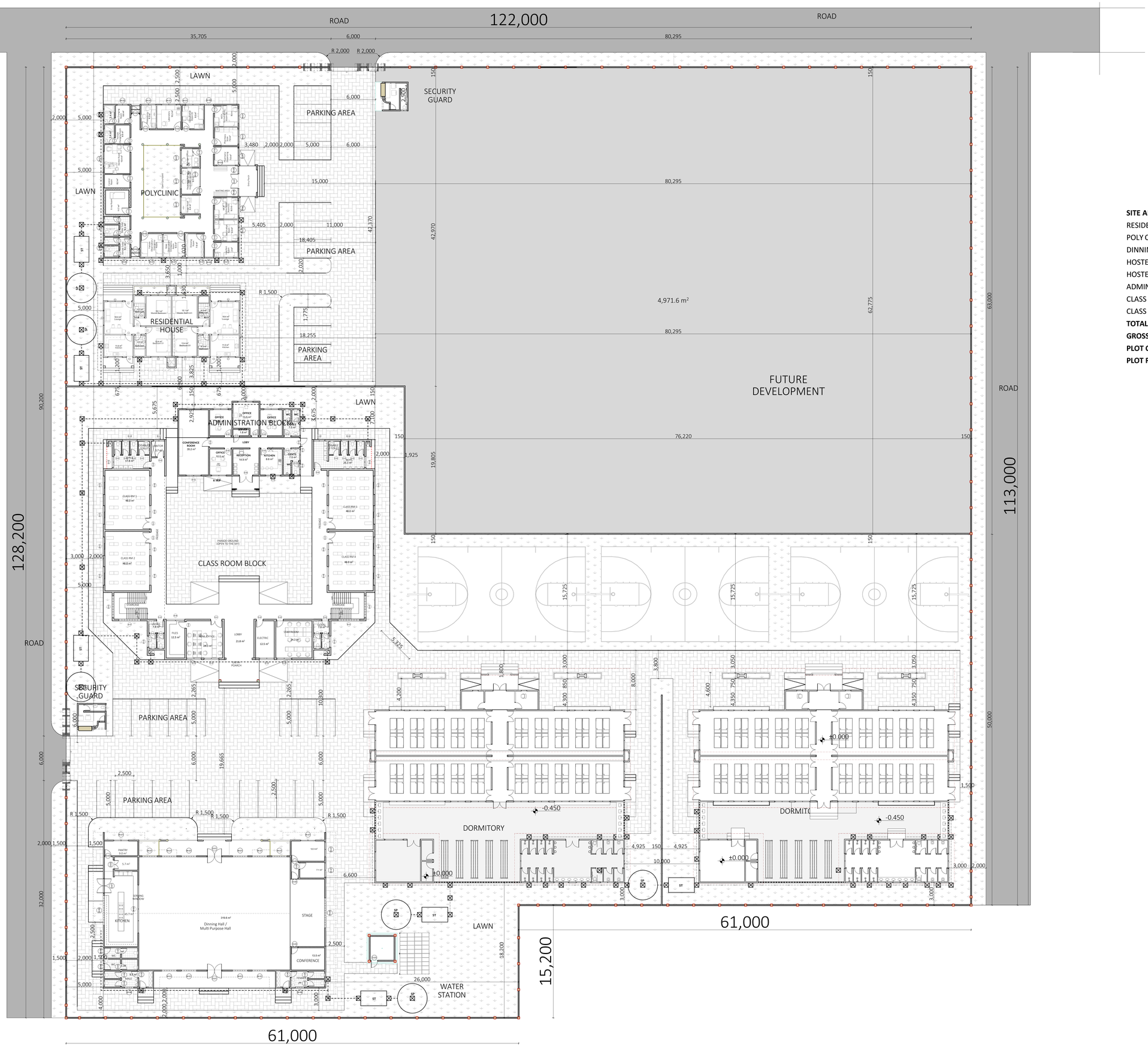
PROPOSED CONSTRUCTION OF THE MULTI SERVICE PROJECT TO BE BUILT ON PLOT....BLOCK .... AT KIJITONYAMA DAR ES SALAAM

			TSHS.
	GENERAL SUMMARY		
A	BILL NR. 1 - PRELIMINARIES		
B	BILL NO. 2 - MULTI FUNCTIONAL DINING		
C	BILL NO. 3 - CLASSROOM & ADMINISTRATION BUILDING		
D	BILL NO. 4 - RESIDENTIAL BUILDING		
E	BILL NO. 5 - POLYCLINIC BUILDING		
F	BILL NO. 6 - DOMITORY BUILDINGS 2NOS		
P	BILL NO. 7 - EXTERNAL WORKS		
P	BILL NO. 8 - SERVICE WORKS		
R	BILL NO. 9 - DAYWORKS		
S	BILL NO. 10 - PRIME COST SUMS AND PROVISIONAL SUMS		
T	**SUB-TOTAL**	TSHS.	
U	**Value Added Tax (VAT)** Add: 18% for Value Added Tax	18%	
V	**FIXED TENDER SUM CARRIED TO FORM OF TENDER**	**TSHS.**	

SIGNED (AUTHORIZED REPRESENTATIVE) _____

ADDRESS _____

DATE _____



SCHEDULE OF AREA

SITE AREA	**14,713.2** m²
RESIDENTIAL HOUSE	178.2 m²
POLY CLINIC	391.0 m²
DINNING HALL	615.5 m²
HOSTEL BLOCK 01	846.1 m²
HOSTEL BLOCK 02	846.1 m²
ADMINISTRATION BLOCK	161.8 m²
CLASS ROOMS BLOCK'S GROUND FLOOR	624.0 m²
CLASS ROOMS BLOCK FIRST FLOOR	583.8 m²
TOTAL BUILT-UP AREA	**3,662.7 m²**
GROSS BUILT-UP AREA	**4,246.5 m²**
PLOT COVERAGE	**25%**
PLOT RATIO	**0.29**

NOTES :

REVISIONS :

No.	Revision/Issue	Date

Architects :

DESIGN ARCHITECTURE ENGINEERING

DXE Associates
Plot No. 17 &18 Haile Selassie Road, Oysterbay
P. O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

Project Title :

PROPOSED CONSTRUCTION OF MULTI-SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Client :

THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O. Box 21121
Dar es salaam

Drawing Type :
SITE PLAN

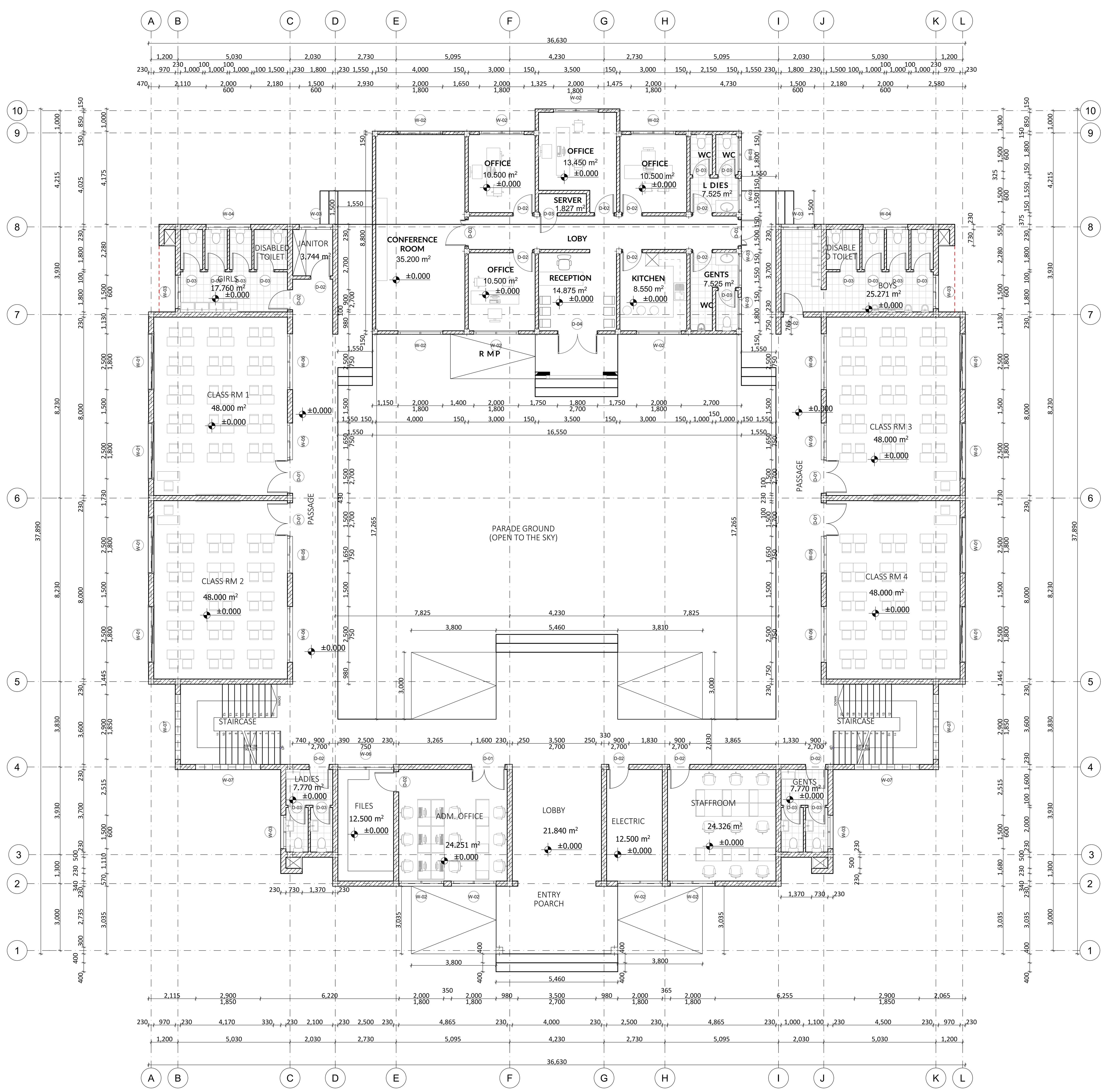
Drawing Title :

SITE PLAN

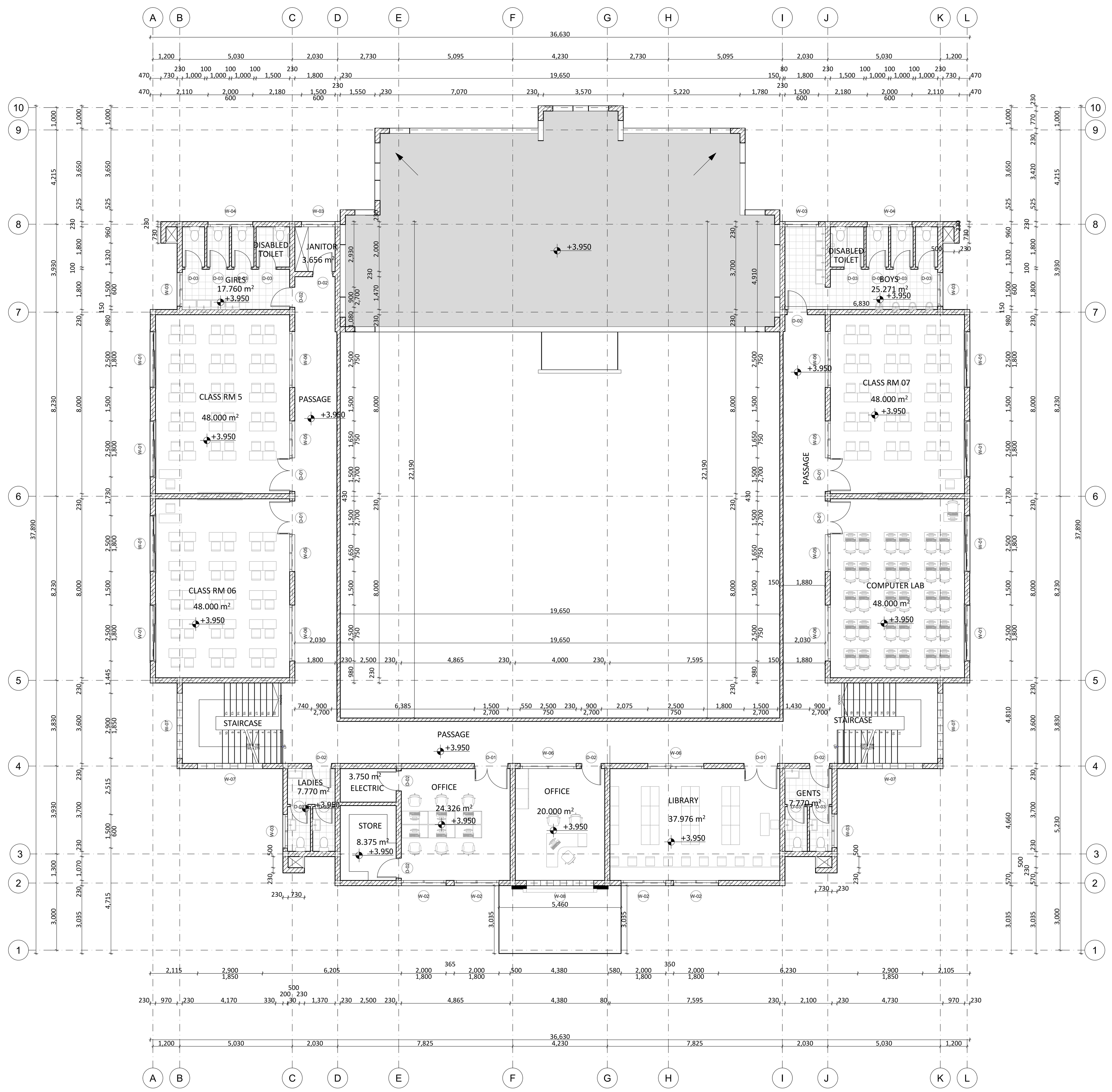
Drawing No:		Scale: 1:175
Drawn By: DM & RR	Checked By: MLK	REV :

Date: Thursday, February 20, 2025

0. SITE PLAN 1:175



01 GROUND FLOOR PLAN 1:100



02 FIRST FLOOR PLAN 1:100

WINDOW SCHEDULE

Element ID	W-01	W-02	W-03	W-04	W-05	W-06	W-07	W-08
Opening name	3-Sash Sliding Window 25	2-Sash Sliding Window 25	2-Sash Sliding Window 25	2-Sash Sliding Window 25	2-Sash Sliding Window 25	2-Sash Sliding Window 25	Glass Block Wall 25	Glass Block Wall 25
Quantity	16	16	17	4	8	11	12	1
W x H Size	2,500×1,800	2,000×1,800	1,500×600	2,000×600	1,650×750	2,500×750	2,900×1,850	3,000×2,700
Sill Height	900	900	2,100	2,100	1,950	1,950	900	0
2D Plan Preview								
3D Front View								
Specifications	Aluminum sliding window Standard profile. Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Aluminum sliding window Standard profile. Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Aluminum sliding window Standard profile. Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Aluminum sliding window Standard profile. Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Aluminum sliding window Standard profile. Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Aluminum sliding window Standard profile. Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Cement louver block window	Cement louver block window

01 1:0.75

DOOR SCHEDULE

Element ID	D-01	D-01	D-02	D-03	D-03	D-04
Opening Name	Double Door Asymmetric 25	Double Door Asymmetric 25	Door 25	Door 25	Door 25	Double Door 25
Quantity	2	11	25	4	24	1
W x H Size	1,200×2,700	1,500×2,700	900×2,700	800×2,700	800×2,100	1,800×2,700
2D symbol						
3D Front View						
Specifications	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system	Glass Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system

02 DOOR SCHEDULE 1:0.75

NOTES :

REVISIONS :

No.	Revision/Issue	Date

Architects :

DXE DESIGN ARCHITECTURE ENGINEERING

DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
P. O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

Project Title :

PROPOSED CONSTRUCTION OF MULTI-SERVICE PROJECT TO BE BUILT AT PLOT NO.............. BLOCK ...., KIJITONYAMA DAR ES SALAAM

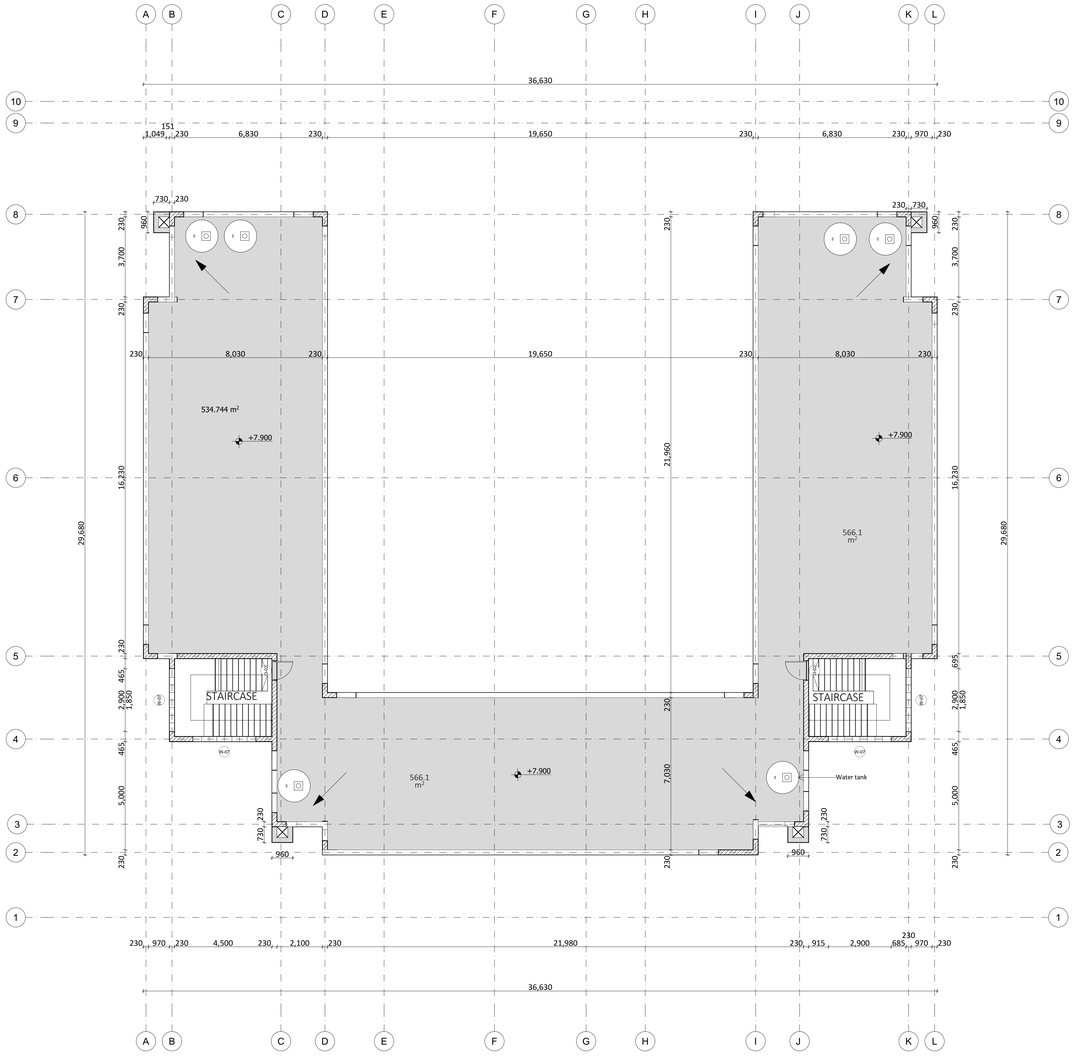
Client :
QATAR CHARITY TANZANIA
P.O.BOX ....
HOUSE NO 22 A & B OYSTERBAY
MASASANI

Drawing Type :
CLASS ROOM BLOCK

Drawing Title :
GROUND FLOOR PLAN, FIRST FLOOR PLAN, WINDOW SCHEDULE, DOOR SCHEDULE

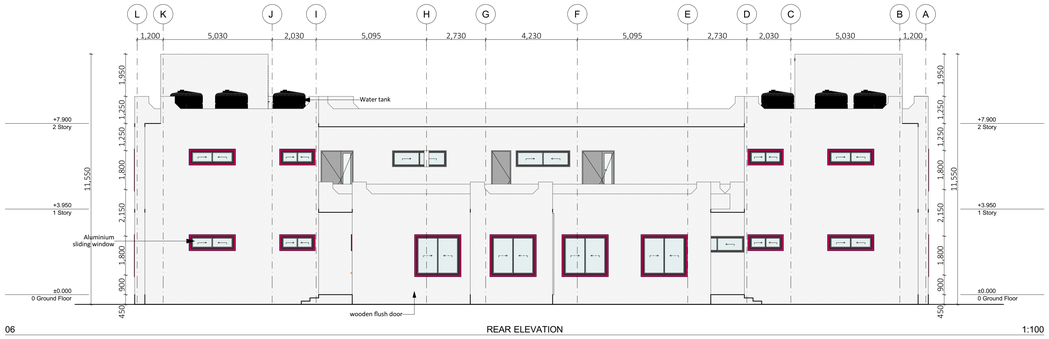
Drawing No:		Scale: 1:100, 1:0.75
Drawn By: DM & RR	Checked By: MLK	REV :

Date: Thursday, February 6, 2025



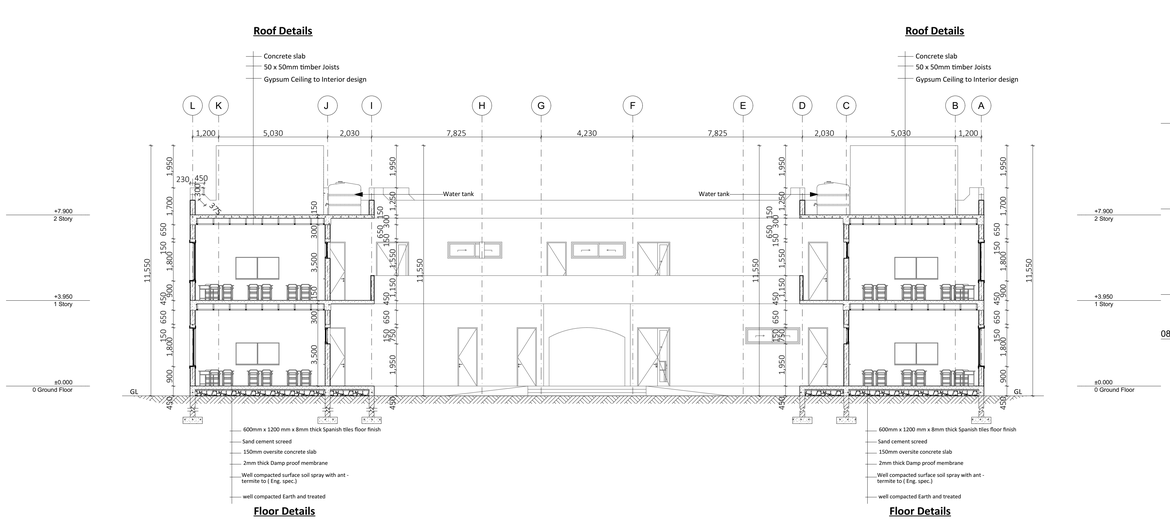
03 ROOF PLAN 1:100

05 FRONT ELEVATION 1:100



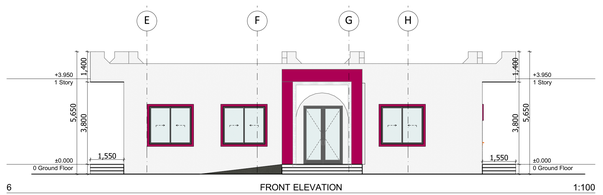
06 REAR ELEVATION 1:100

07 RIGHT ELEVATION 1:100



S-01 Building Section 1:100

08 LEFT ELEVATION 1:100



6 FRONT ELEVATION 1:100

NOTES :

REVISIONS :

No.	Revision/Issue	Date

Architects :

DESIGN ARCHITECTURE ENGINEERING

DXE Associates
Plot No. 17 &18 Haile Selassie Road, Oysterbay
P. O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

Project Title :

PROPOSED CONSTRUCTION OF MULTI-SERVICE PROJECT TO BE BUILT AT PLOT NO..... BLOCK ....., KIJITONYAMA DAR ES SALAAM

Client :
QATAR CHARITY TANZANIA
P.O.BOX .....
HOUSE NO 22 A & B OYSTERBAY
MASASANI

Drawing Type :
CLASS ROOM BLOCK

Drawing Title :
ROOF PLAN, Building Section, FRONT ELEVATION, REAR ELEVATION, RIGHT ELEVATION, LEFT ELEVATION

Drawing No:

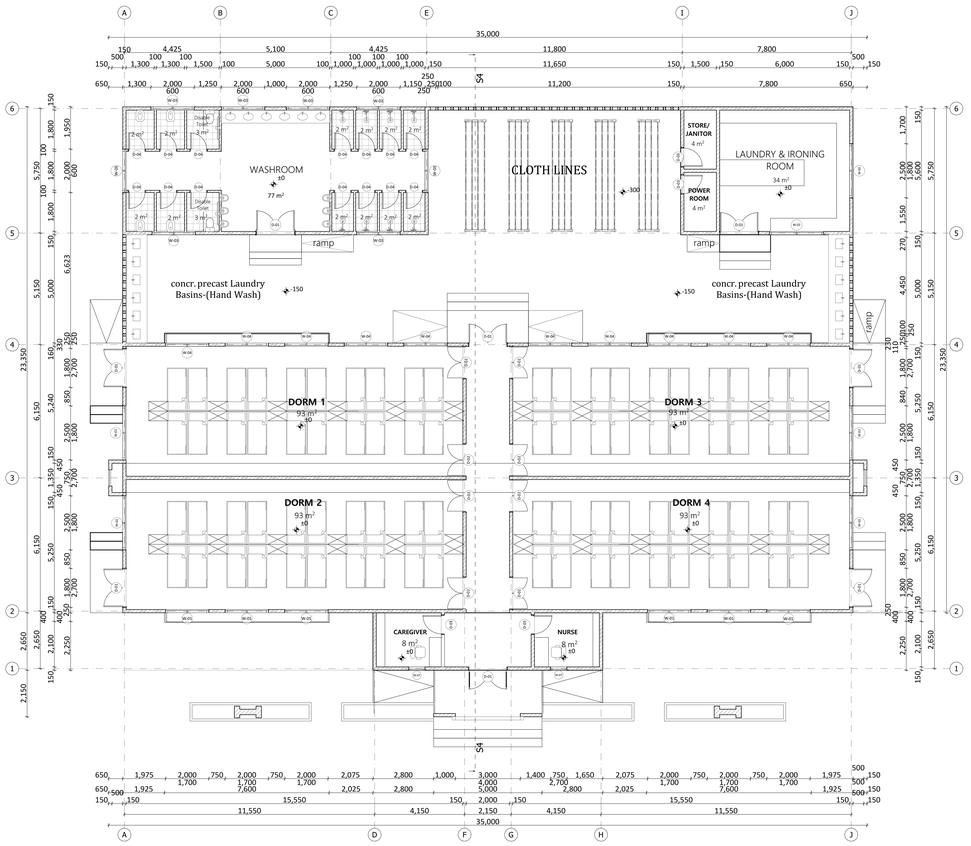
Scale: 1:100

Drawn By: DM & RR

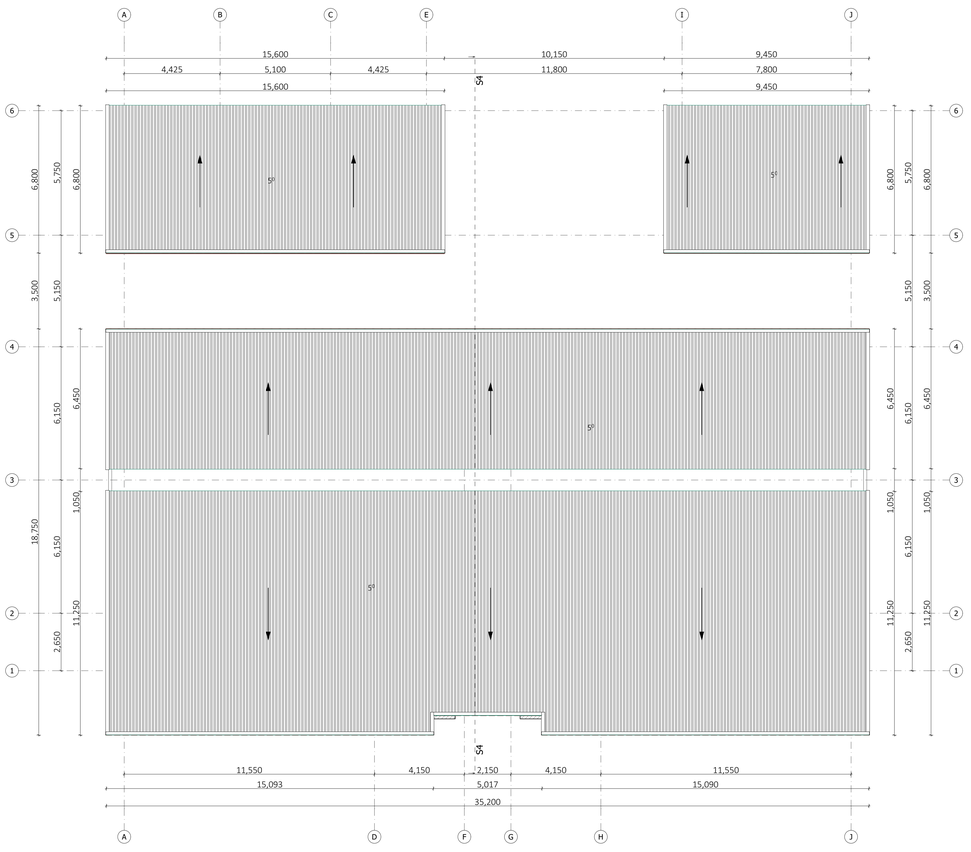
Checked By: MLK

REV :

Date: Thursday, February 6, 2025

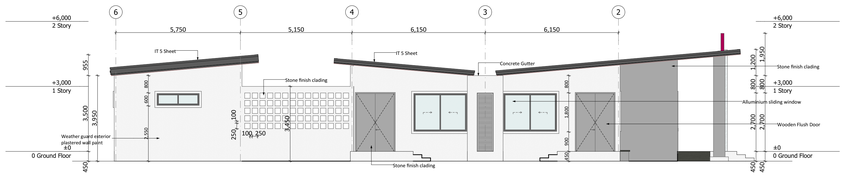


4. HOSTEL BLOCK 1:100

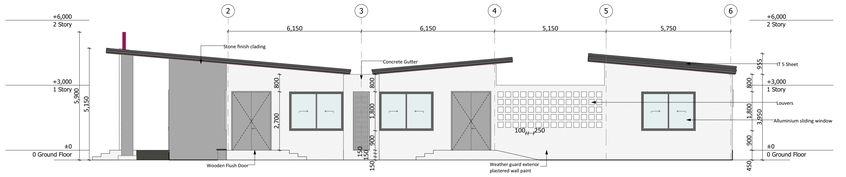


WINDOW SCHEDULE

Element ID	W-01	W-02	W-03	W-04	W-05	W-06	W-07
Opening Name	2-Sash Sliding Window 26	2-Sash Sliding Window 26	2-Sash Sliding Window 26	2-Sash Sliding Window 26	Window 26	Glass Block Wall 26	Glass Block Wall 26
Quantity	6	6	8	10	2	1	2
Nominal W x H Size	2.000×1.700	2.500×1.800	2.000×0.600	2.000×1.800	0.750×2.700	8.000×2.200	5.000×1.800
Sill/Header Value	1.00	0.90	2.10	0.90	0.00	0.50	0.90
2D Plan Preview							
3D Front View							
Specifications	Aluminum sliding window Standard profile. Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Aluminum sliding window Standard profile. Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane, Mosquito screen, all standard iron mongery	Aluminum sliding window Standard profile. Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Aluminum sliding window Standard profile. Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Aluminum top hung window Standard profile. Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Cement louvers Block Window	Cement louvers Block Window



WEST ELEVATION 1 1:100



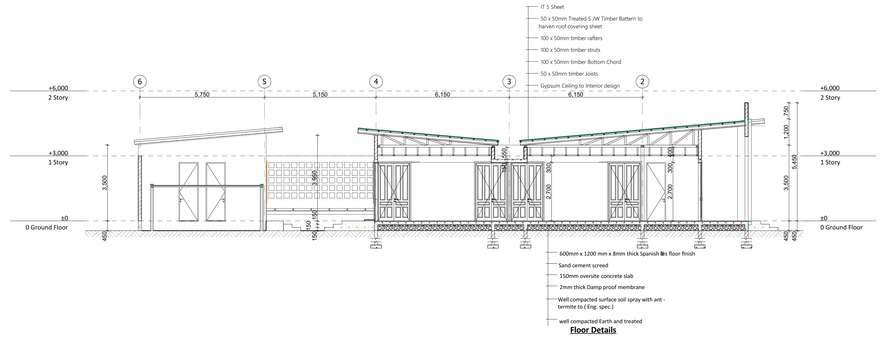
EAST ELEVATION 1 1:100

1 DOOR SCHEDULE

Element ID	D-01	D-02	D-03	D-04
Library Part Name	Double Door 26	Double Door Asymmetric 26	Door 26	Door 26
Quantity	8	8	4	16
Nominal W x H Size	1.800×2.700	1.500×2.700	0.900×2.700	0.800×2.100
Sill/Header Value	0.00	0.00	0.00	0.10
2D Plan Preview				
3D Front View				
Specifications	Steel Door Framing with Glass Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system

BACK ELEVATION 1 1:100

FRONT ELEVATION 1 1:100



S4 Building Section 1:100

NOTES :

REVISIONS :

No.	Revision/Issue	Date

Architects :

DXE DESIGN ARCHITECTURE ENGINEERING

DXE Associates
Plot No.17 &18 Haile Selassie Road, Oysterbay
P. O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

Project Title :

PROPOSED CONSTRUCTION OF MULTI-SERVICE PROJECT TO BE BUILT AT PLOT NO..... BLOCK ....., KIJITONYAMA DAR ES SALAAM

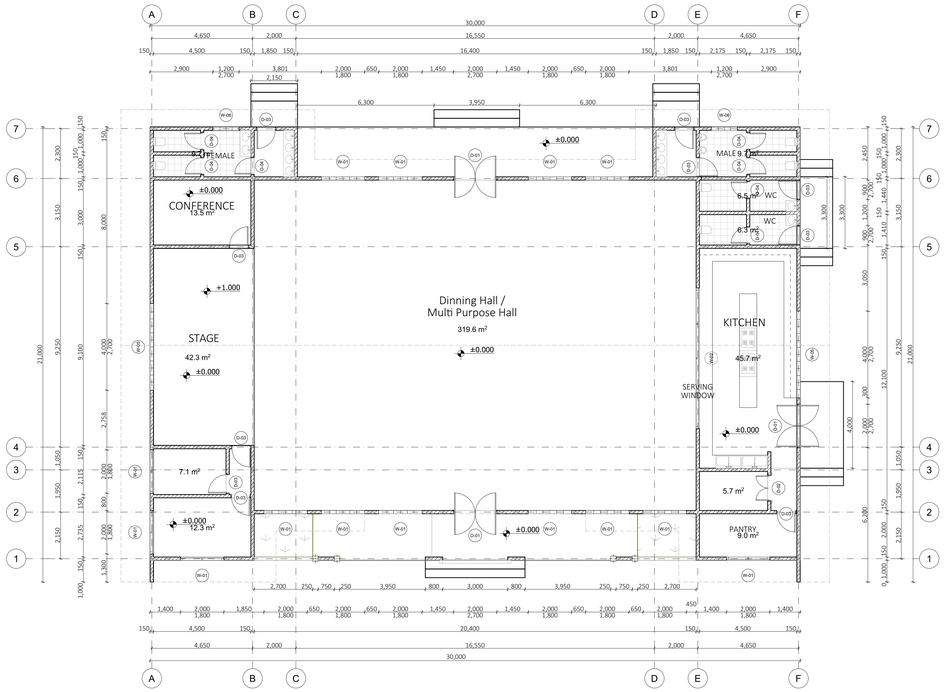
Client :
QATAR CHARITY TANZANIA
P.O.BOX .....
HOUSE NO 22 A & B OYSTERBAY
MASASANI

Drawing Type :
HOSTEL BLOCK

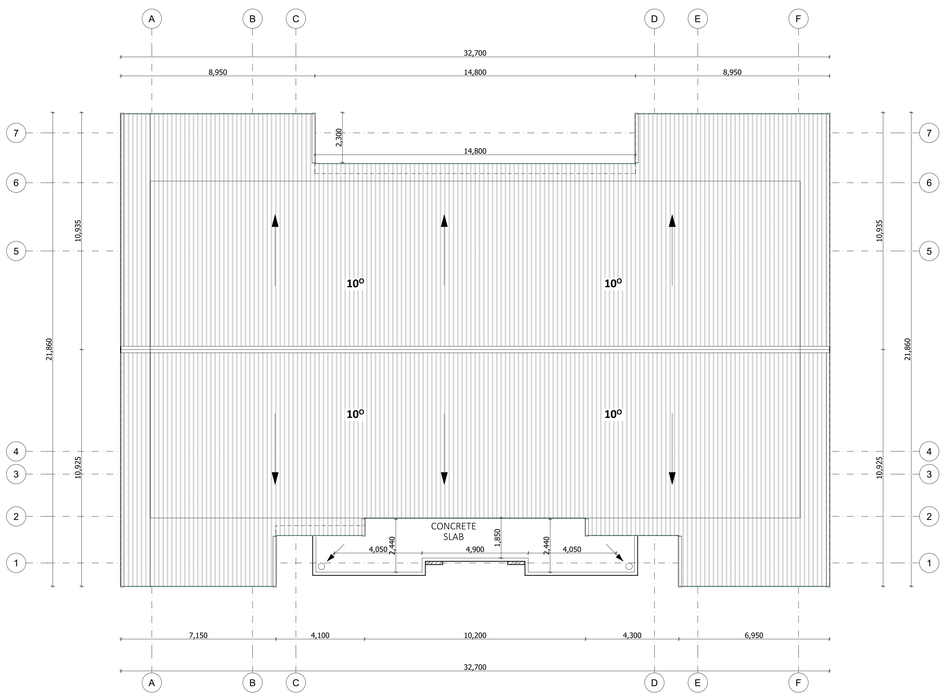
Drawing Title :
HOSTEL BLOCK, HOSTEL ROOF PLAN, Building Section, 1, HOSTEL D-SCHEDULE, HOSTEL W-SCHEDULE

Drawing No:		Scale : 1:100, 1:0.95, 1:0.80
Drawn By: DM & RR	Checked By: MLK	REV :

Date: Thursday, 6 February 2025



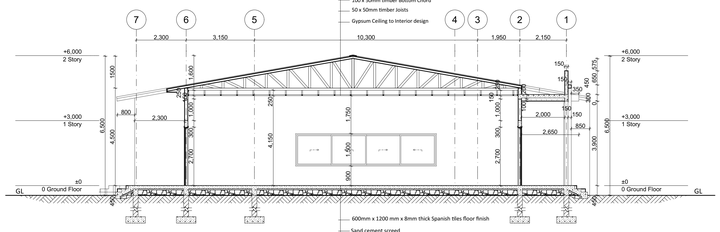
01 GROUND FLOOR PLAN 1:100



02 ROOF PLAN 1:100

Roof Details

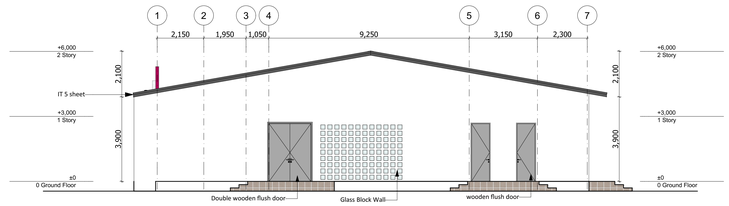
- IT 5 Roofing sheet
- 50 x 50mm Treated S /W Timber Battern to harven roof covering sheet
- 100 x 50mm timber rafters
- 100 x 50mm timber struts
- 100 x 50mm timber Bottom Chord
- 50 x 50mm timber Joists
- Gypsum Ceiling to Interior design



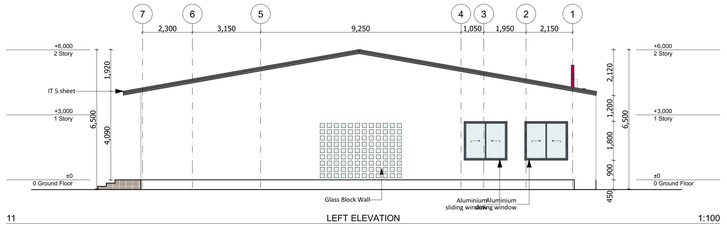
- 600mm x 1200 mm x 8mm thick Spanish tiles floor finish
- Sand cement screed
- 150mm oversite concrete slab
- 2mm thick Damp proof membrane
- Well compacted surface soil spray with ant - termite to (Eng. spec.)
- well compacted Earth and treated

Floor Details

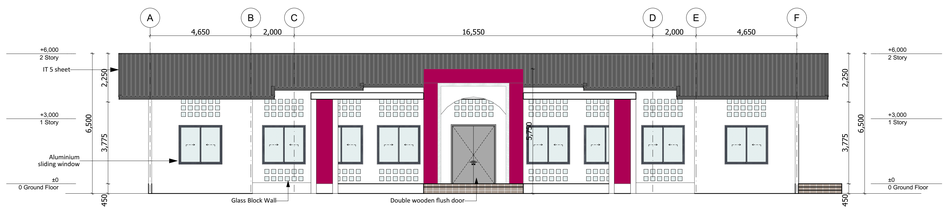
S-02 BUILDING SECTION 1:100



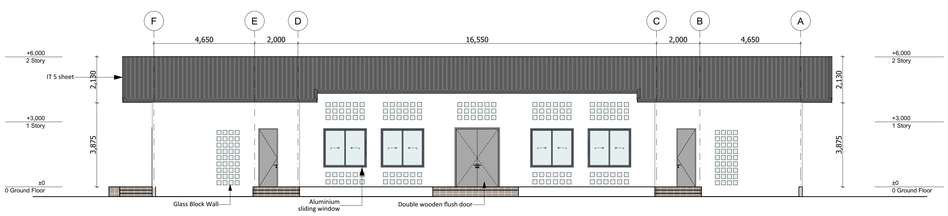
8 RIGHT ELEVATION 1:100



11 LEFT ELEVATION 1:100



9 FRONT ELEVATION 1:100



10 REAR ELEVATION 1:100

WINDOW SCHEDULE

Element ID	W-01	W-02	W-03	W-04	W-05	W-06
Opening Name	2-Sash Sliding Window 25	4-Sash Sliding Window 25	Glass Block Wall 25	Glass Block Wall 25	Glass Block Wall 25	Glass Block Wall 25
Quantity	14	1	10	14	2	4
W x H Size	2.000×1.800	6.500×1.500	2.000×0.800	2.000×1.000	4.000×2.700	1.200×2.700
Sill Height	0.900	0.900	0.000	3.000	0.000	0.000
2D symbol						
3D Front View						
Specifications	Aluminum sliding window Standard profile. Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Aluminum sliding window Standard profile. Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Cement louver block window	Cement louver block window	Cement louver block window	Cement louver block window

01 WINDOW SCHEDULE 1:1

02 DOOR SCHEDULE

Element ID	D-01	D-02	D-03	D-04
Opening Name	Double Door 25	Double Door 25	Door 25	Door 25
Quantity	3	1	8	7
W x H Size	2.000×2.700	1.200×2.700	0.900×2.700	0.800×2.700
2D symbol				
3D Front View				
Specifications	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system

02 DOOR SCHEDULE 1:1

NOTES :

REVISIONS :

No.	Revision/Issue	Date

Architects :

DXE DESIGN ARCHITECTURE ENGINEERING

DXE Associates
Plot No. 17 &18 Haile Selassie Road, Oysterbay
P. O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

Project Title :

PROPOSED CONSTRUCTION OF MULTI-SERVICE PROJECT TO BE BUILT AT PLOT NO..... BLOCK ....., KIJITONYAMA DAR ES SALAAM

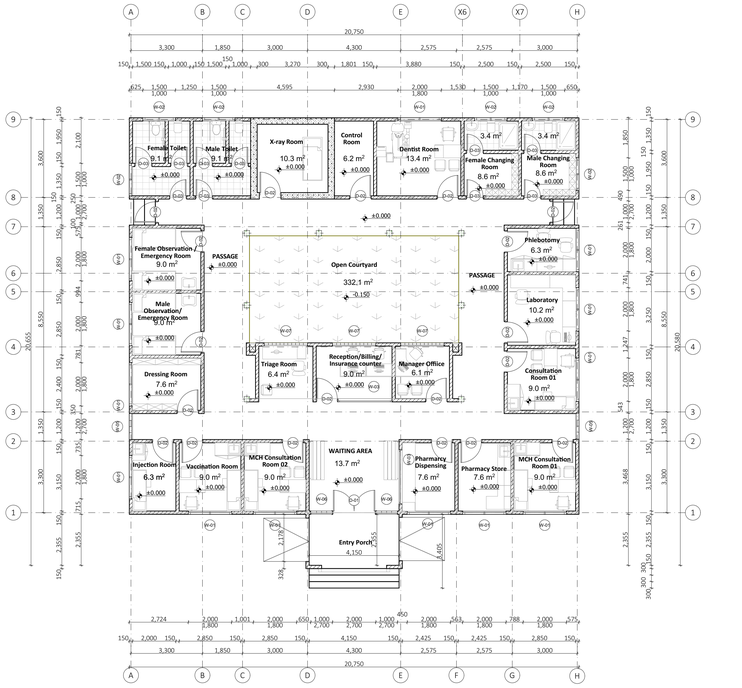
Client :
QATAR CHARITY TANZANIA
P.O.BOX .....
HOUSE NO 22 A & B OYSTERBAY
MASASANI

Drawing Type :
MULTI FUNCTIONAL DINNING HALL

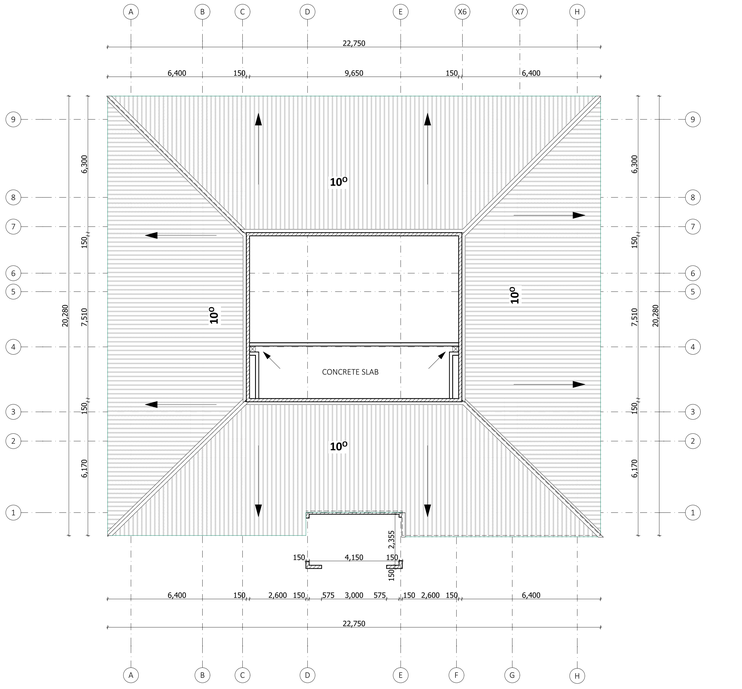
Drawing Title :
GROUND FLOOR PLAN, ROOF PLAN, BUILDING SECTION, FRONT ELEVATION, REAR ELEVATION, RIGHT ELEVATION, LEFT ELEVATION, WINDOW SCHEDULE AND DOOR SCHEDULE

Drawing No:		Scale: 1:100, 1:1
Drawn By: DM & RR	Checked By: MLK	REV :

Date: Thursday, February 6, 2025

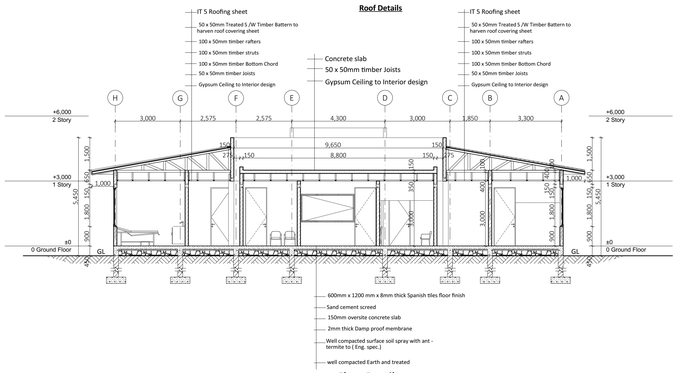


01 GROUND FLOOR PLAN 1:100

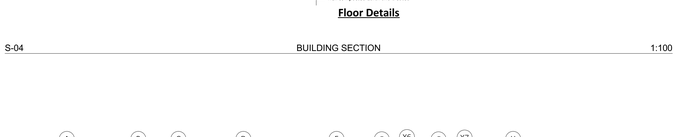


02 ROOF PLAN 1:100

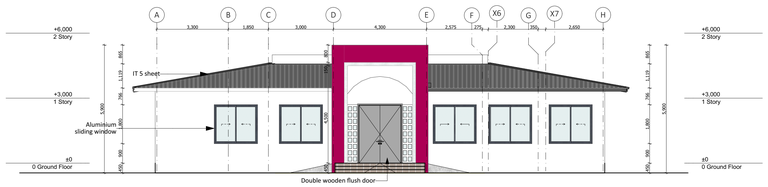
Roof Details



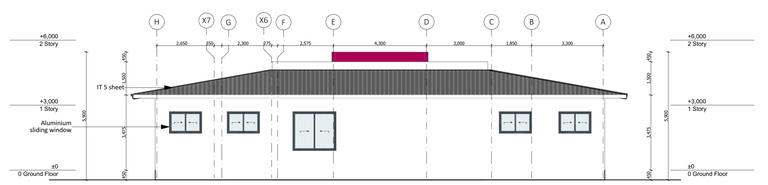
Floor Details



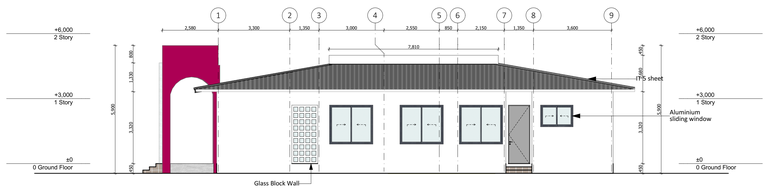
S-04 BUILDING SECTION 1:100



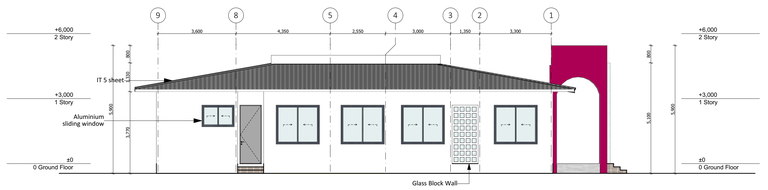
13 FRONT ELEVATION 1:100



14 REAR ELEVATION 1:100



12 RIGHT ELEVATION 1:100



15 LEFT ELEVATION 1:100

WINDOW SCHEDULE

Element ID	W-01	W-02	W-03	W-04	W-05	W-06	W-07
Opening Name	2-Sash Sliding Window 25	2-Sash Sliding Window 25	Window 25	Glass Block Wall 25	Glass Block Wall 25	Glass Block Wall 25	Glass Block Wall 25
Quantity	13	6	2	2	2	2	3
W x H Size	2.000×1.800	1.500×1.000	2.500×1.300	2.000×2.700	1.200×2.700	1.000×2.700	2.000×2.700
Sill Height	0.900	1.700	1.100	0.000	0.000	0.000	0.000
2D symbol							
3D Front View							
Specifications	Aluminum sliding window Standard profile, Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Aluminum sliding window Standard profile, Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Aluminum side hung window Standard profile, Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Cement louver block window	Cement louver block window	Cement louver block window	Cement louver block window

01 WINDOW SCHEDULE 1:1

02 DOOR SCHEDULE

Element ID	D-01	D-02	D-03
Opening Name	Double Door 25	Door 25	Door 25
Quantity	1	19	10
W x H Size	2.000×2.700	1.000×2.700	0.800×2.700
2D symbol			
3D Front View			
Specifications	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system

02 DOOR SCHEDULE 1:1

NOTES :

REVISIONS :

No.	Revision/Issue	Date

Architects :

DESIGN ARCHITECTURE ENGINEERING ®

DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
P. O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

Project Title :

PROPOSED CONSTRUCTION OF MULTI-SERVICE PROJECT TO BE BUILT AT PLOT NO..... BLOCK ....., KIJITONYAMA DAR ES SALAAM

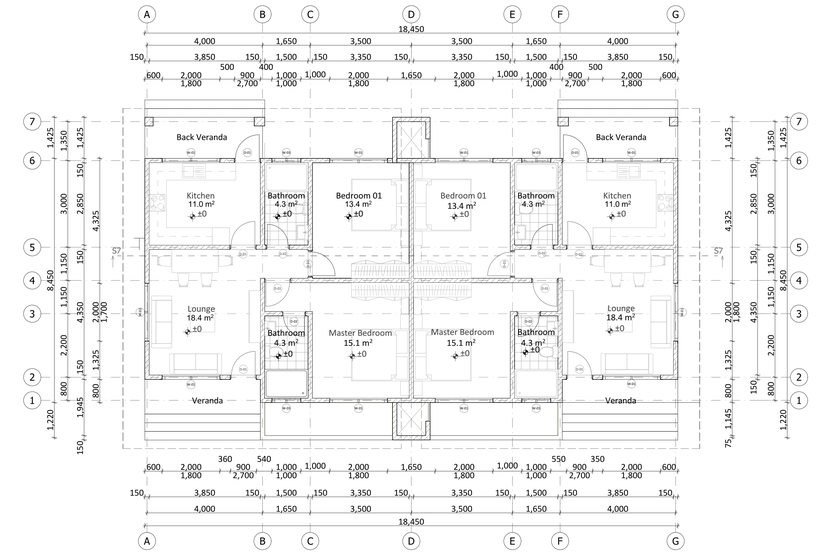
Client :
QATAR CHARITY TANZANIA
P.O.BOX .....
HOUSE NO 22 A & B OYSTERBAY
MASASANI

Drawing Type :
POLY CLINIC

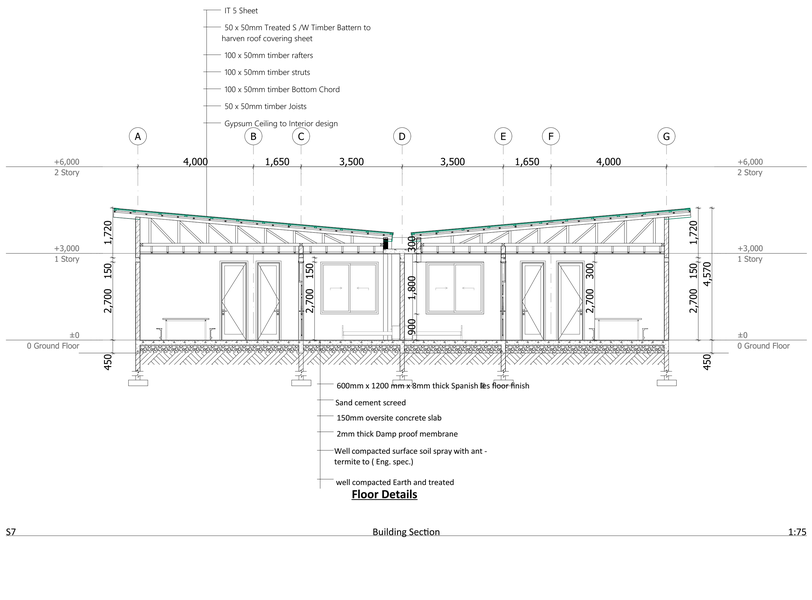
Drawing Title :
ROOF PLAN, GROUND FLOOR PLAN, BUILDING SECTION, FRONT ELEVATION, REAR ELEVATION, RIGHT ELEVATION, LEFT ELEVATION, WINDOW SCHEDULE AND DOOR SCHEDULE

Drawing No:		Scale: 1:100, 1:1
Drawn By: DM & RR	Checked By: MLK	REV :

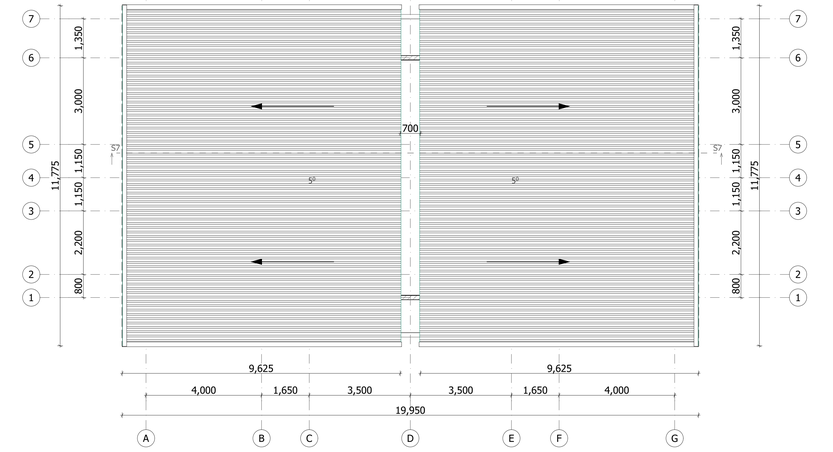
Date: Thursday, February 6, 2025



1. RESIDENTIAL HOUSE 1:75



S7 Building Section 1:75



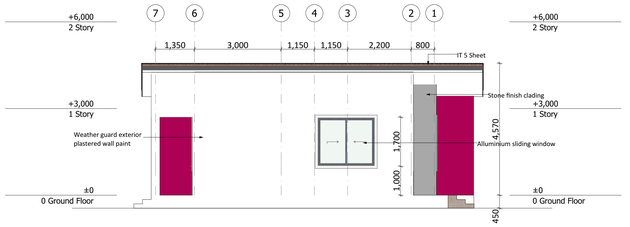
2. RESIDENTIAL ROOF PLAN 1:75

WINDOW SCHEDULE

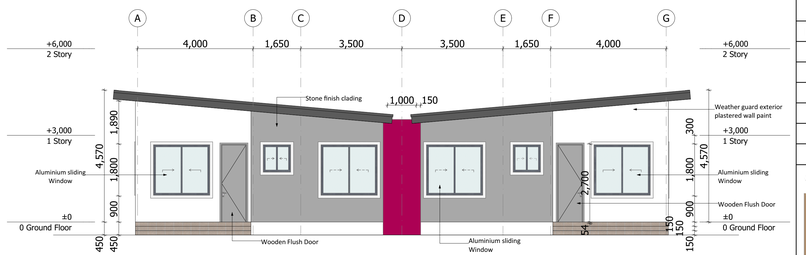
Element ID	W-01	W-02	W-03
Opening Name	2-Sash Sliding Window 26	2-Sash Sliding Window 26	2-Sash Sliding Window 26
Quantity	9	1	4
Nominal W x H Size	2,000×1,800	2,000×1,700	1,000×1,000
Sill/Header Value	0.90	1.00	1.70
2D Plan Preview			
3D Front View			
Specifications	Aluminum sliding window Standard profile. Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Aluminum sliding window Standard profile. Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery	Aluminum sliding window Standard profile. Color Bronze/Silver, 40x100x1.2mm thick powder coated aluminum extrusion windows profile, 6mm single glazing glass pane. Mosquito screen, all standard iron mongery

DOOR SCHEDULE

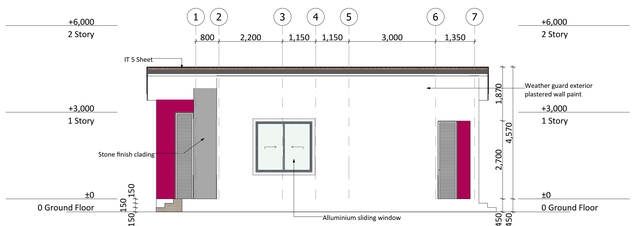
Element ID	D-01	D-02
Library Part Name	Door 26	Door 26
Quantity	10	4
Nominal W x H Size	900×2,700	800×2,700
Sill/Header Value	0.00	0.00
2D Plan Preview		
3D Front View		
Specifications	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system	Steel Door Framing with Solid core Door Leaf with Laminate finish.Lever-style handle cylindrical Lock system



RIGHT ELEVATION 2 1:75



FRONT ELEVATION Elevation 1:75



LEFT ELEVATION 11 1:75

BACK ELEVATION Elevation 1:75

NOTES :

REVISIONS :

No.	Revision/Issue	Date

Architects :

DESIGN ARCHITECTURE ENGINEERING

DXE Associates
Plot No. 17 &18 Haile Selassie Road, Oysterbay
P. O. Box 32062
Dar es Salaam, Tanzania
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+255 762 718891
Email: dxe@dxe.co.tz

Project Title :

PROPOSED CONSTRUCTION OF MULTI-SERVICE PROJECT TO BE BUILT AT PLOT NO..... BLOCK ....., KIJITONYAMA DAR ES SALAAM

Client :

QATAR CHARITY TANZANIA
P.O.BOX .....
HOUSE NO 22 A & B OYSTERBAY
MASASANI

Drawing Type :
RESIDENTIAL HOUSE

Drawing Title :
RESIDENTIAL HOUSE, RESIDENTIAL ROOF PLAN, Building Section, Elevation, 11, 2, RESIDENTIAL W-SCHEDULE, RESIDENTIAL D-SCHEDULE

Drawing No:		Scale : 1:75, 1:0.68, 1:1
Drawn By: DM & RR	Checked By: MLK	REV :

Date: Thursday, 6 February 2025

ENTRANCE GATE

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

قطـــر الخيرية
QATAR CHARITY

DXE
DESIGN
ARCHITECTURE
ENGINEERING

ENTRANCE GATE AND SECURITY HOUSE

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

قطـــر الخيرية
QATAR CHARITY

DXE DESIGN ARCHITECTURE ENGINEERING

PARKING

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

قطر الخيرية
QATAR CHARITY

DXE DESIGN ARCHITECTURE ENGINEERING

CLASSROOM BLOCK

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

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QATAR CHARITY

DXE
DESIGN
ARCHITECTURE
ENGINEERING

CLASSROOM BLOCK

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
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Thursday, February 20, 2025

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QATAR CHARITY

DESIGN
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ENGINEERING

POLYCLINIC

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
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Thursday, February 20, 2025

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ENGINEERING

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PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
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Thursday, February 20, 2025

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QATAR CHARITY

DXE DESIGN ARCHITECTURE ENGINEERING

ADMINISTRATION BLOCK

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

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QATAR CHARITY

DXE DESIGN ARCHITECTURE ENGINEERING

ADMINISTRATION BLOCK

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
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Thursday, February 20, 2025

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QATAR CHARITY

DXE DESIGN ARCHITECTURE ENGINEERING

RESIDENTIAL BLOCK

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
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DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

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QATAR CHARITY

DXE DESIGN ARCHITECTURE ENGINEERING

RESIDENTIAL BLOCK

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
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Thursday, February 20, 2025

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QATAR CHARITY

DXE
DESIGN
ARCHITECTURE
ENGINEERING

DORMITORY

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
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Thursday, February 20, 2025

DESIGN ARCHITECTURE ENGINEERING

DORMITORY

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
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Thursday, February 20, 2025

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QATAR CHARITY

DXE
DESIGN
ARCHITECTURE
ENGINEERING

MULTI FUNCTIONAL DINNING HALL

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
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Thursday, February 20, 2025

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QATAR CHARITY

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DESIGN
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ENGINEERING

MULTI FUNCTIONAL DINNING HALL

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
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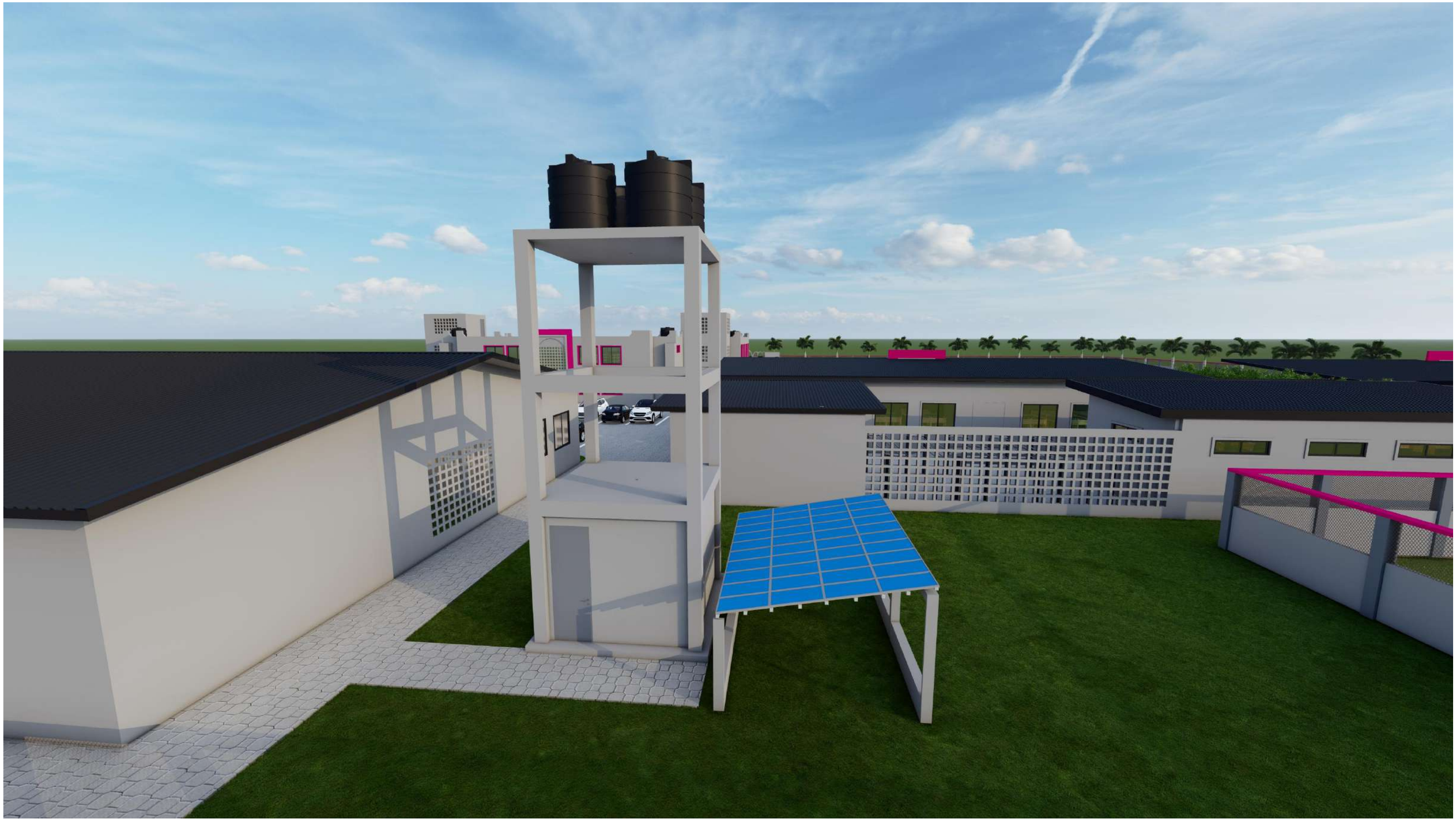
Thursday, February 20, 2025

قطر الخيرية
QATAR CHARITY

DXE
DESIGN
ARCHITECTURE
ENGINEERING

WATER PUMP HOUSE



PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

قطـــر الخيرية
QATAR CHARITY

DXE DESIGN ARCHITECTURE ENGINEERING

AERIAL VIEW

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

قطر الخيرية
QATAR CHARITY

DXE
DESIGN
ARCHITECTURE
ENGINEERING

AERIAL VIEW

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

قطر الخيرية
QATAR CHARITY

DXE
DESIGN
ARCHITECTURE
ENGINEERING

ENTRANCE GATE

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

قطـــر الخيرية
QATAR CHARITY

DXE
DESIGN
ARCHITECTURE
ENGINEERING

ENTRANCE GATE AND SECURITY HOUSE

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

قطـــر الخيرية
QATAR CHARITY

DXE DESIGN ARCHITECTURE ENGINEERING

PARKING

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

قطر الخيرية
QATAR CHARITY

DXE DESIGN ARCHITECTURE ENGINEERING

CLASSROOM BLOCK

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

قطـــر الخيرية
QATAR CHARITY

DXE
DESIGN
ARCHITECTURE
ENGINEERING

CLASSROOM BLOCK

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

قطـــر الخيرية
QATAR CHARITY

DESIGN
ARCHITECTURE
ENGINEERING

POLYCLINIC

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
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Thursday, February 20, 2025

قطـــر الخيرية
QATAR CHARITY

DXE
DESIGN
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POLYCLINIC

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

قطـــر الخيرية
QATAR CHARITY

DXE DESIGN ARCHITECTURE ENGINEERING

ADMINISTRATION BLOCK

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

قطر الخيرية
QATAR CHARITY

DXE DESIGN ARCHITECTURE ENGINEERING

ADMINISTRATION BLOCK

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

قطـــر الخيرية
QATAR CHARITY

DXE DESIGN ARCHITECTURE ENGINEERING

RESIDENTIAL BLOCK

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

قطـــر الخيرية
QATAR CHARITY

DXE DESIGN ARCHITECTURE ENGINEERING

RESIDENTIAL BLOCK

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
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Thursday, February 20, 2025

قطر الخيرية
QATAR CHARITY

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DORMITORY

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
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Thursday, February 20, 2025

DESIGN ARCHITECTURE ENGINEERING

DORMITORY

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
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قطـــر الخيرية
QATAR CHARITY

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MULTI FUNCTIONAL DINNING HALL

PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
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قطر الخيرية
QATAR CHARITY

DXE
DESIGN
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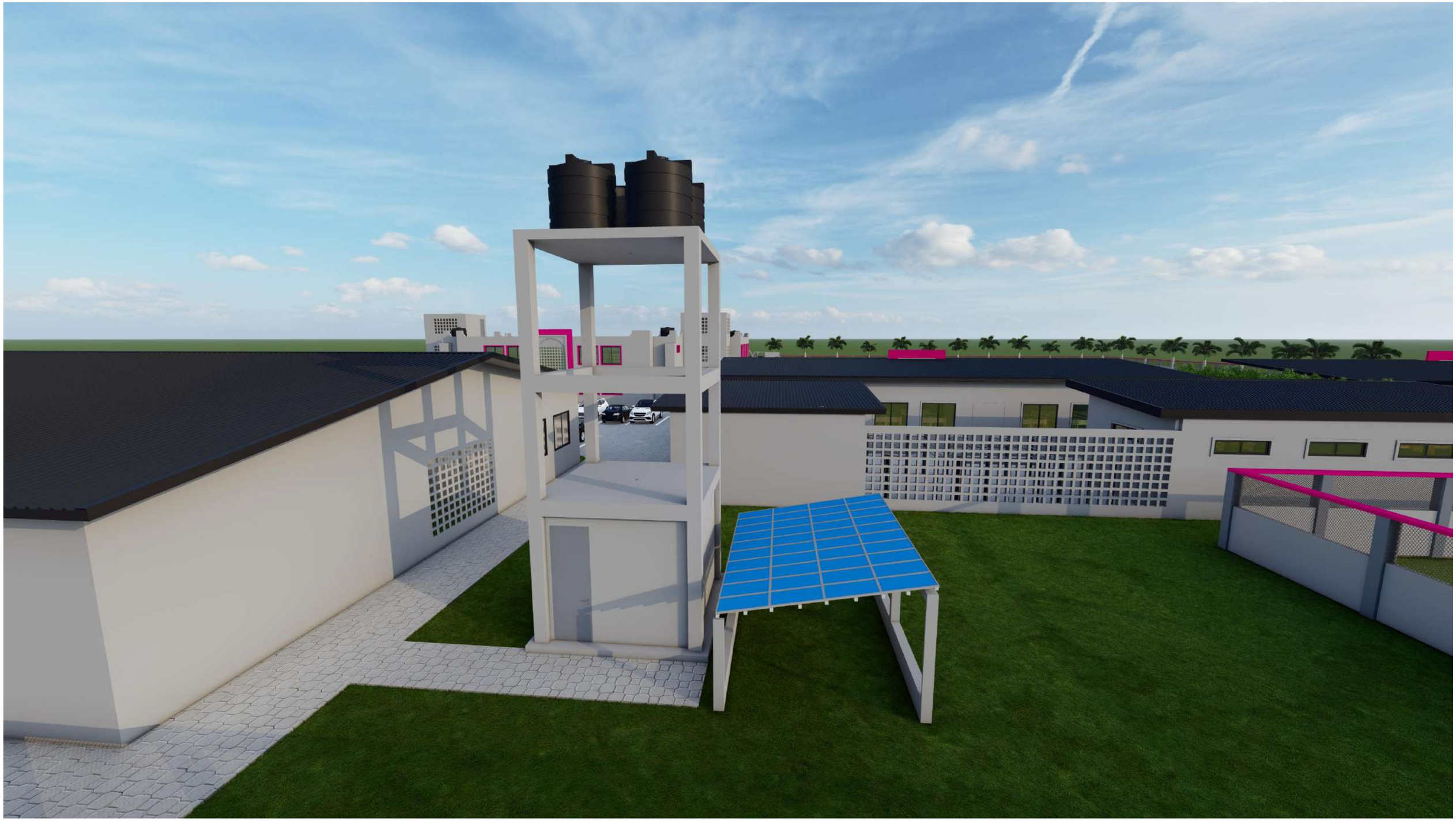
WATER PUMP HOUSE



PROPOSED MULITI SERVICE PROJECT KIJITONYAMA DAR ES SALAAM
QATAR CHARITY TANZANIA HOUSE NO 22 A & B OYSTERBAY MASASANI PENINSULA
DAR ES SALAAM TANZANIA

Thursday, February 20, 2025

قطـــر الخيرية
QATAR CHARITY

DXE DESIGN ARCHITECTURE ENGINEERING

AERIAL VIEW

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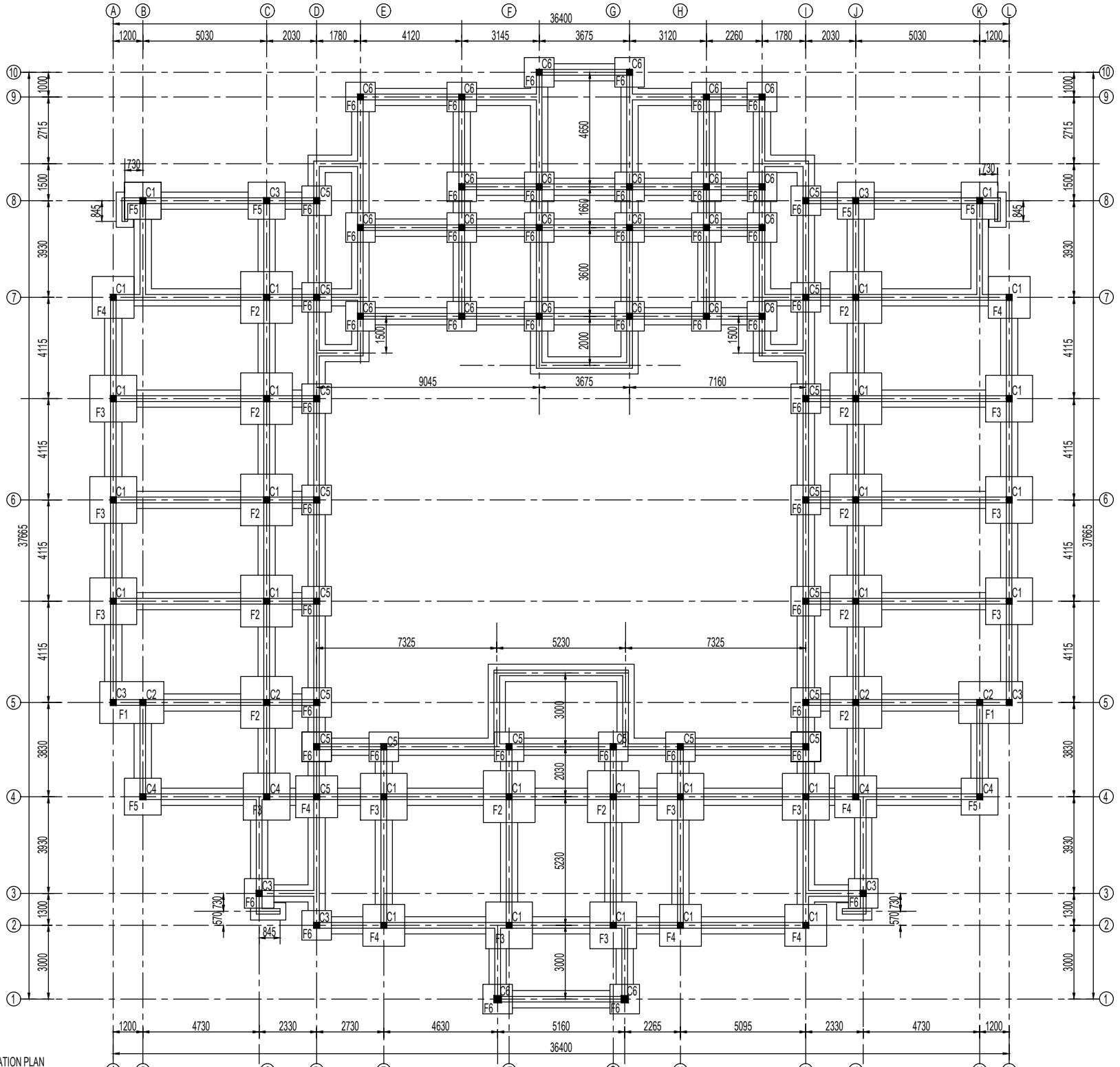
Thursday, February 20, 2025

قطر الخيرية
QATAR CHARITY

DXE
DESIGN
ARCHITECTURE
ENGINEERING



GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

Architect and Interior Designer:
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

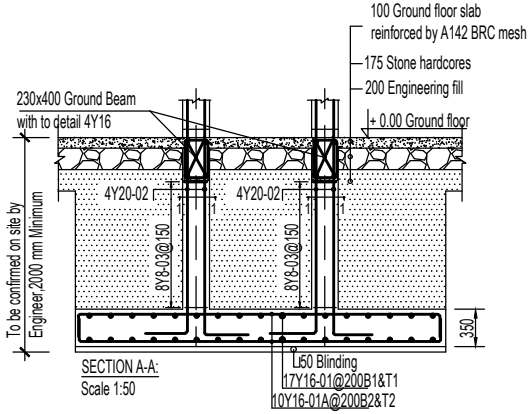
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

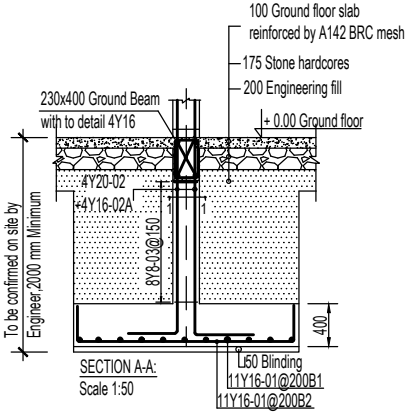
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

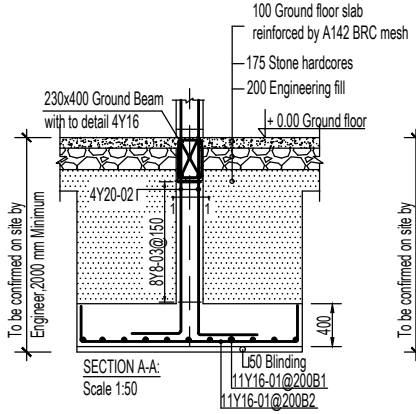
Drawing Tittle:
FOUNDATION PLAN (CLASSROOM)

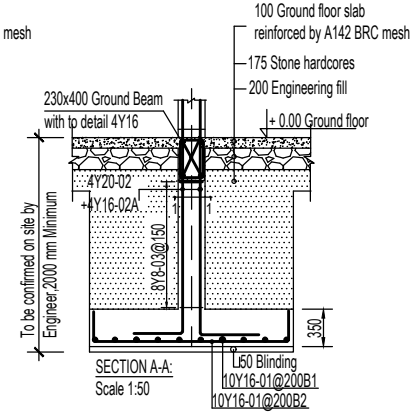
Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:150	March,2025

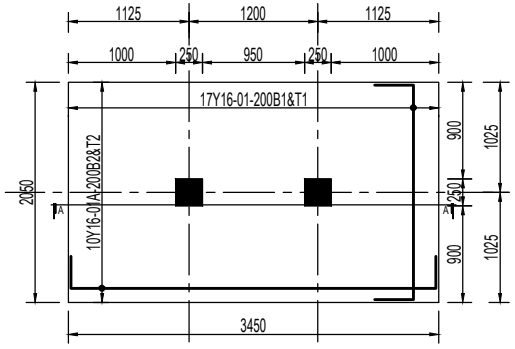
Drawing Number: STR/01



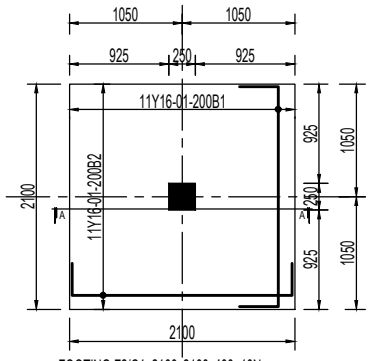








FOOTING F1, 3450x2050x350: 2Nos,
Scale 1:50



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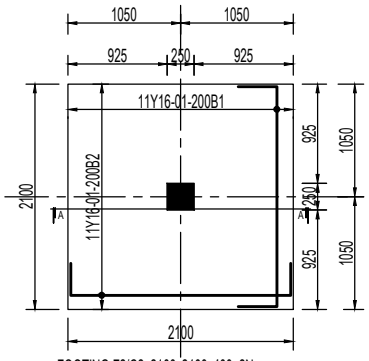
Scale 1:50



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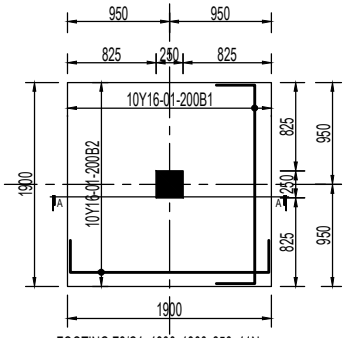
Scale 1:50



FOOTING F3/C1, 1900x1900x350: 11Nos,
Scale 1:50

GENERAL NOTES

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Email: dxe@dxe.co.tz

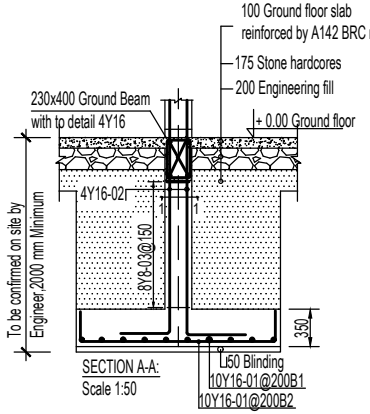
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

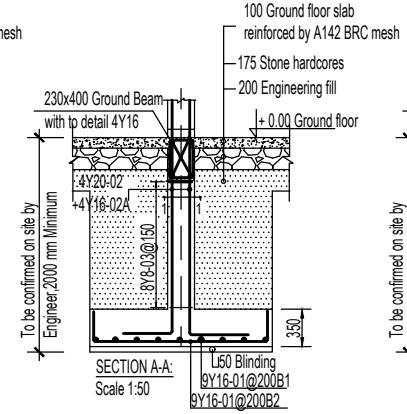
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

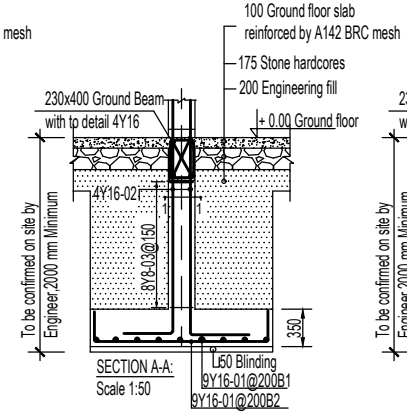
Drawing Tittle:
FOOTING
(CLASSROOM)

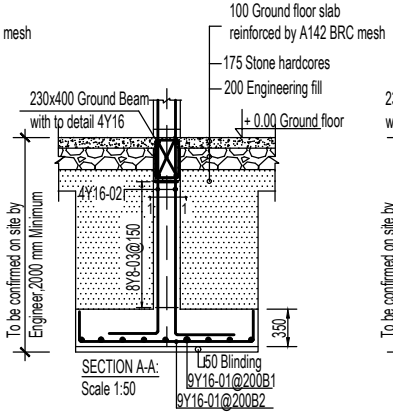
Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:50	March,2025

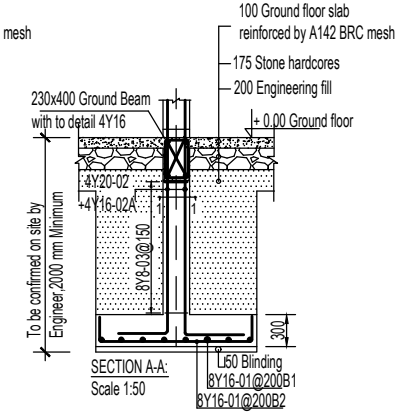
Drawing Number:
STR/02

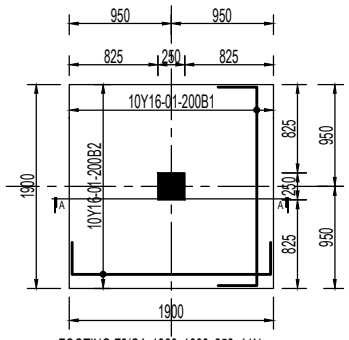




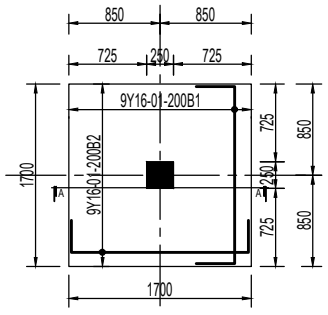




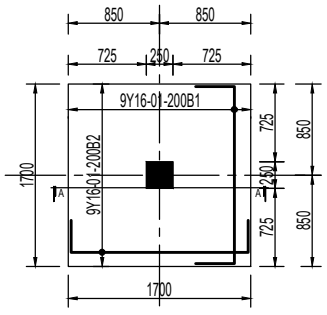




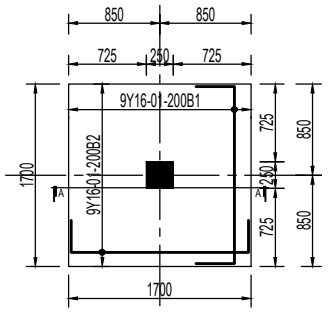
FOOTING F3/C4, 1900x1900x350: 11Nos,
Scale 1:50



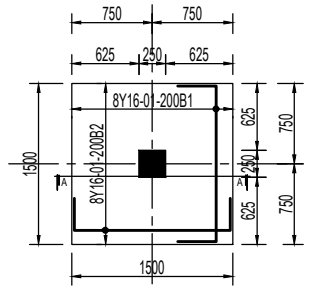
FOOTING F4/C1, 1700x1700x350: 5Nos,
Scale 1:50



FOOTING F4/C4, 1700x1700x350: 1Nos,
Scale 1:50



FOOTING F4/C5, 1700x1700x350: 1Nos,
Scale 1:50



FOOTING F5/C1, 1500x1500x300: 2Nos,
Scale 1:50

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Architect and Interior Designer:
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32062
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Email: dxe@dxe.co.tz

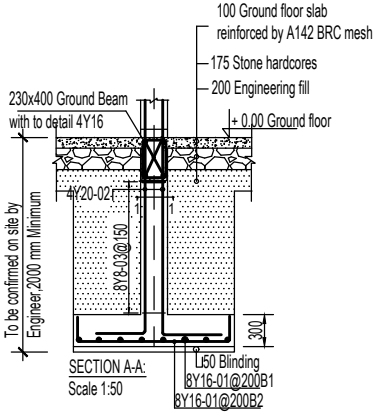
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

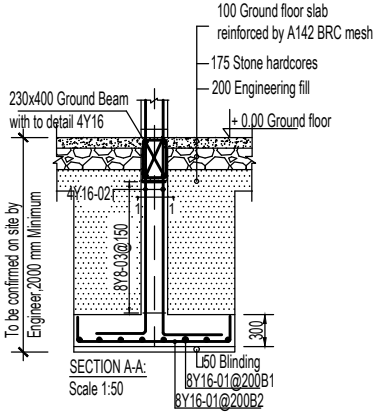
Drawing Tittle:
FOOTING
(CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:50	March,2025

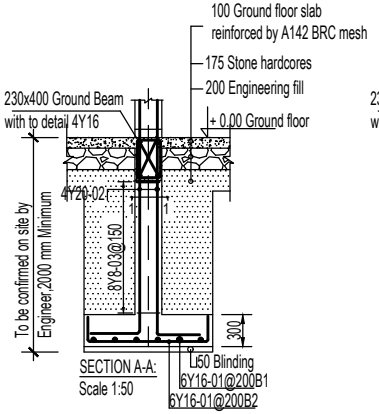
Drawing Number:
STR/03



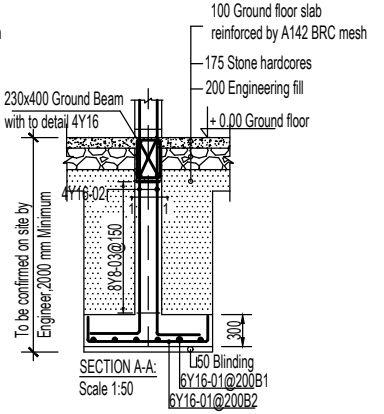
SECTION A-A:
Scale 1:50



SECTION A-A:
Scale 1:50



SECTION A-A:
Scale 1:50



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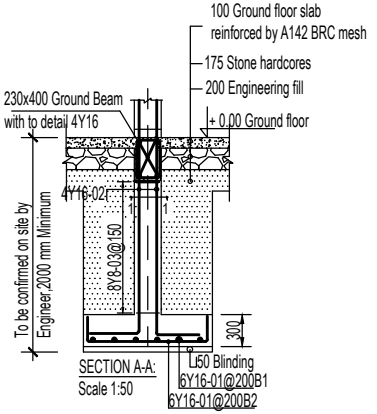
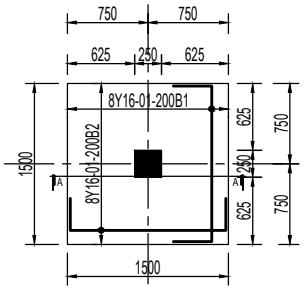
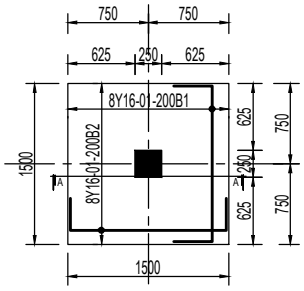
Scale 1:50



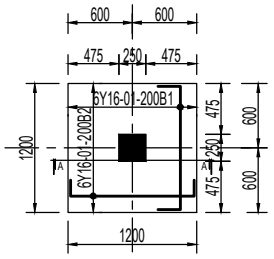
SECTION A-A:
Scale 1:50



FOOTING F5/C3, 1500x1500x300: 2Nos,
Scale 1:50



FOOTING F5/C4, 1500x1500x300: 2Nos,
Scale 1:50



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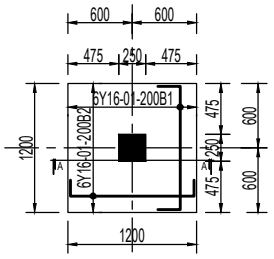
Scale 1:50



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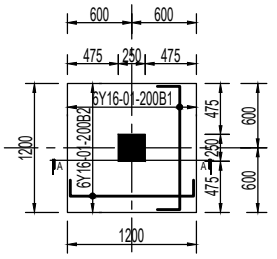
Scale 1:50



FOOTING F6/C6, 1200x1200x300: 25Nos,
Scale 1:50

GENERAL NOTES

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2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
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Revisions:		
Serial Number	Description	Date

Client Name and Address:
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CONSULTING PROFESSIONAL
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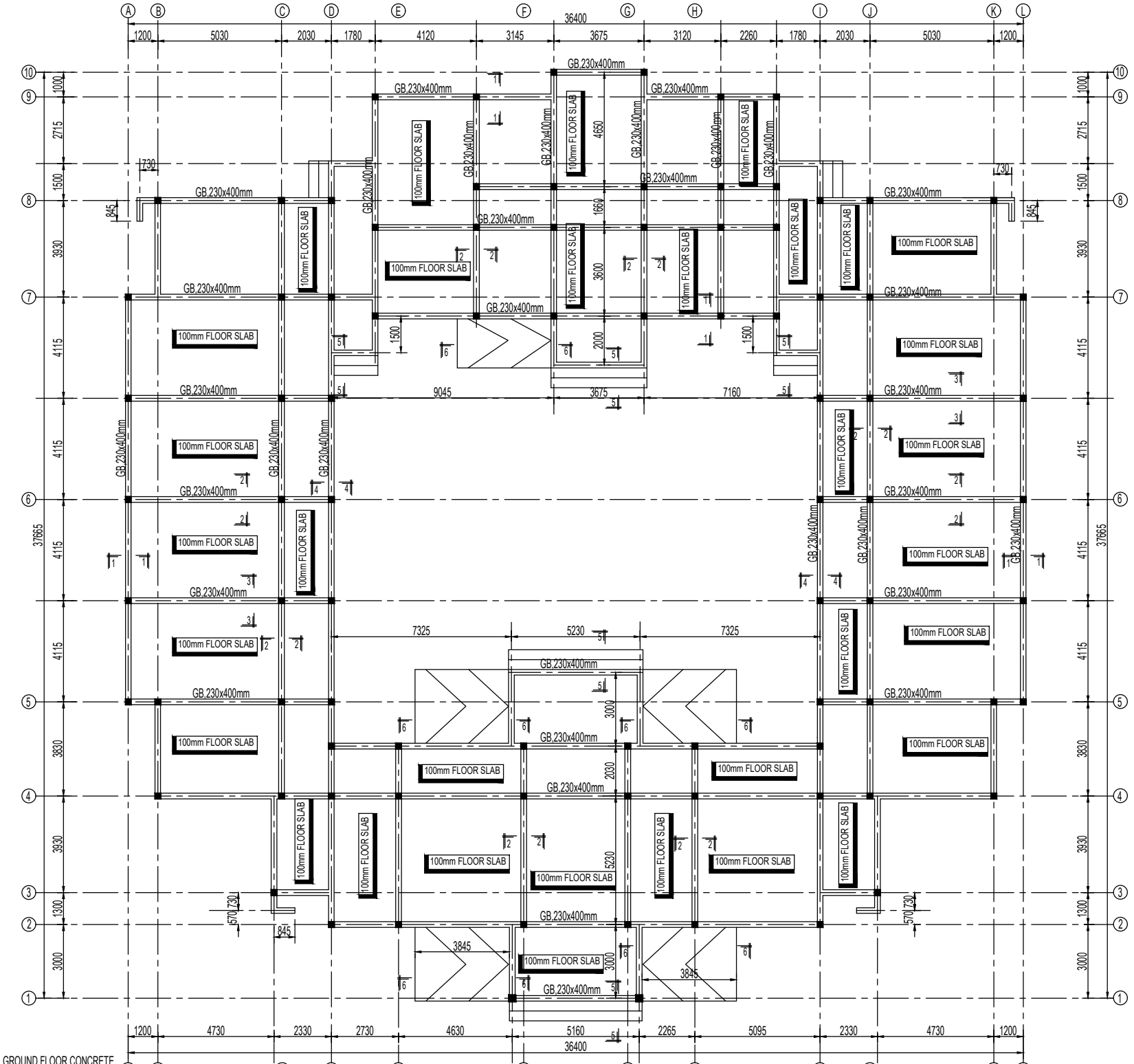
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
FOOTING
(CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:50	March,2025

Drawing Number:
STR/04



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Revisions:		
Serial Number	Description	Date

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Email: dxe@dxe.co.tz

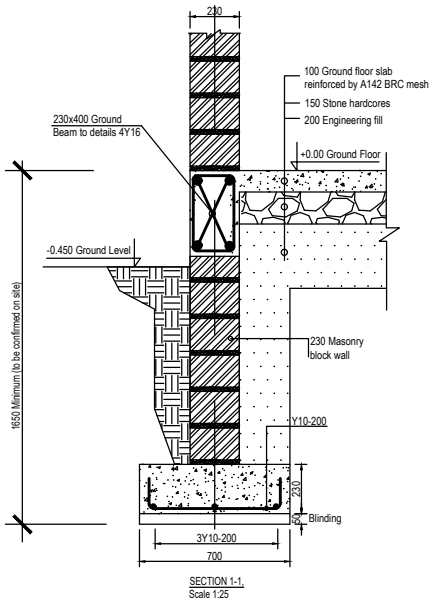
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

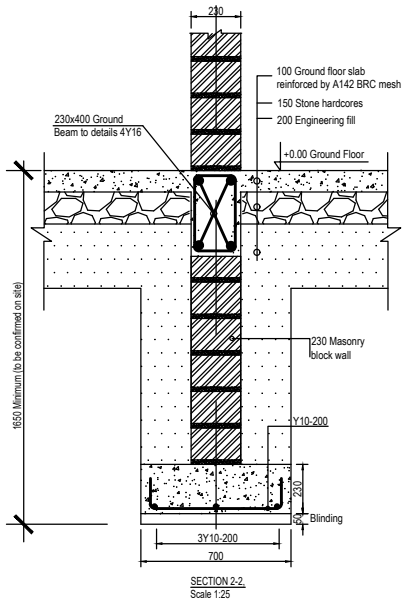
Drawing Tittle:
GROUND FLOOR CONCRETE LAYOUT (CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:150	March,2025

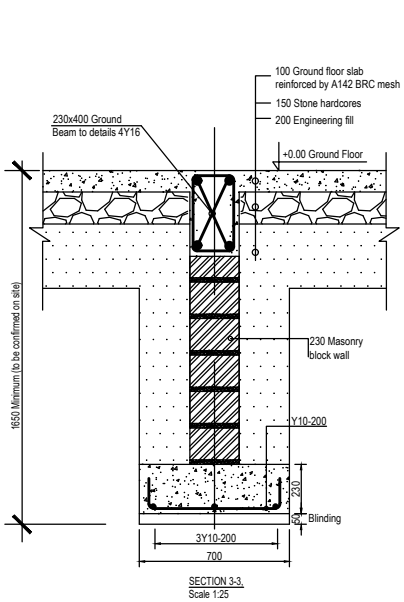
Drawing Number: STR/05



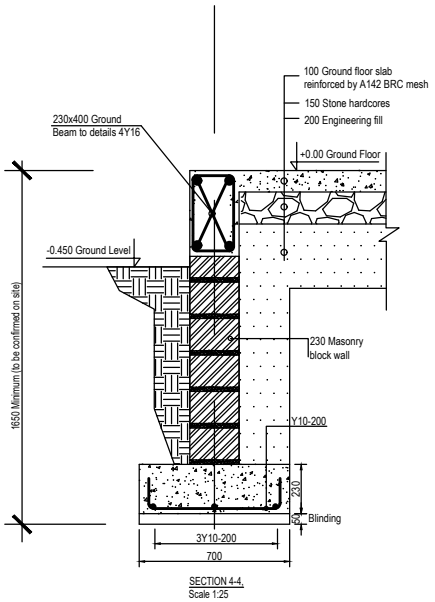
SECTION 1-1.
Scale 1:25



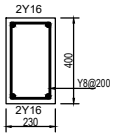
SECTION 2-2.
Scale 1:25



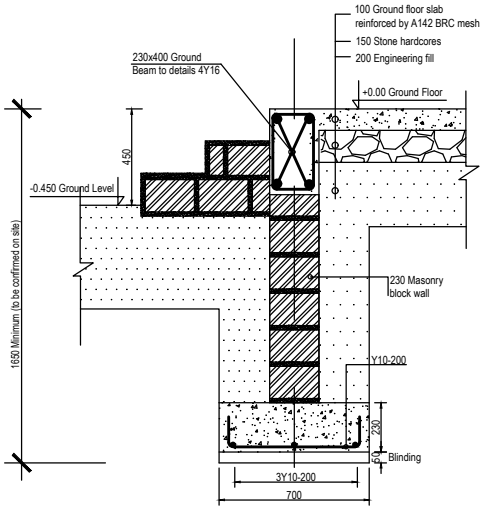
SECTION 3-3.
Scale 1:25



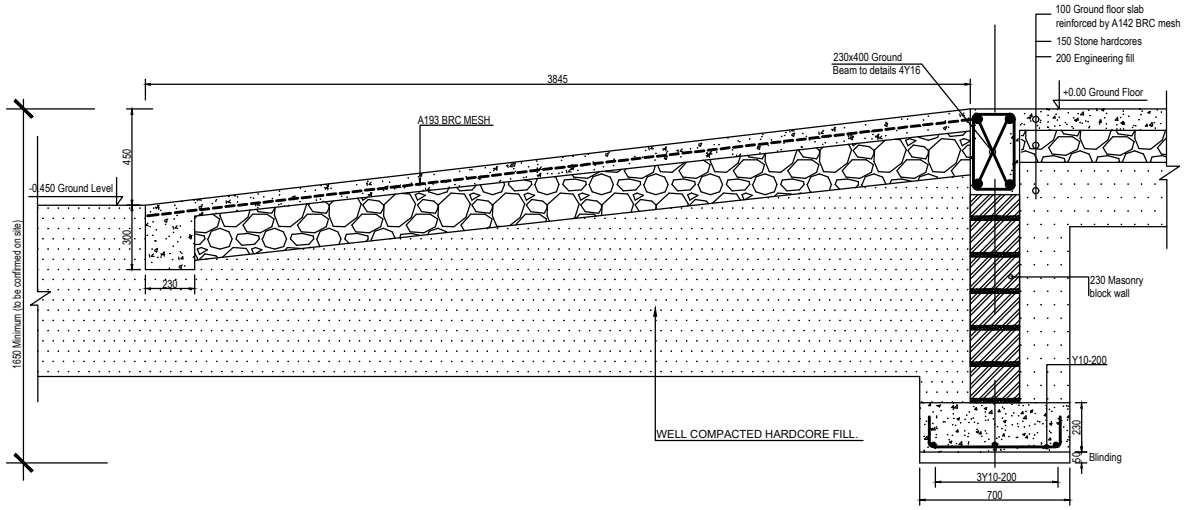
SECTION 4-4.
Scale 1:25



GROUND BEAM SECTION.
Scale 1:25



SECTION 5-5.
Scale 1:25



SECTION 6-6.
Scale 1:25

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

Architect and Interior Designer:
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

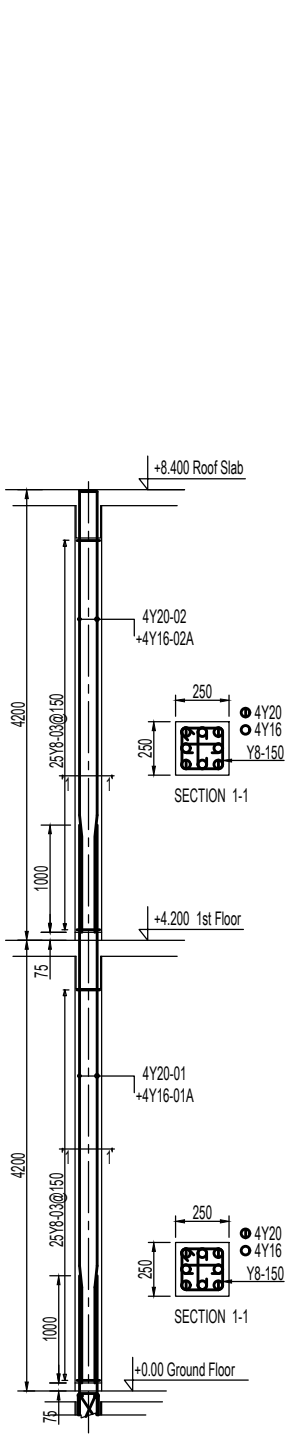
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

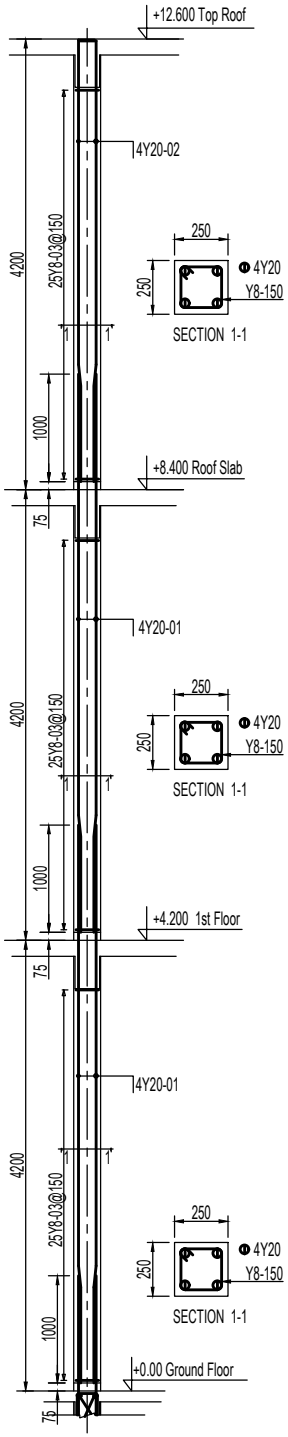
Drawing Tittle:
SECTIONS
(CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:25	March,2025

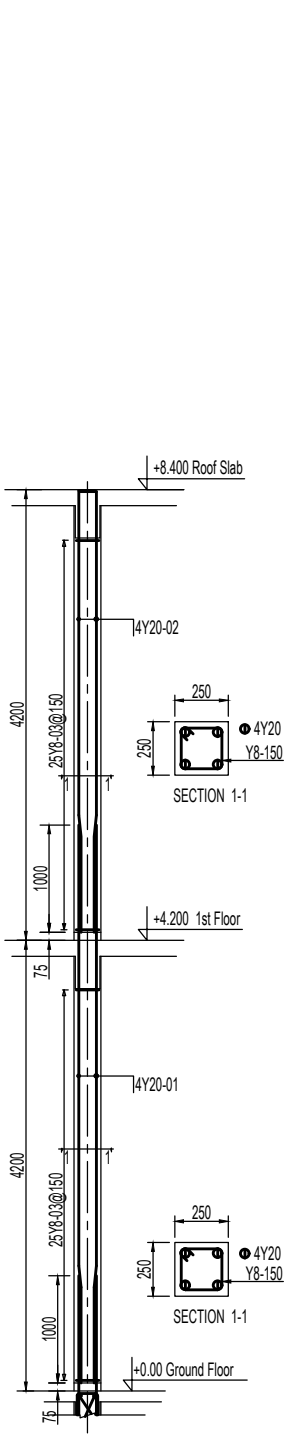
Drawing Number:
STR/06



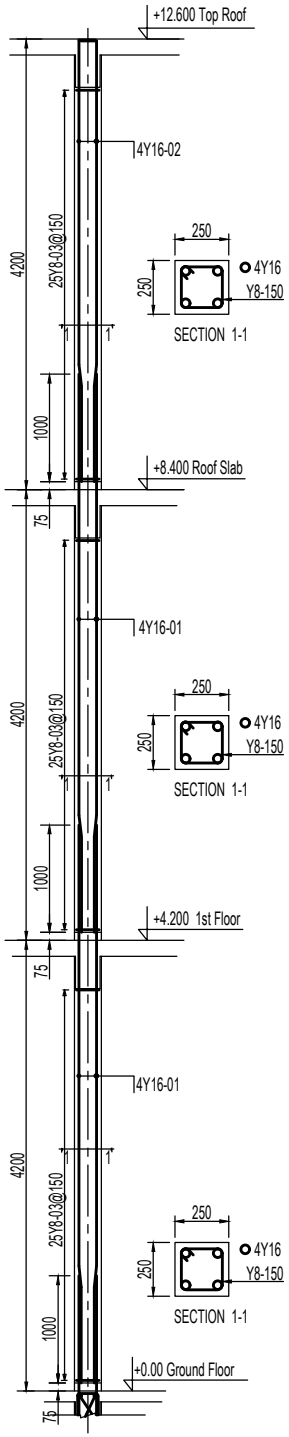
Column C1, 250x250mm 28Nos
Scale 1:50



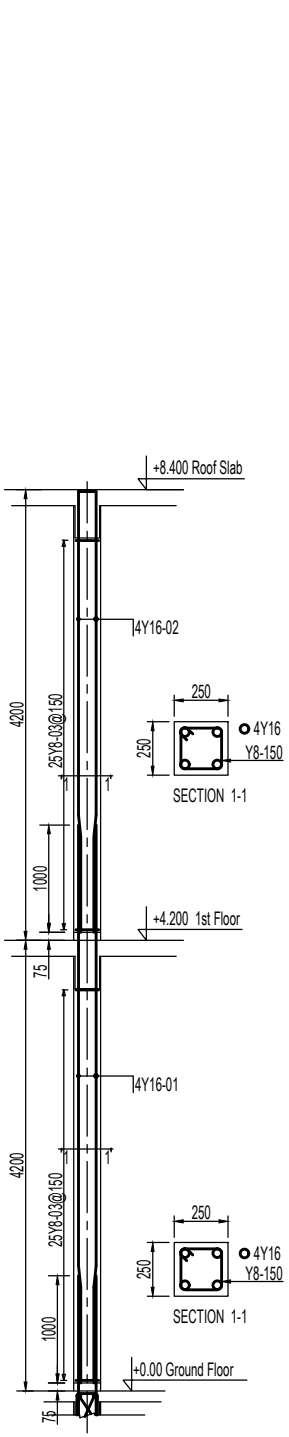
Column C2, 250x250mm 4Nos
Scale 1:75



Column C3, 250x250mm 7Nos
Scale 1:50



Column C4, 250x250mm 4Nos
Scale 1:75



Column C5, 250x250mm 19Nos
Scale 1:50

Column C6, 250x250mm 25Nos
Scale 1:50

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
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Architect and Interior Designer:
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Email: dxe@dxe.co.tz

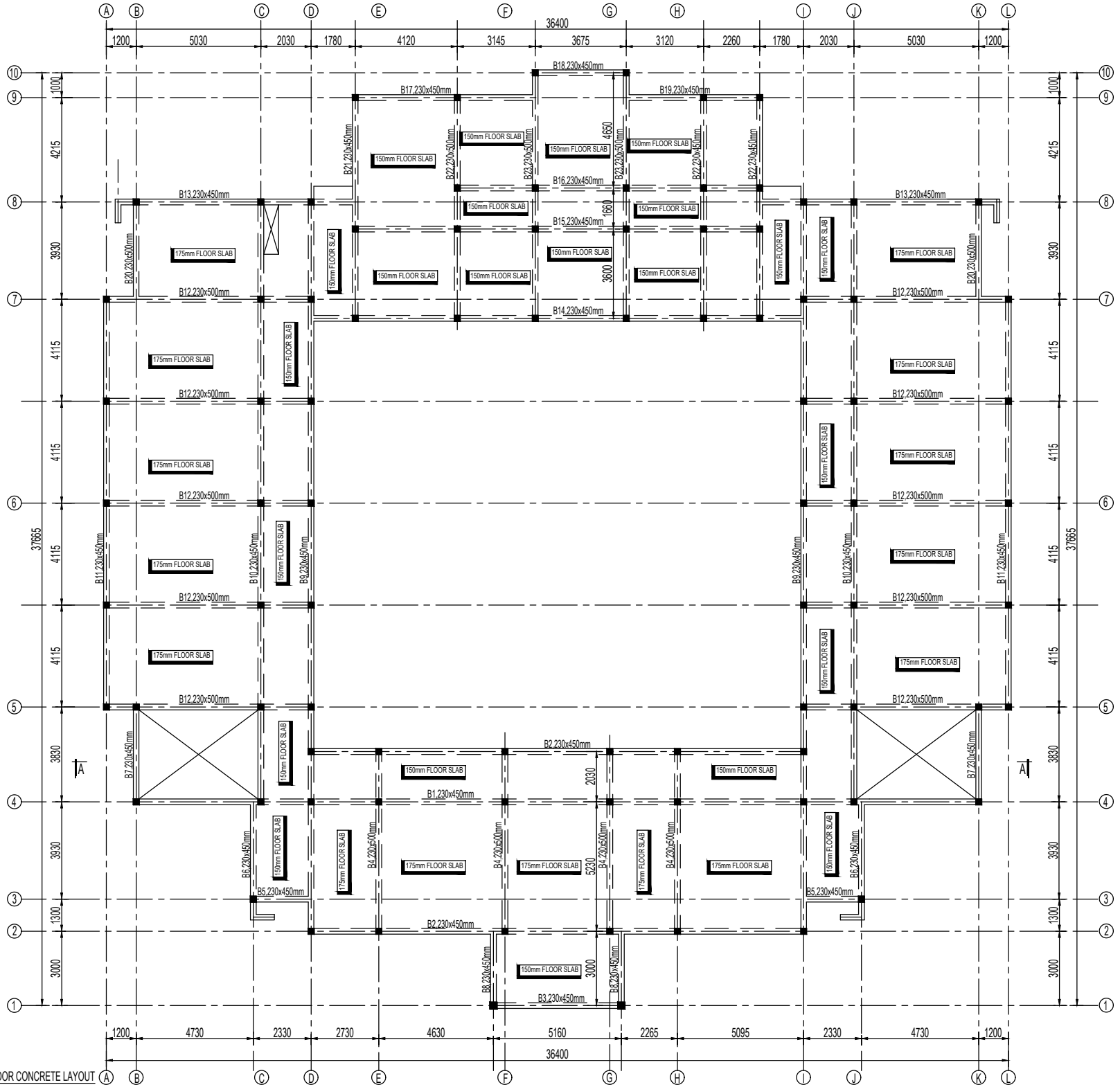
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
COLUMNS
(CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale: 1:50	Date: March,2025

Drawing Number: STR/07



GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
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   = 75mm bottom
   (d) Columns = 40mm
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6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
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Email: dxe@dxe.co.tz

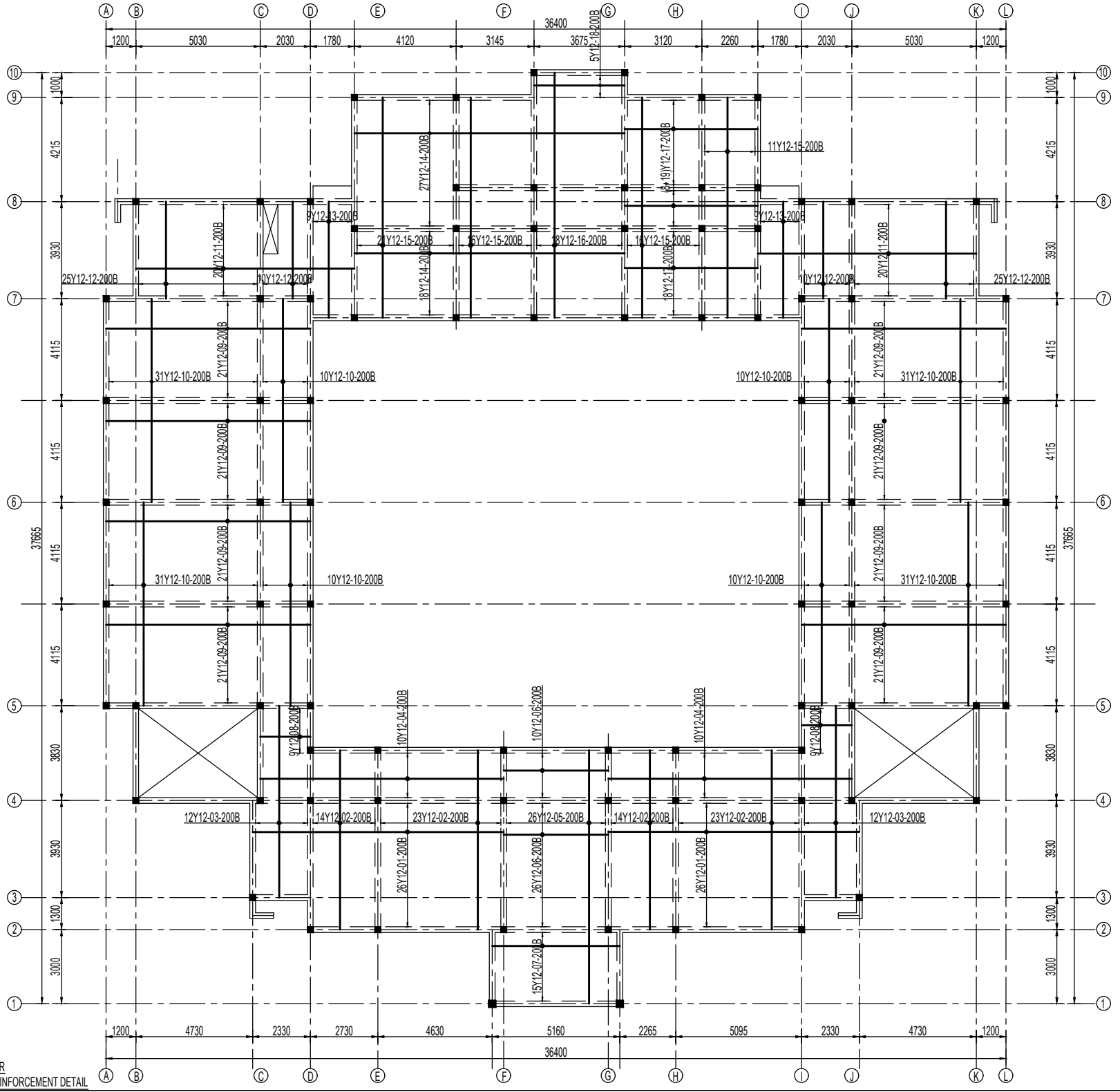
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK '47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
FIRST FLOOR CONCRETE LAYOUT (CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:150	March,2025

Drawing Number: STR/08



FIRST FLOOR
BOTTOM REINFORCEMENT DETAIL

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
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   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
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   (c) Columns footings = 50mm sides
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   (d) Columns = 40mm
   (e) Strip foundations = 50mm
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6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
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Email: dxe@dxe.co.tz

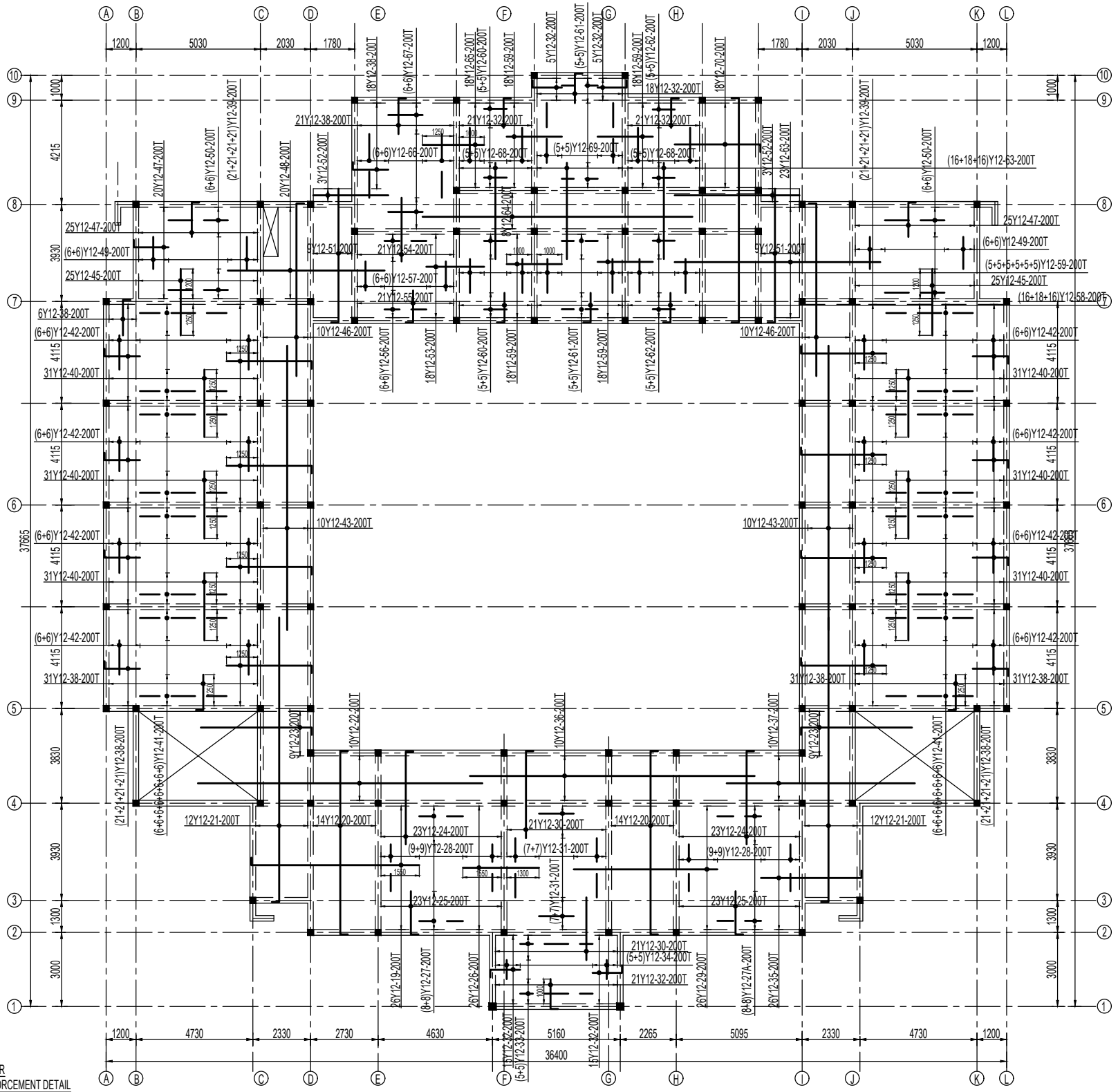
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK '47,
AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
FIRST FLOOR
BOTTOM REINFORCEMENT DETAIL
(CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:150	March,2025

Drawing Number: STR/09



GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
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   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
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   = 75mm bottom
   (d) Columns = 40mm
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   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
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Email: dxe@dxe.co.tz

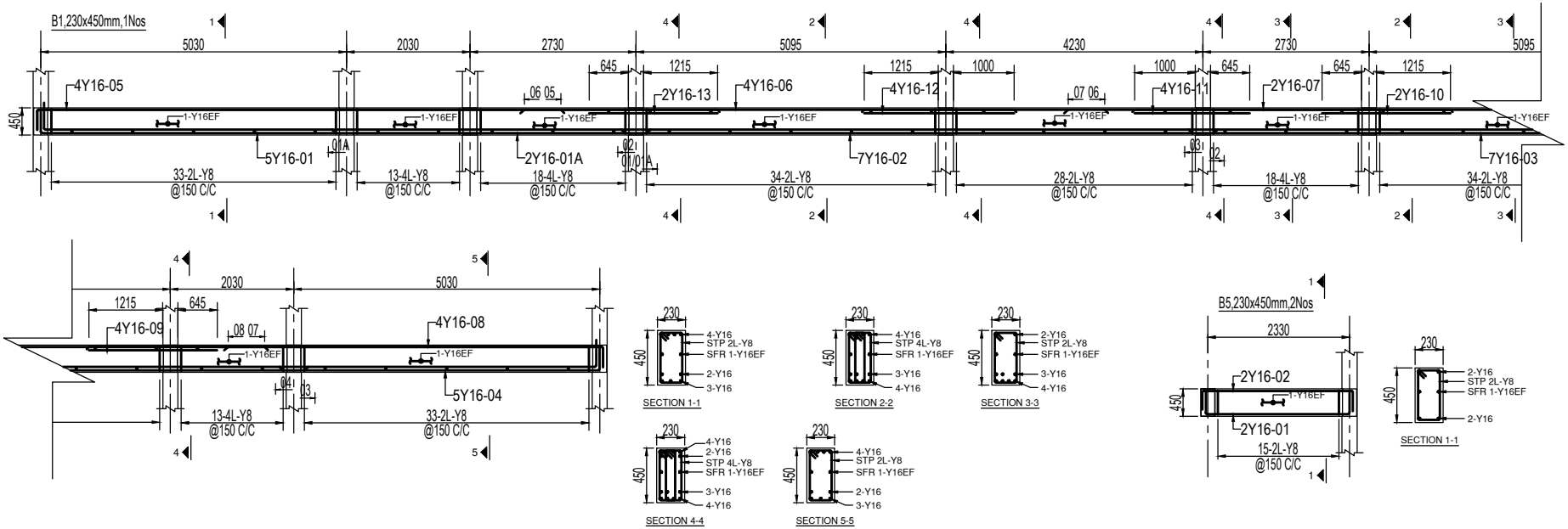
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

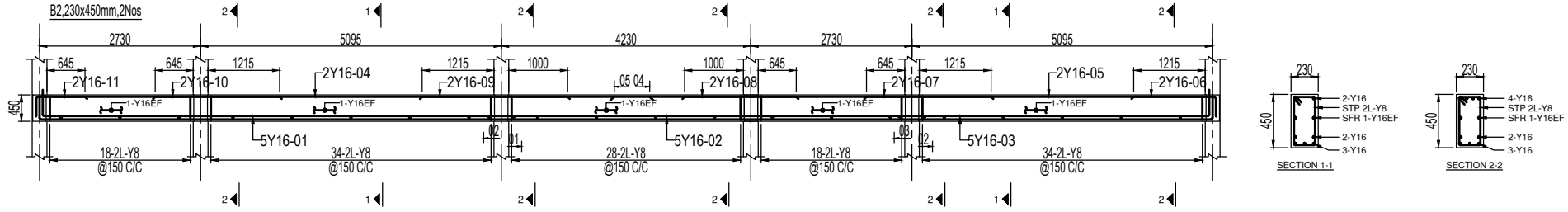
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

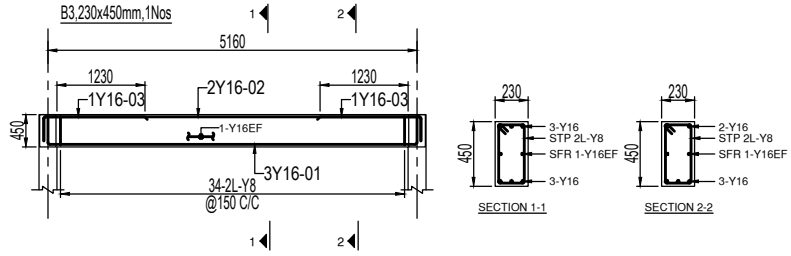
Drawing Tittle:
FIRST FLOOR
TOP REINFORCEMENT DETAIL
(CLASSROOM)

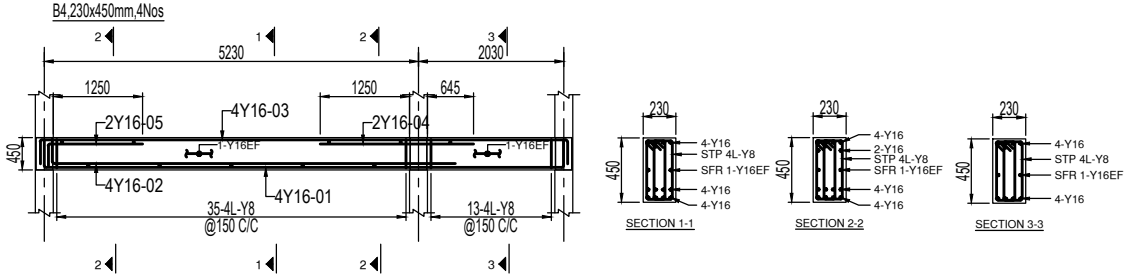
Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:150	March,2025

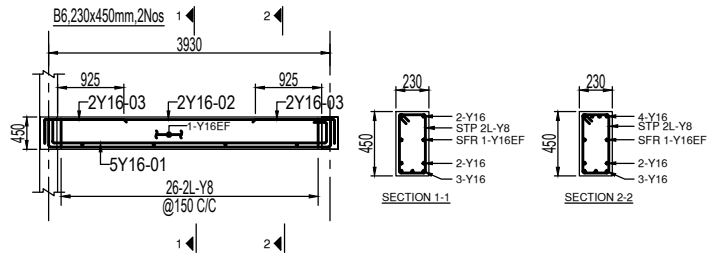
Drawing Number: STR/10

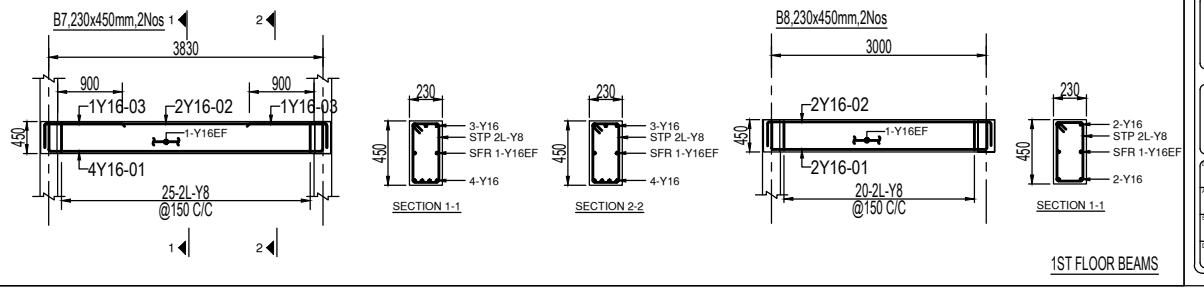












1ST FLOOR BEAMS

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
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Architect and Interior Designer:
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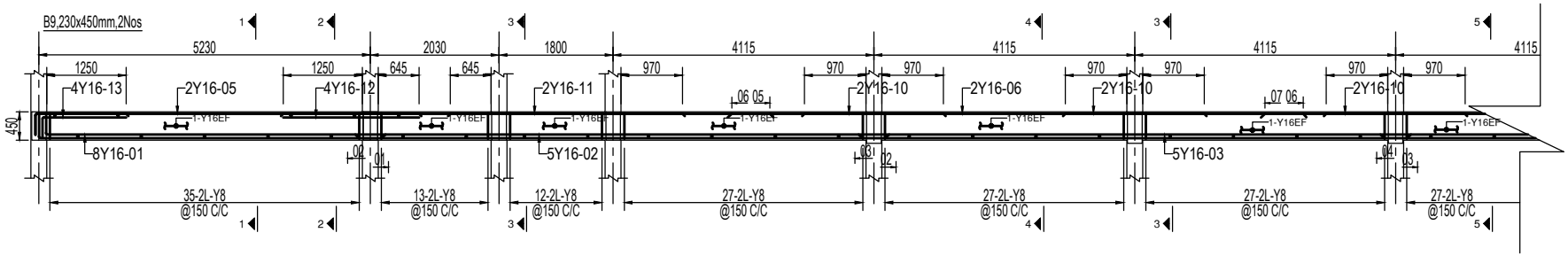
Email: dxe@dxe.co.tz

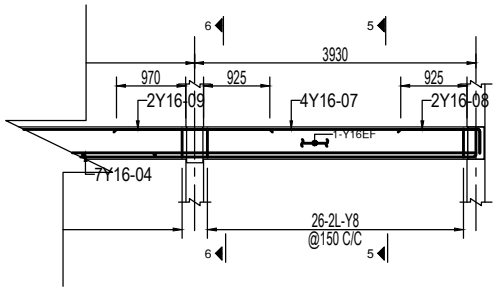
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

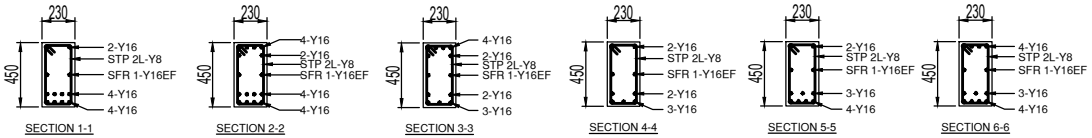
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

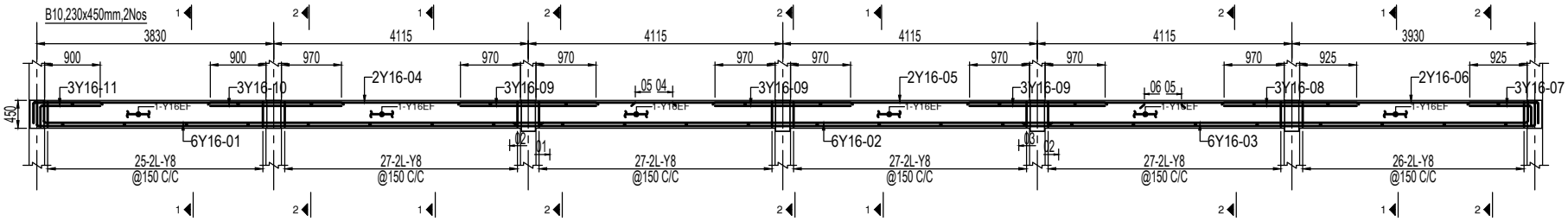
Drawing Tittle:
BEAMS
(CLASSROOM)

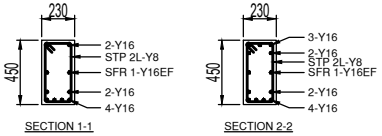
Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale: 1:75	Date: March,2025
Drawing Number: STR/11	

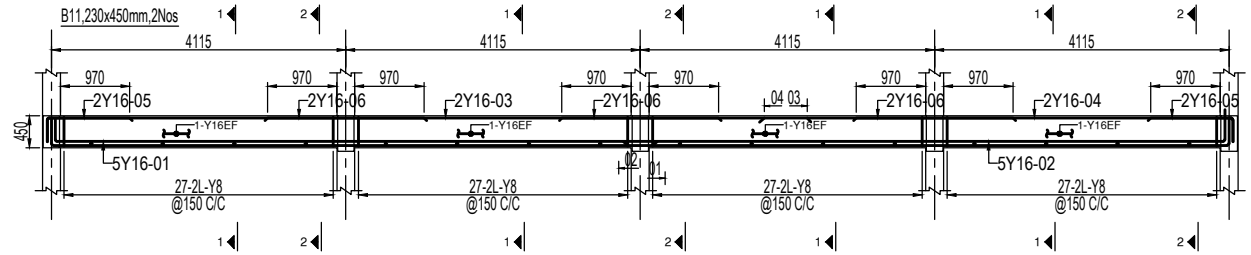


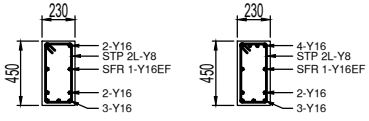


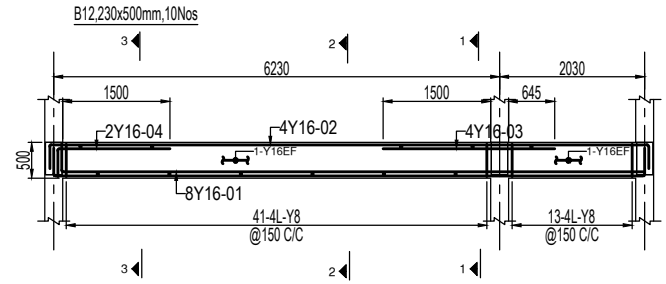


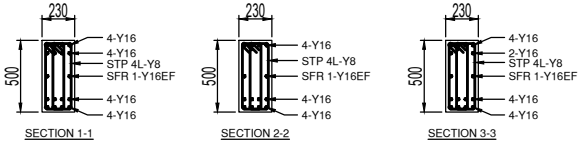












1ST FLOOR BEAMS

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

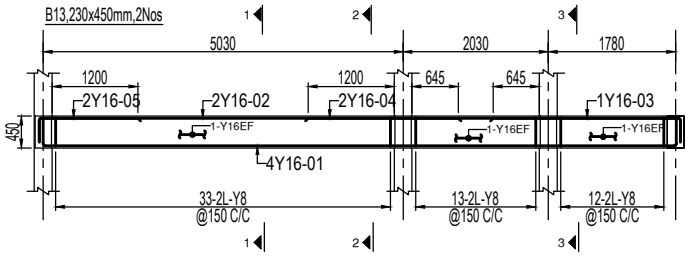
Architect and Interior Designer:
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

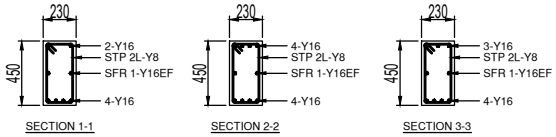
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

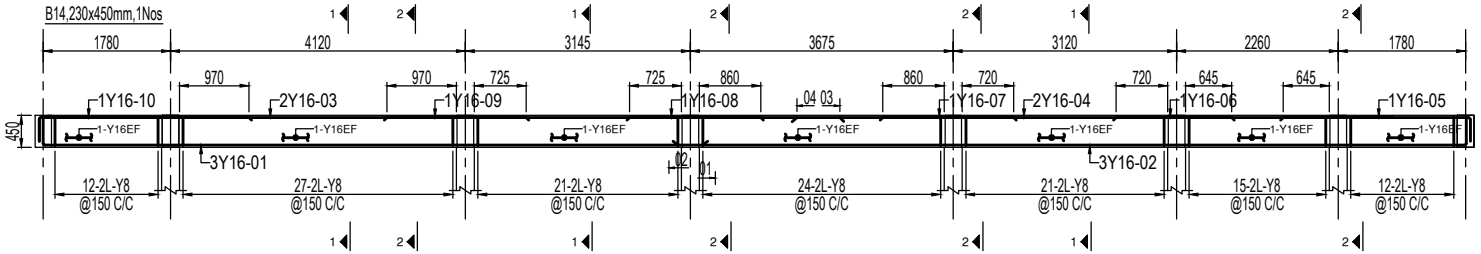
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

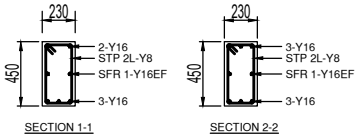
Drawing Tittle:
BEAMS
(CLASSROOM)

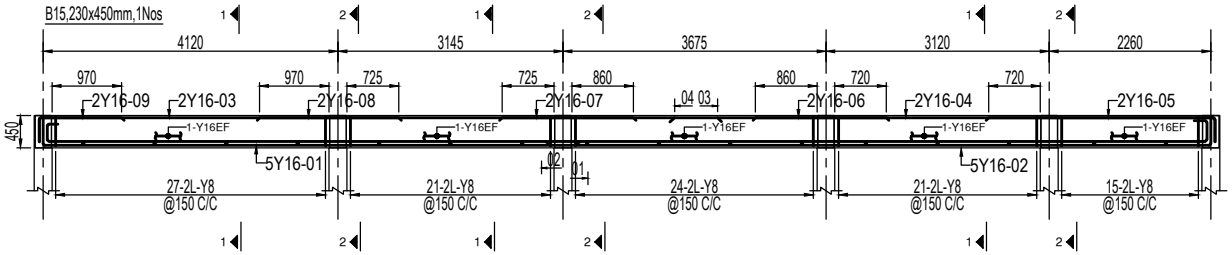
Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:75	March,2025
Drawing Number:	
STR/12	

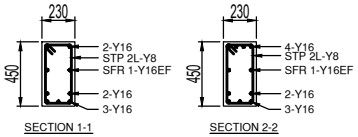


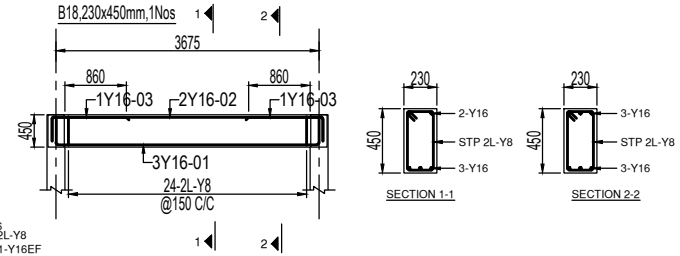


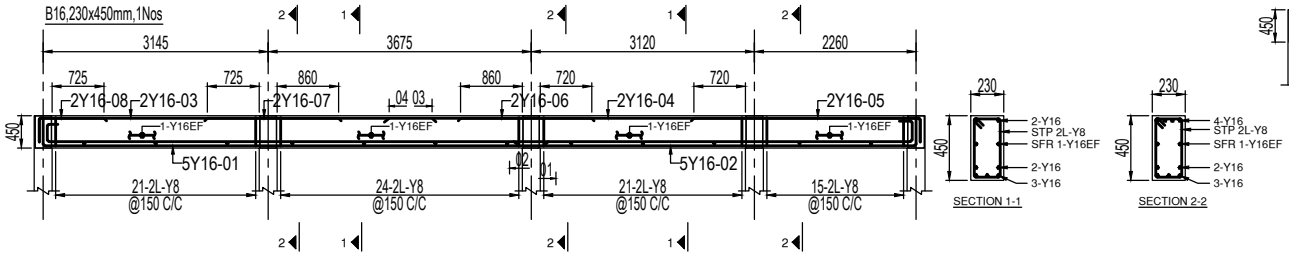


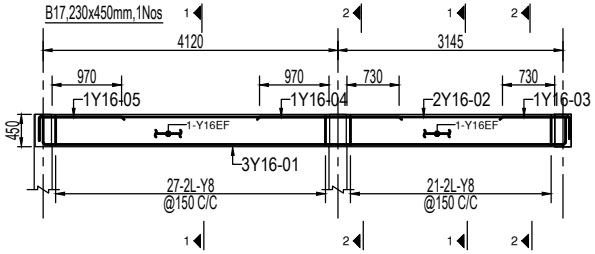


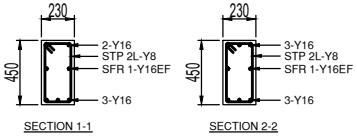


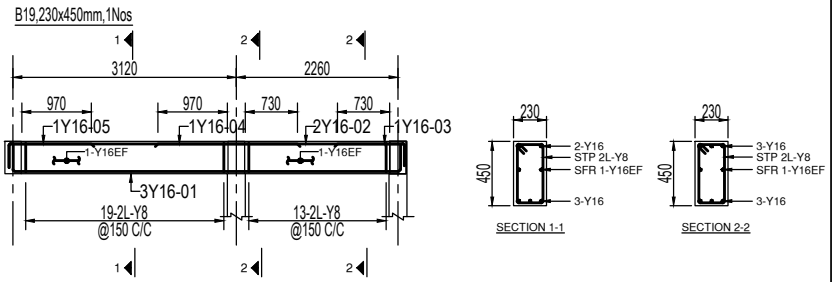












GENERAL NOTES

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   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
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   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
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6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
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Email: dxe@dxe.co.tz

Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

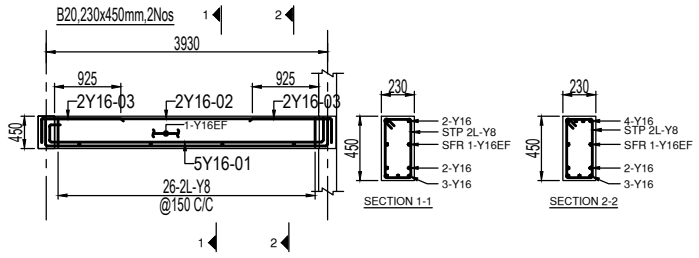
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK '47,
AT KIJITONYAMA DAR ES SALAAM.

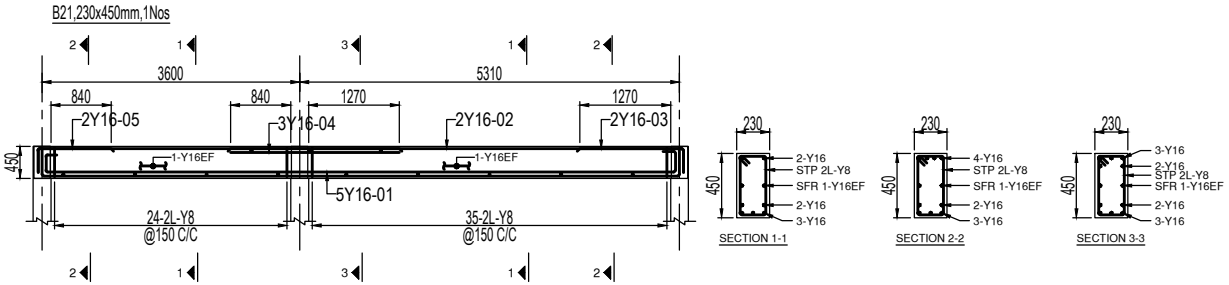
Drawing Tittle:
BEAMS
(CLASSROOM)

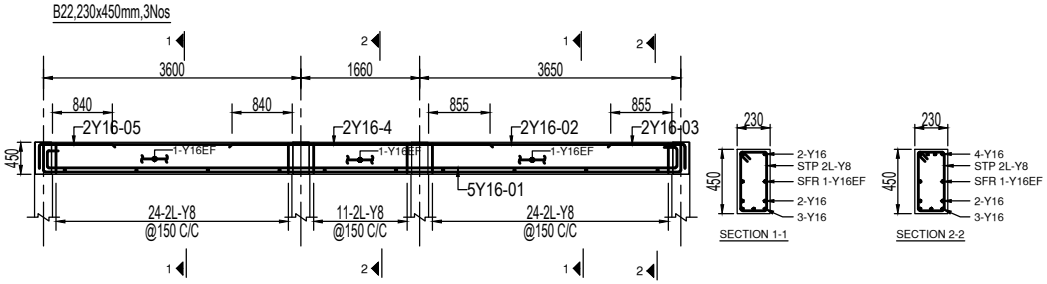
Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:75	March,2025

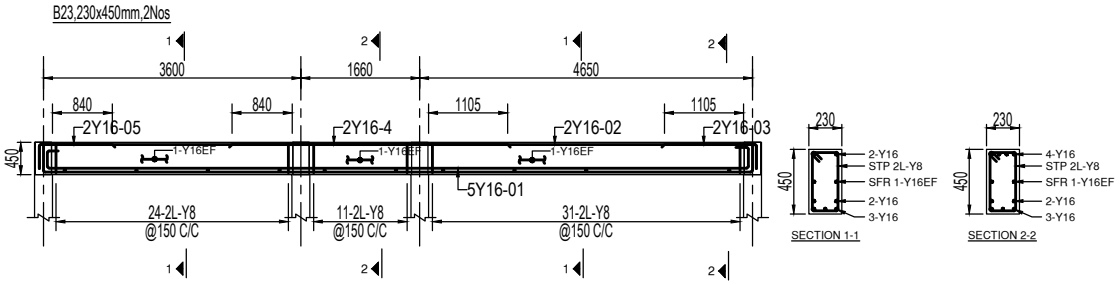
Drawing Number:
STR/13

1ST FLOOR BEAMS









GENERAL NOTES

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Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
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Architect and Interior Designer:
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Email: dxe@dxe.co.tz

Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

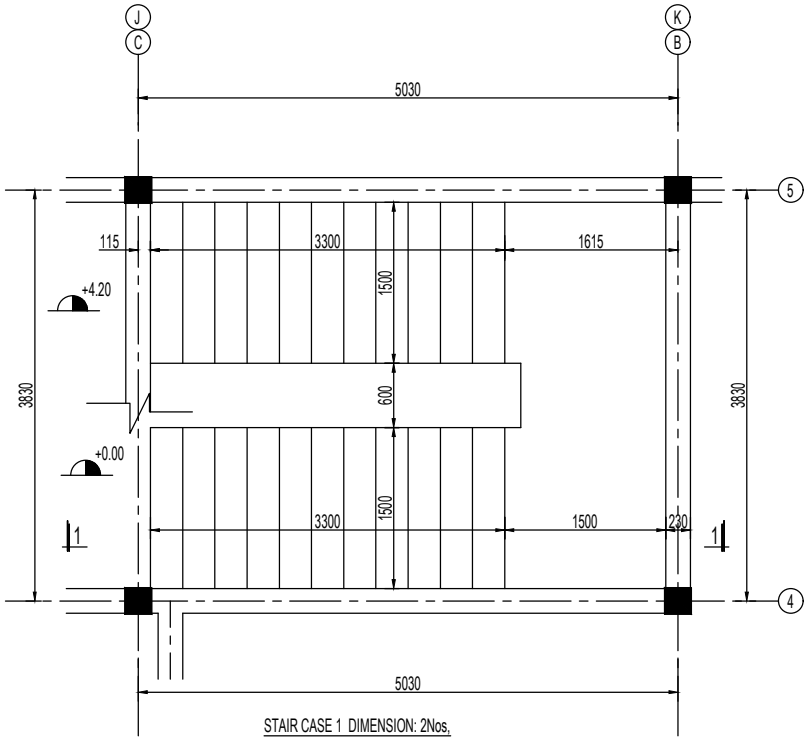
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
BEAMS
(CLASSROOM)

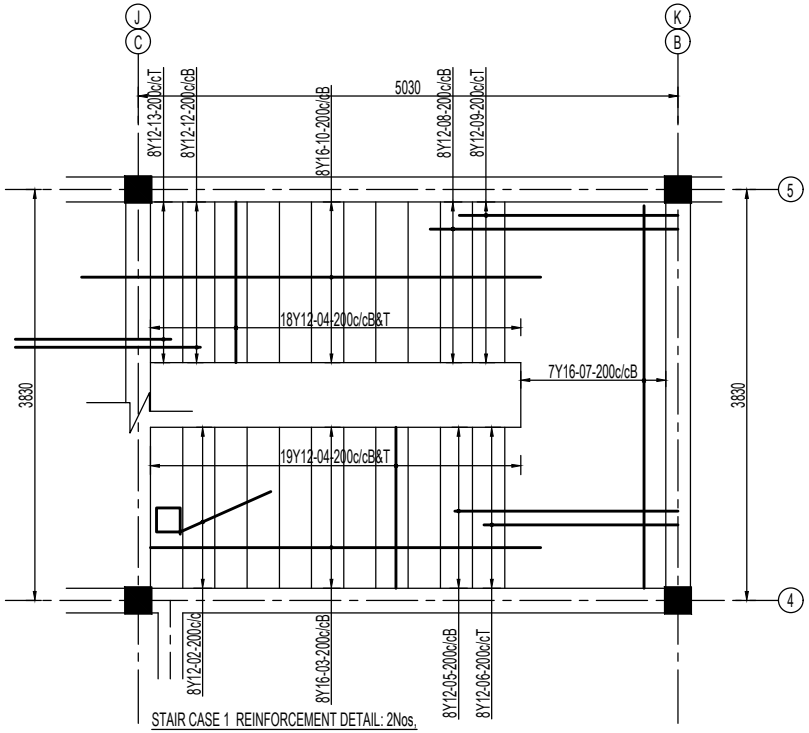
Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:75	March,2025

Drawing Number: STR/14

1ST FLOOR BEAMS



STAIR CASE 1 DIMENSION: 2Nos,
Scale 1:50



STAIR CASE 1 REINFORCEMENT DETAIL: 2Nos,
Scale 1:50

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
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   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
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   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
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6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
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Email: dxe@dxe.co.tz

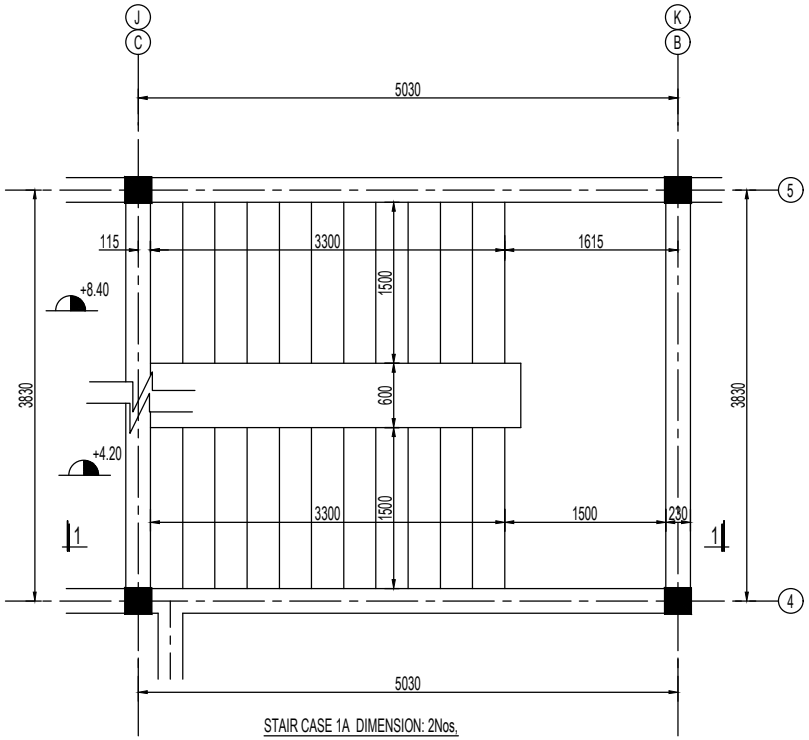
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

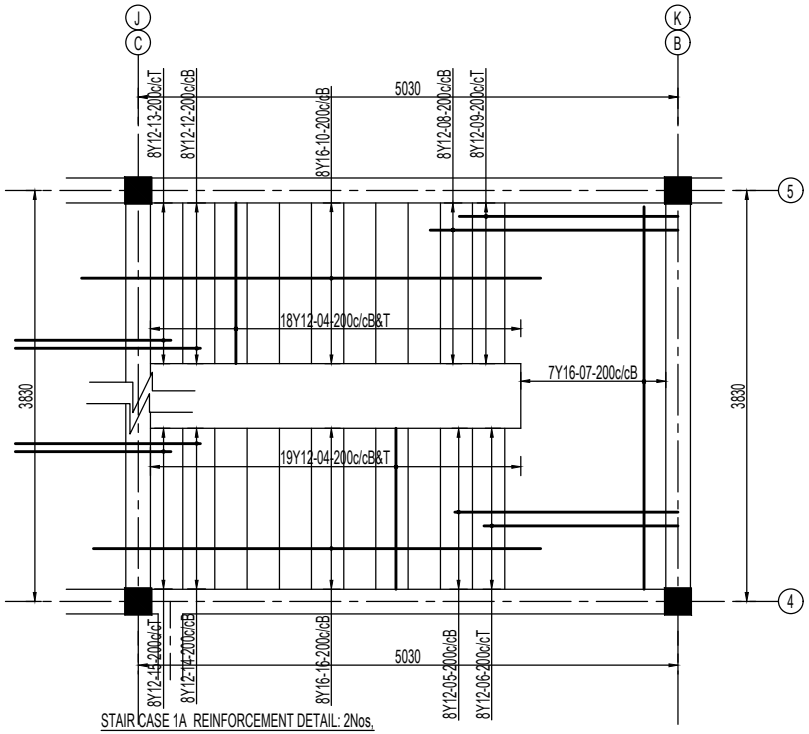
Drawing Tittle:
STAIR CASE 1 DIMENSION & REINFORCEMENT DETAIL (CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:50	March,2025

Drawing Number:
STR/15



STAIR CASE 1A DIMENSION: 2Nos,
Scale 1:50



STAIR CASE 1A REINFORCEMENT DETAIL: 2Nos,
Scale 1:50

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
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4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
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   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm

5. Reinforcements shall comply to BS 4466. code if practice:-
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6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
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Architect and Interior Designer:
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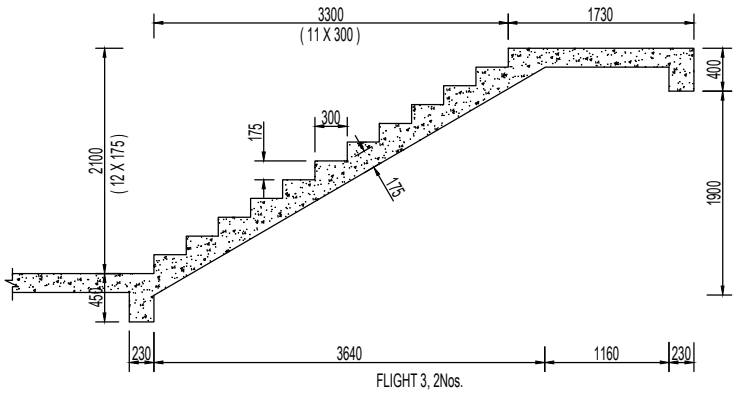
Email: dxe@dxe.co.tz

Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
STAIR CASE 1A DIMENSION & REINFORCEMENT DETAIL (CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:50	March,2025
Drawing Number:	
STR/16	



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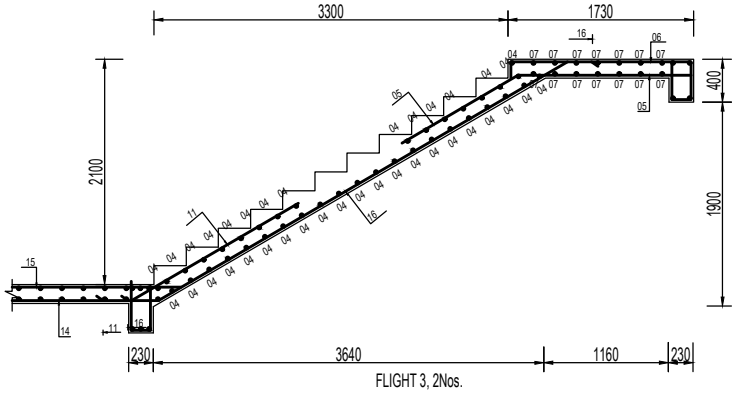
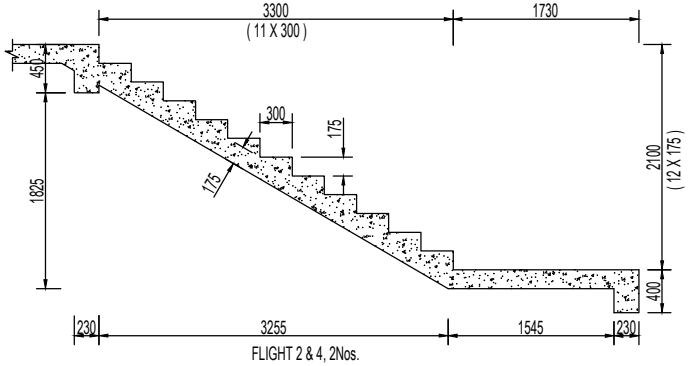
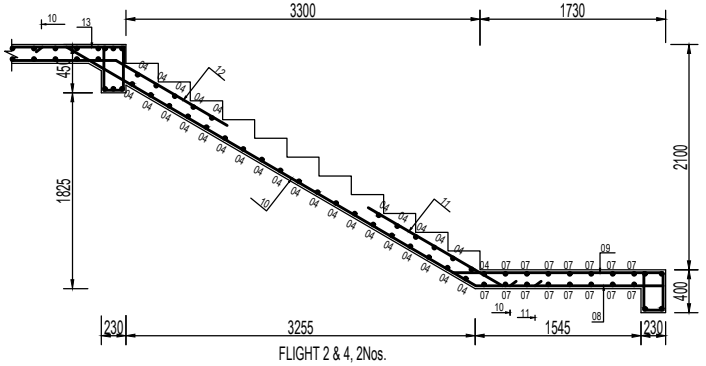


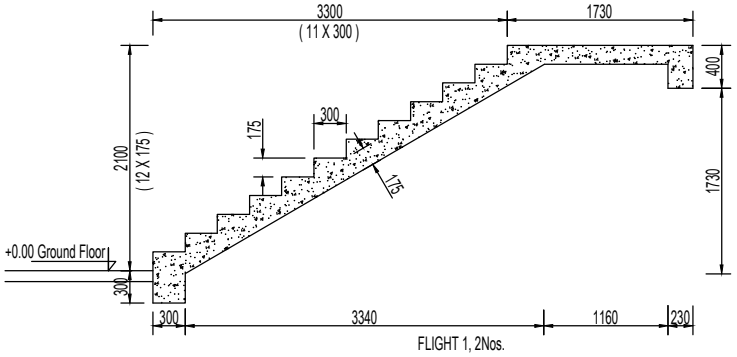
FLIGHT 3, 2Nos.



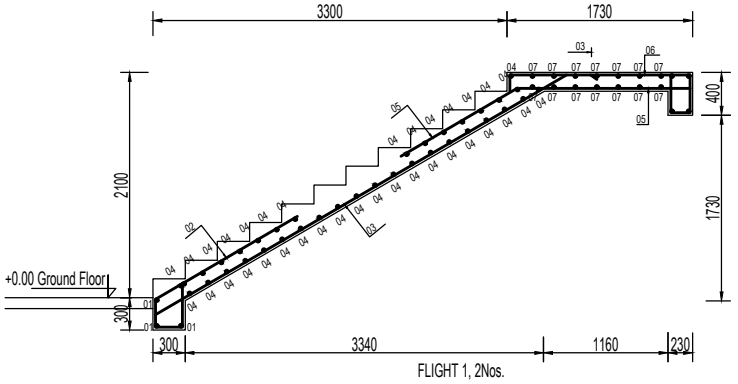
FLIGHT 2 & 4, 2Nos.



FLIGHT 2 & 4, 2Nos.



FLIGHT 1, 2Nos.



FLIGHT 1, 2Nos.

GENERAL NOTES

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Revisions:		
Serial Number	Description	Date

Client Name and Address:
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Email: dxe@dxe.co.tz

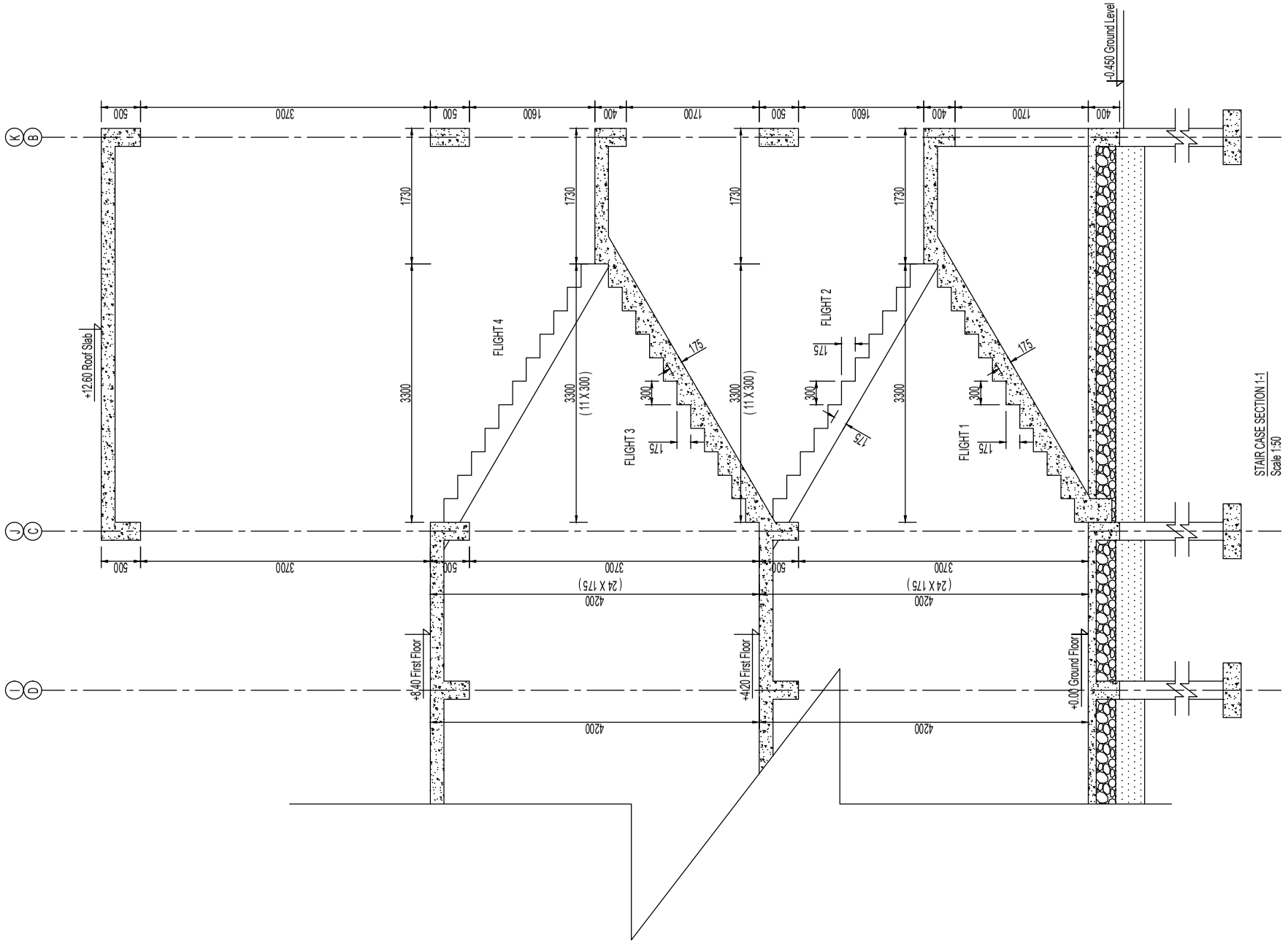
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
SECTIONS
(CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:50	March,2025

Drawing Number:
STR/16



GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

Architect and Interior Designer:
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

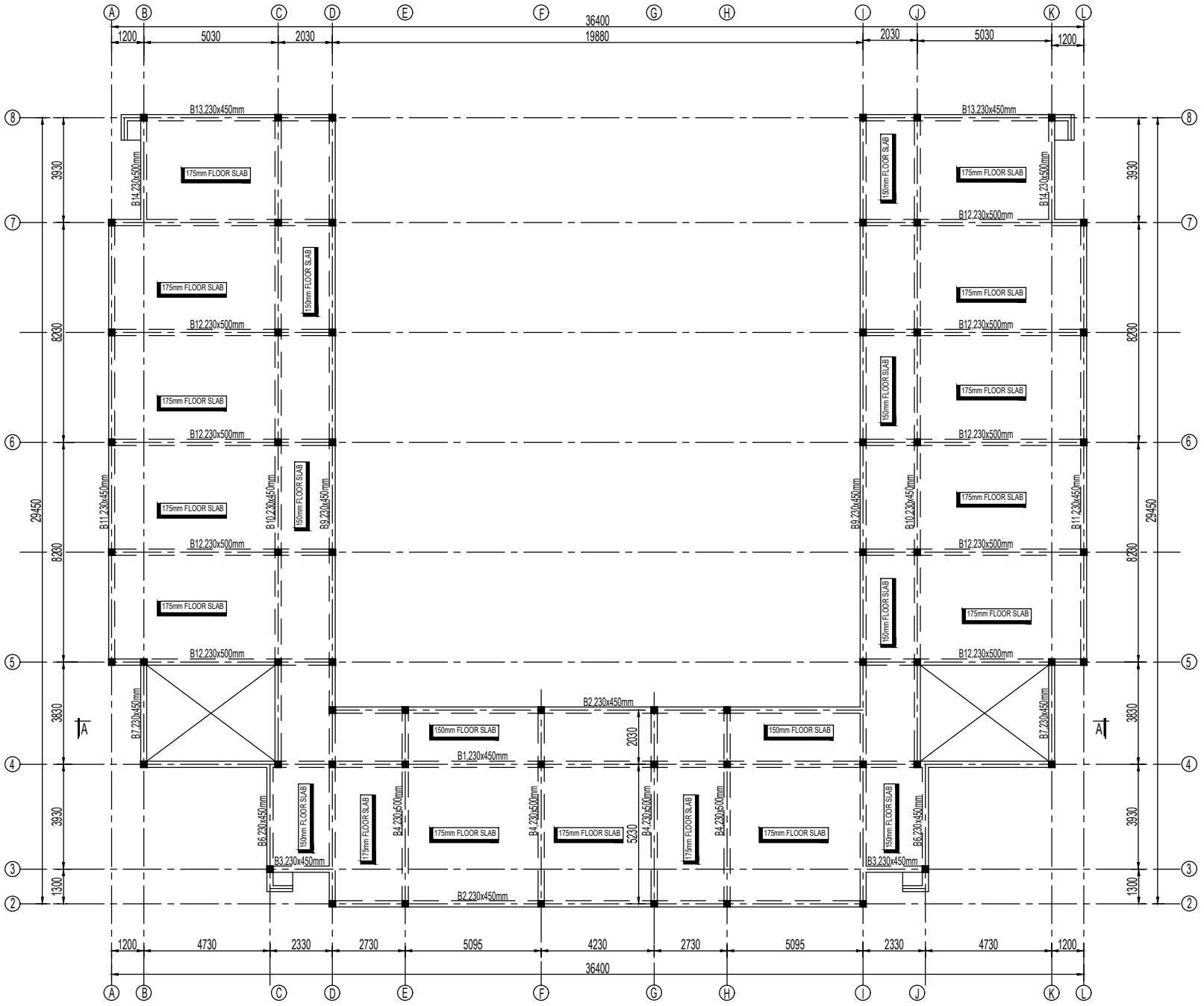
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Title:
STAIR CASE SECTION 1-1
(CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:50	March,2025

Drawing Number:
STR/18



ROOF CONCRETE LAYOUT

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
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   (f) Blinding concrete=Grade 10 (1:4:8)mix
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   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
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   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
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   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
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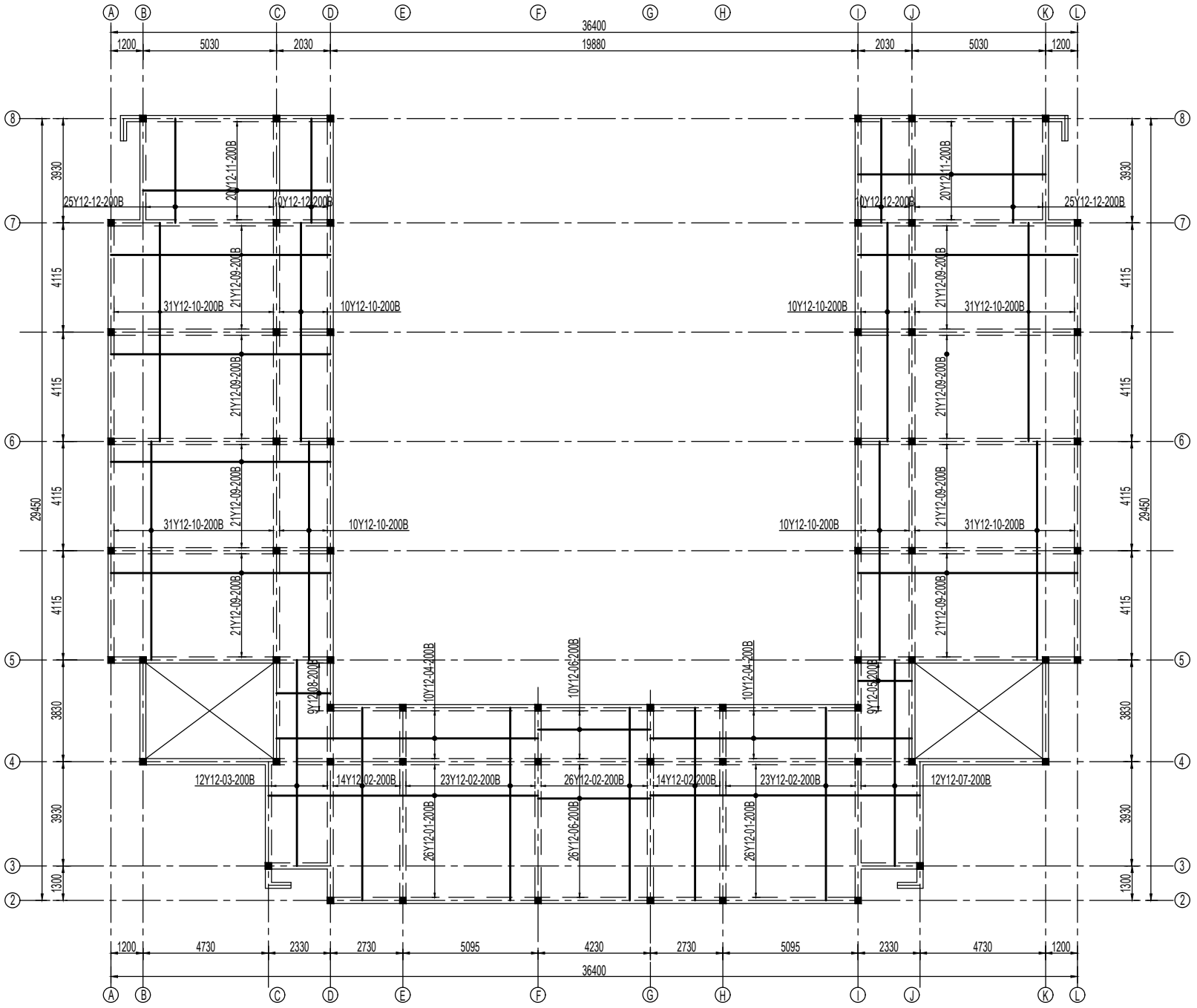
Email: dxe@dxe.co.tz

Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
ROOF CONCRETE LAYOUT (CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:150	March,2025
Drawing Number:	
STR/19	



ROOF
BOTTOM REINFORCEMENT DETAIL

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
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6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

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Consulting Engineer:
GALAXY PROJECT SERVICES LTD
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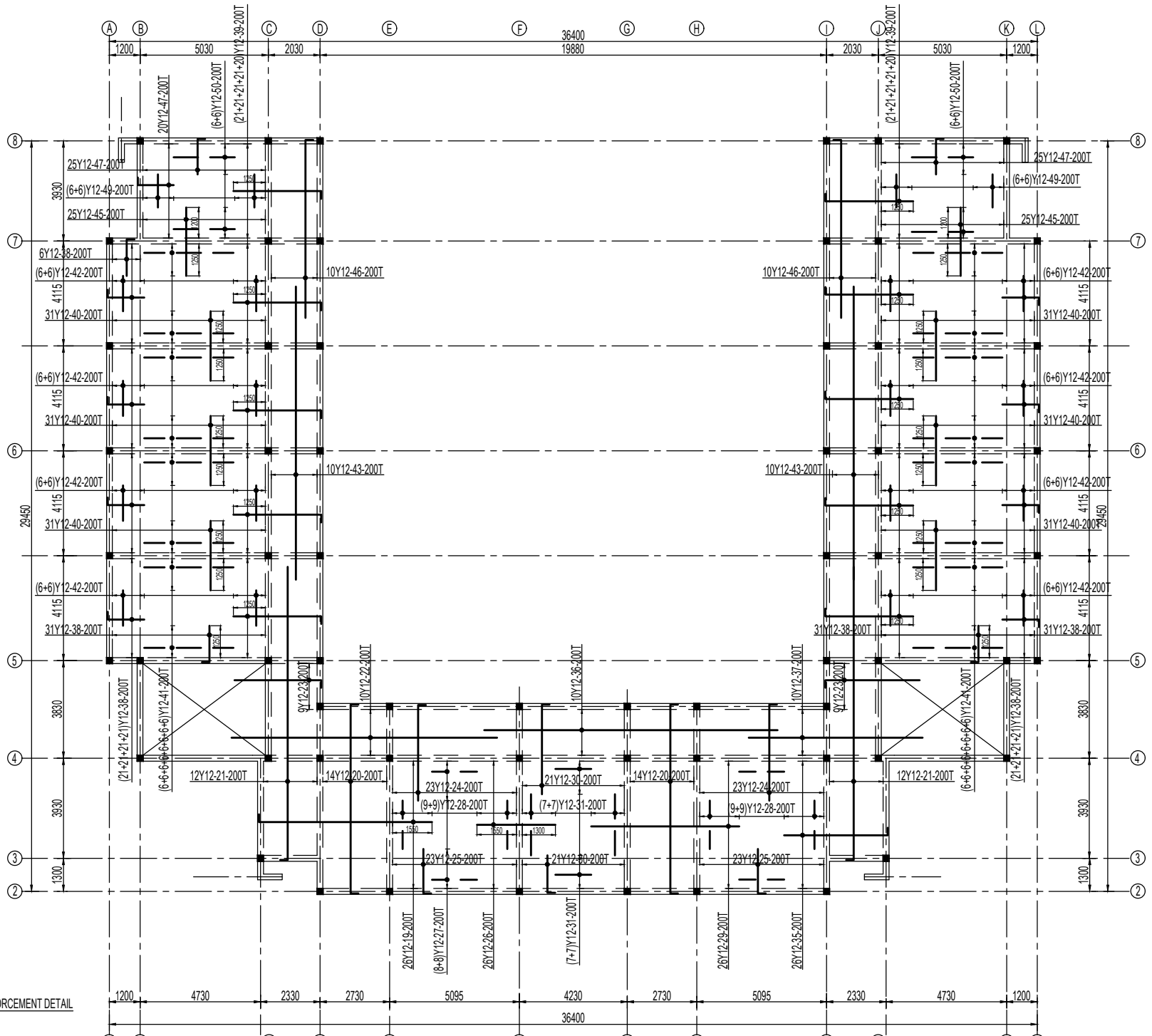
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK '47,
AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
ROOF
BOTTOM REINFORCEMENT DETAIL
(CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:150	March,2025

Drawing Number:
STR/20



ROOF
TOP REINFORCEMENT DETAIL

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
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   (f) Blinding concrete=Grade 10 (1:4:8)mix
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   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
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   (d) Columns = 40mm
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   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

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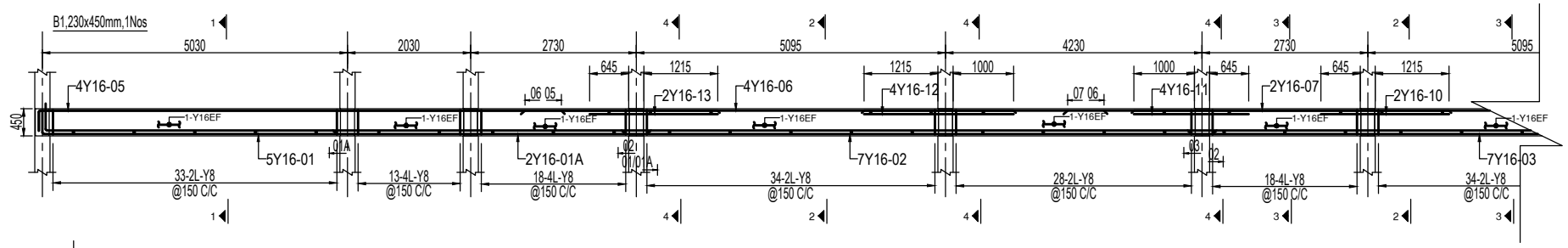
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

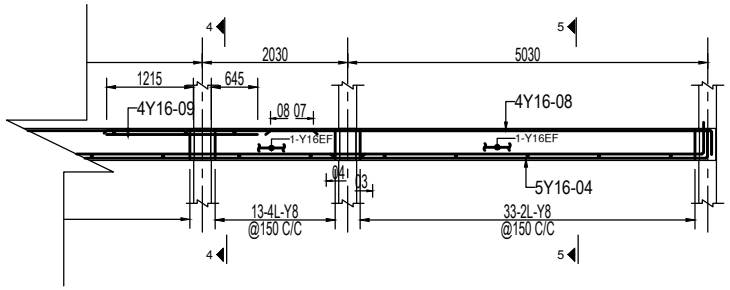
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

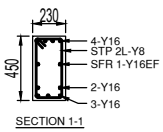
Drawing Tittle:
ROOF
TOP REINFORCEMENT DETAIL
(CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:150	March,2025

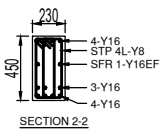
Drawing Number:
STR/21



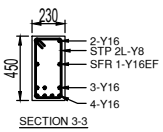




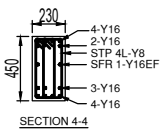
SECTION 1-1



SECTION 2-2



SECTION 3-3



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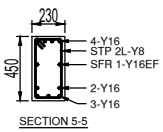
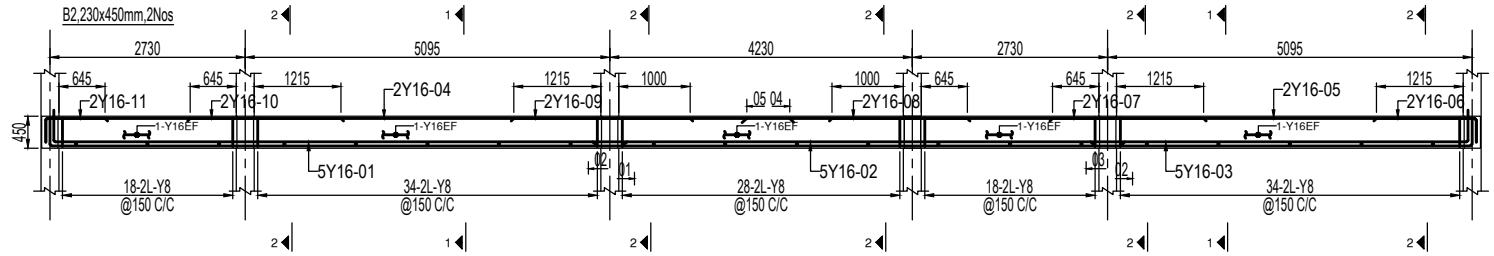
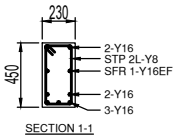
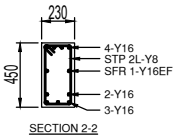


SECTION 5-5

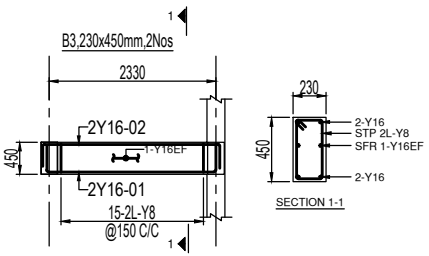




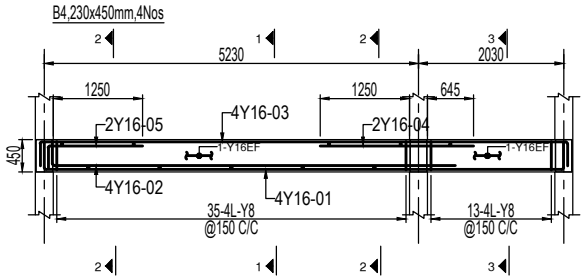
SECTION 1-1

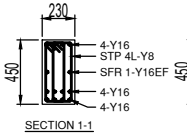


SECTION 2-2

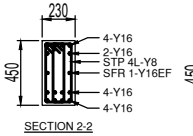


SECTION 1-1





SECTION 1-1



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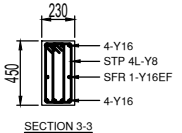
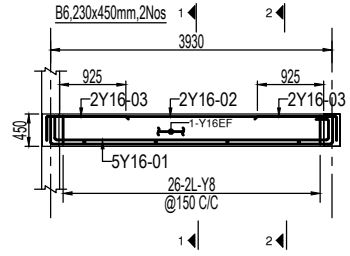
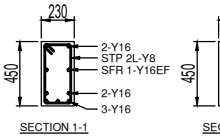
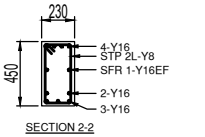


SECTION 3-3

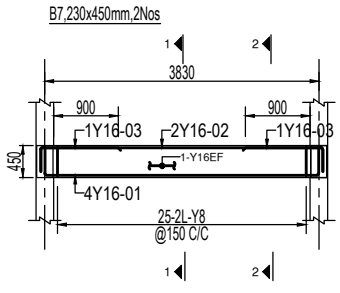


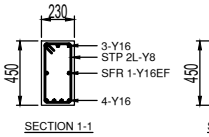


SECTION 1-1

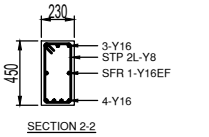


SECTION 2-2





SECTION 1-1



SECTION 2-2

ROOF BEAMS

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
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4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
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7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
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Email: dxe@dxe.co.tz

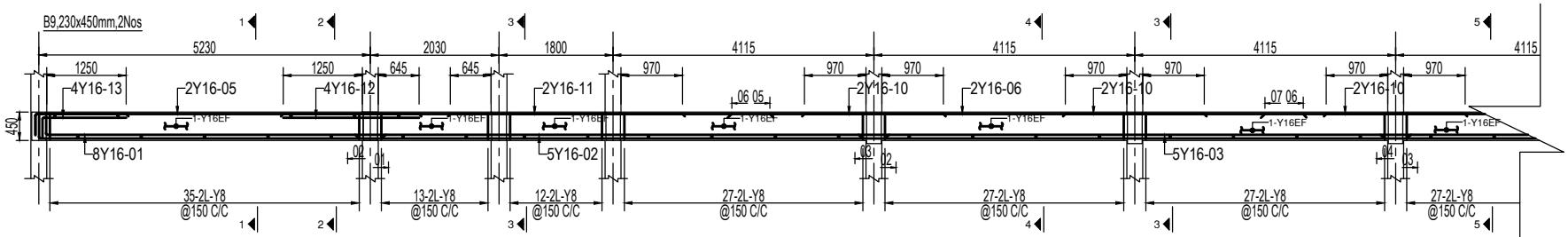
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

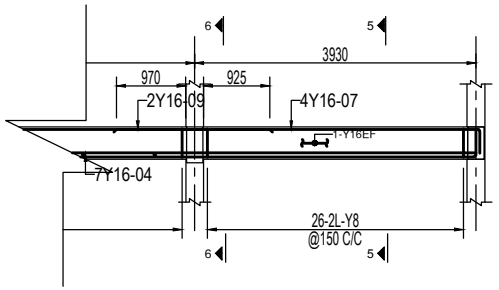
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

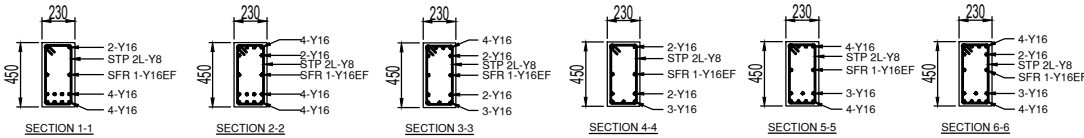
Drawing Tittle:
ROOF BEAMS (CLASSROOM)

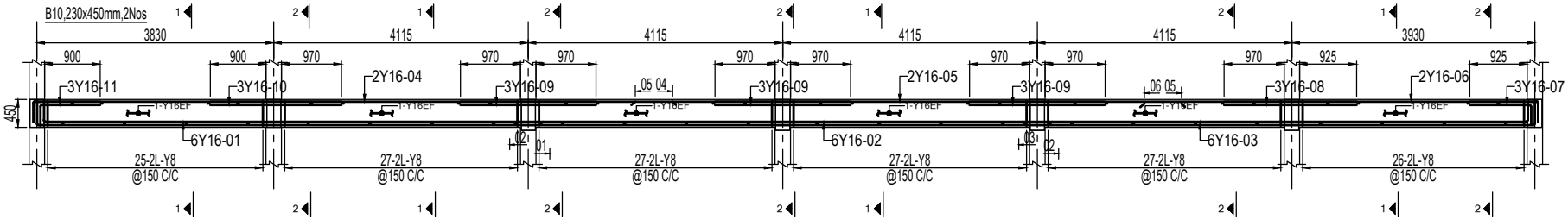
Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:75	March,2025

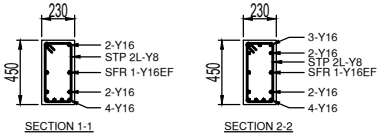
Drawing Number: STR/22

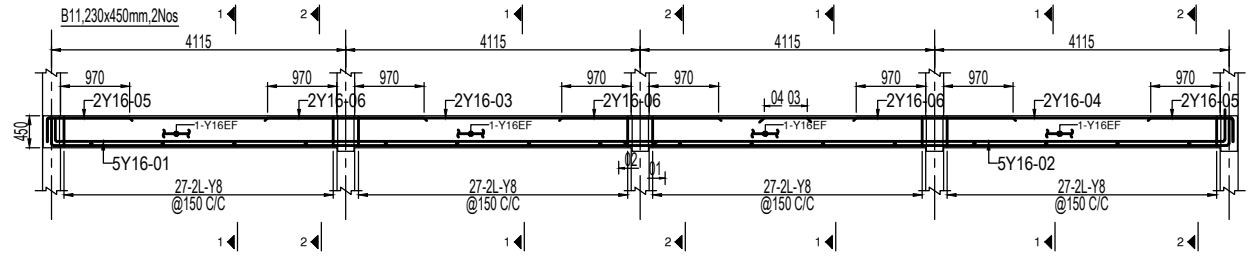


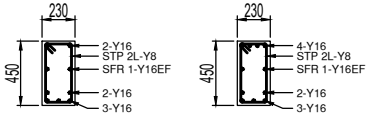


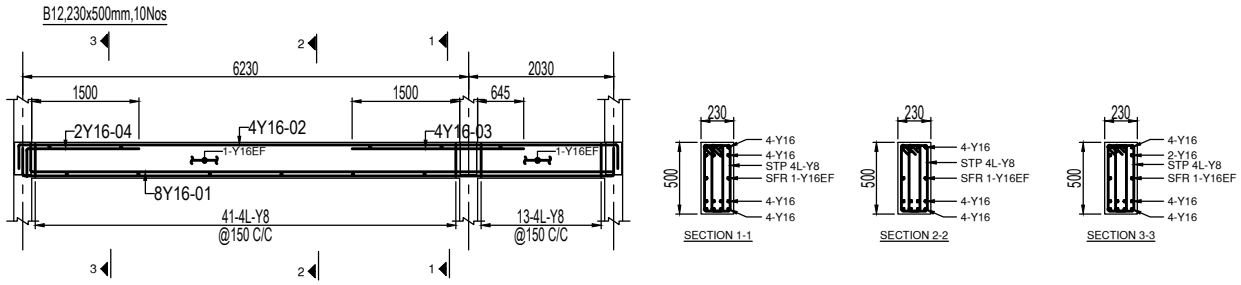












ROOF BEAMS

GENERAL NOTES

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   (d) Strip foundation = Grade 20 (1:2:4)mix
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   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

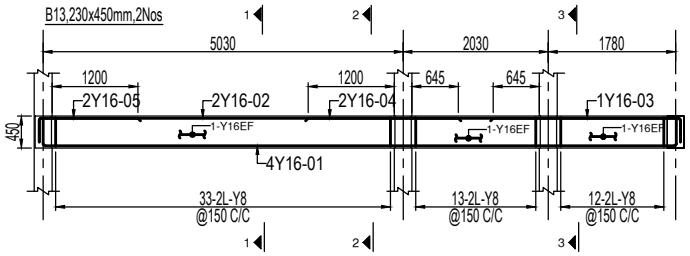
Architect and Interior Designer:
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

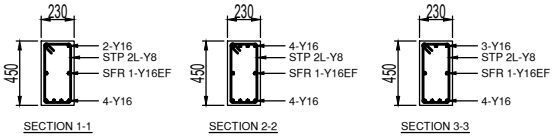
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

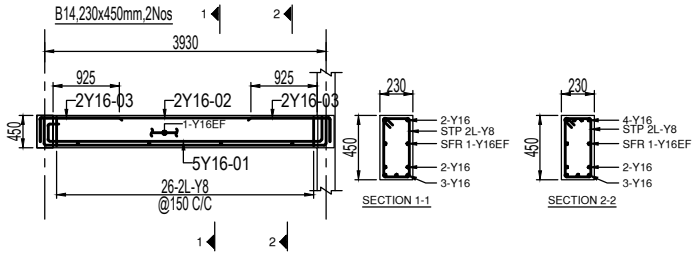
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
ROOF BEAMS (CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:75	March,2025
Drawing Number:	
STR/23	







GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
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Email: dxe@dxe.co.tz

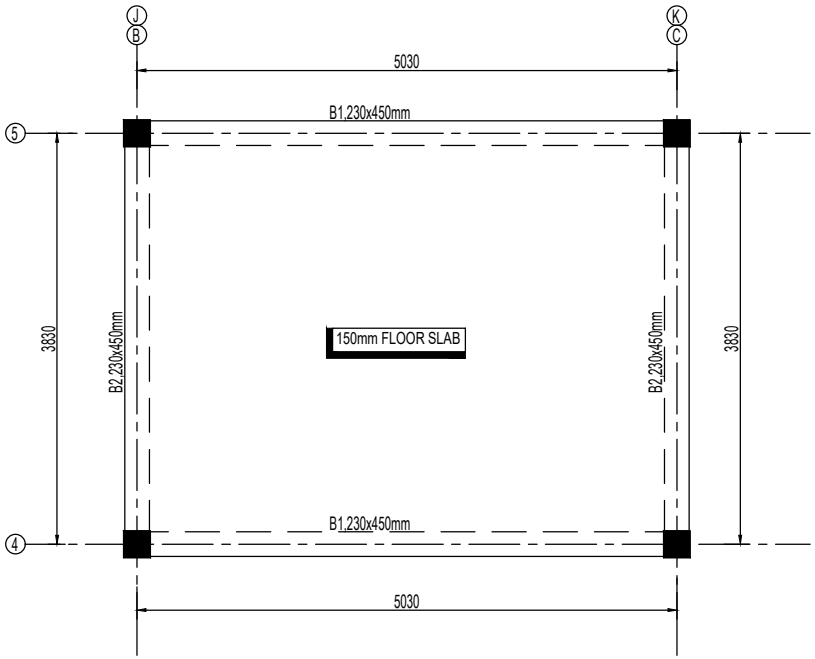
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

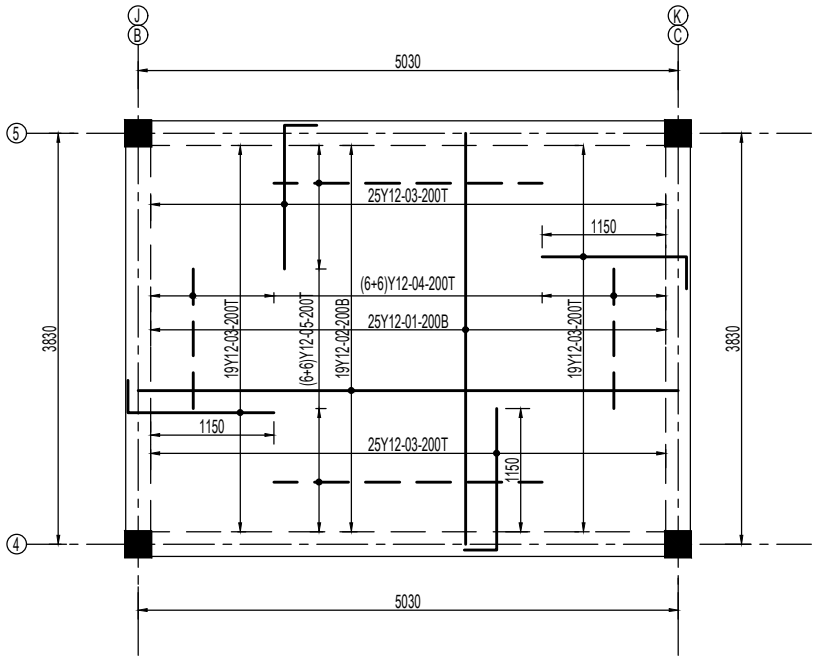
Drawing Tittle:
ROOF BEAMS
(CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:75	March,2025
Drawing Number:	
STR/24	

ROOF BEAMS



TOP ROOF CONCRETE LAYOUT , 2Nos.



TOP ROOF REINFORCEMENT DETAIL , 2Nos.

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix

4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm

5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
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Architect and Interior Designer:
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Email: dxe@dxe.co.tz

Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

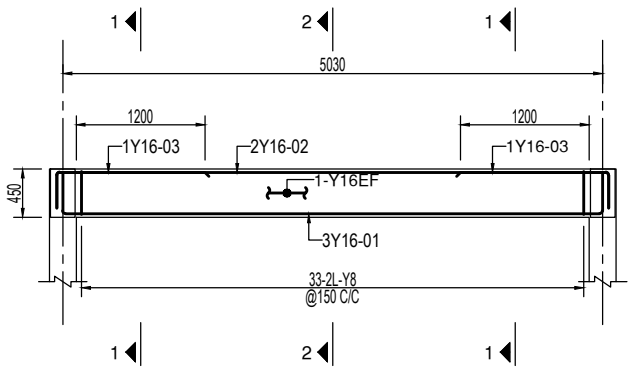
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

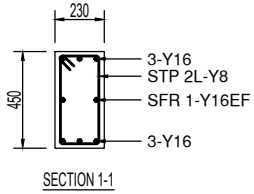
Drawing Tittle:
TOP ROOF CONCRETE LAYOUT & REINFORCEMENT DETAIL (CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:50	March,2025

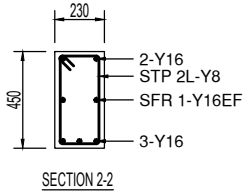
Drawing Number:
STR/25

B1,230x450mm,4Nos



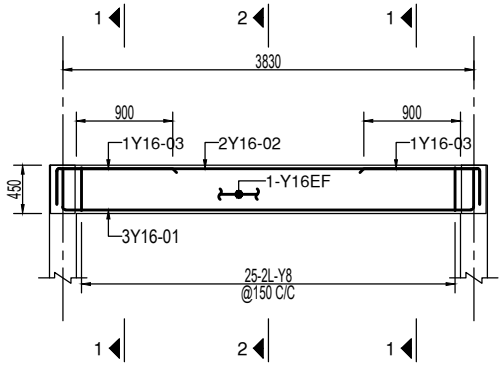


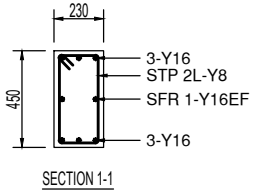
SECTION 1-1



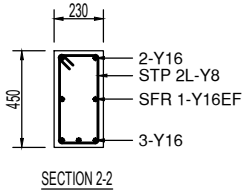
SECTION 2-2

B2,230x450mm,4Nos





SECTION 1-1



SECTION 2-2

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix

4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm

5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
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DAR ES SALAAM.

Architect and Interior Designer:
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Email: dxe@dxe.co.tz

Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

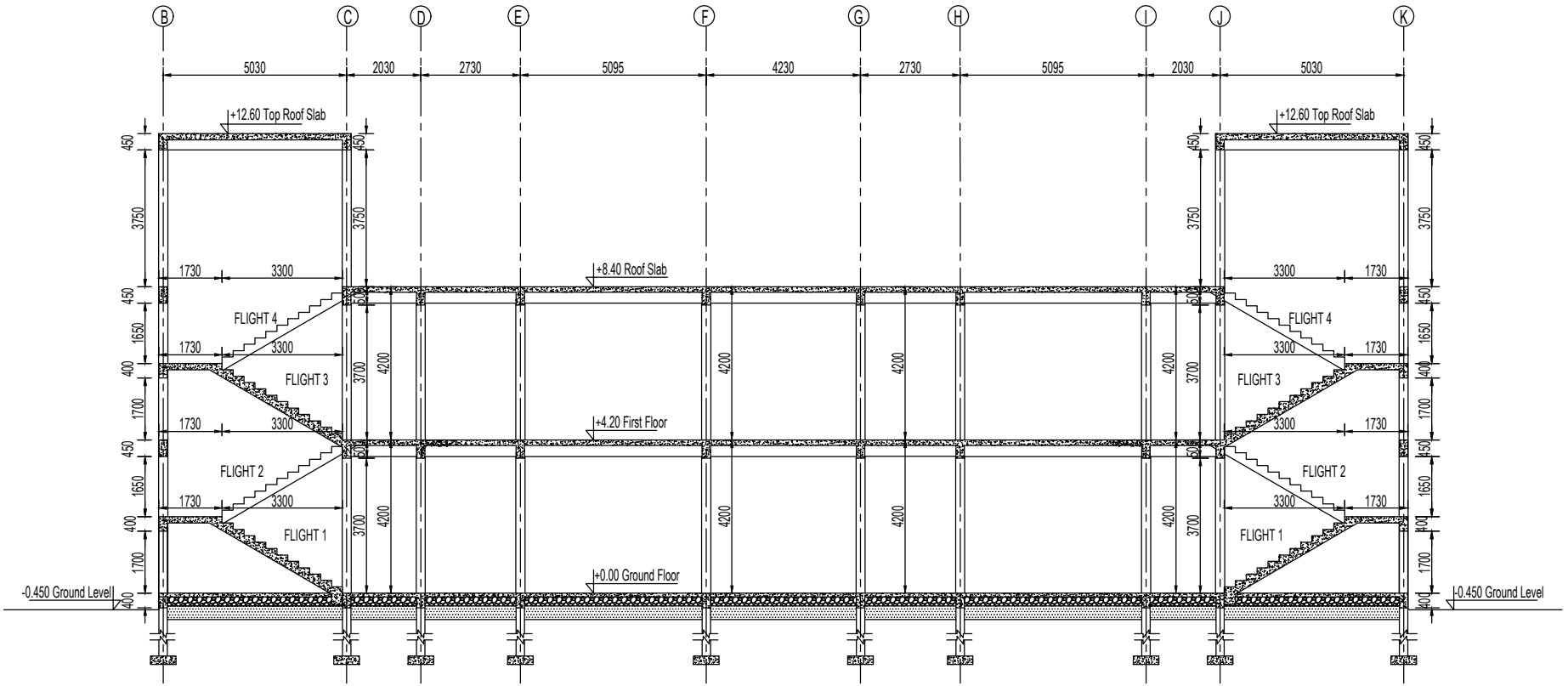
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
TOP ROOF BEAMS (CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:50	March,2025

Drawing Number: STR/26

TOP ROOF BEAMS



STRUCTURAL SECTION A-A

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix

4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm

5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

Architect and Interior Designer:
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
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Email: dxe@dxe.co.tz

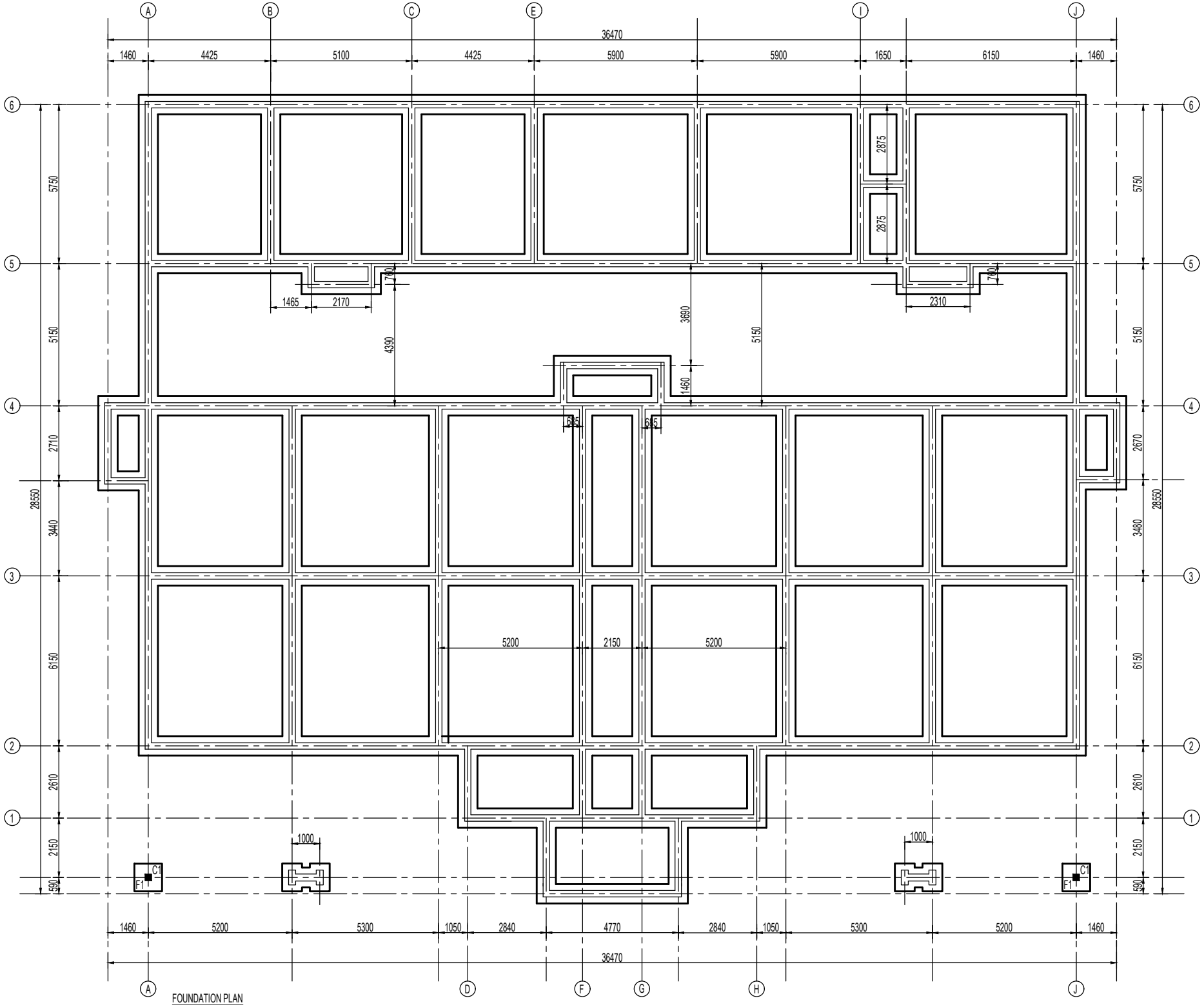
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
STRUCTURAL SECTION A-A (CLASSROOM)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:125	March,2025

Drawing Number:
STR/27



FOUNDATION PLAN

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grade 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 250N/mmsq.
   (b) High tensile steel fy = 460N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

Architect and Interior Designer:
DXE DESIGN ARCHITECTURE ENGINEERING
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32862,
Dar es Salaam, Tanzania
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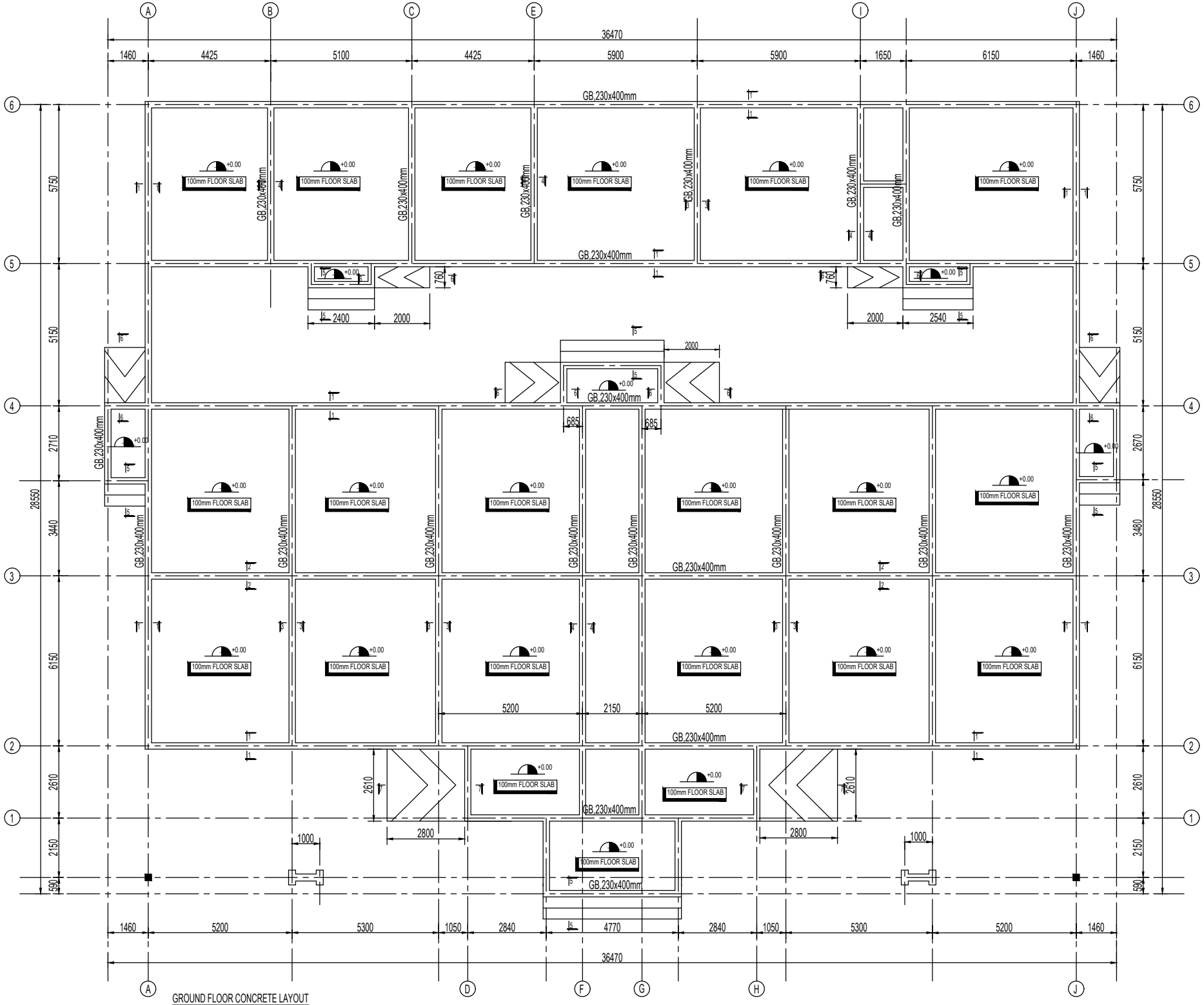
+255 762 718891
Email: dxe@dxe.co.tz

Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
FOUNDATION PLAN
(HOSTEL BLOCK)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:125	March,2025
Drawing Number:	
STR/01	



GROUND FLOOR CONCRETE LAYOUT

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grade 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 250N/mmsq.
   (b) High tensile steel fy = 460N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
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DAR ES SALAAM.

Architect and Interior Designer:
DXE DESIGN ARCHITECTURE ENGINEERING
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Email: dxe@dxe.co.tz

Consulting Engineer:
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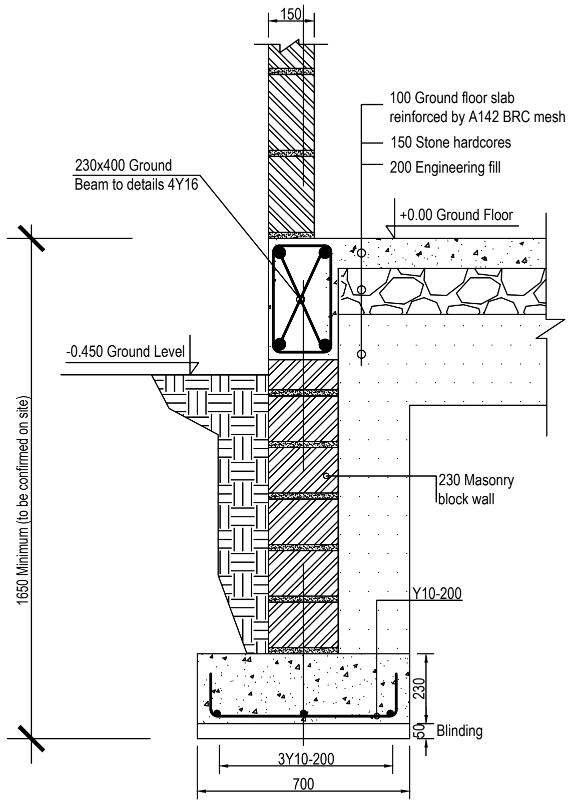
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

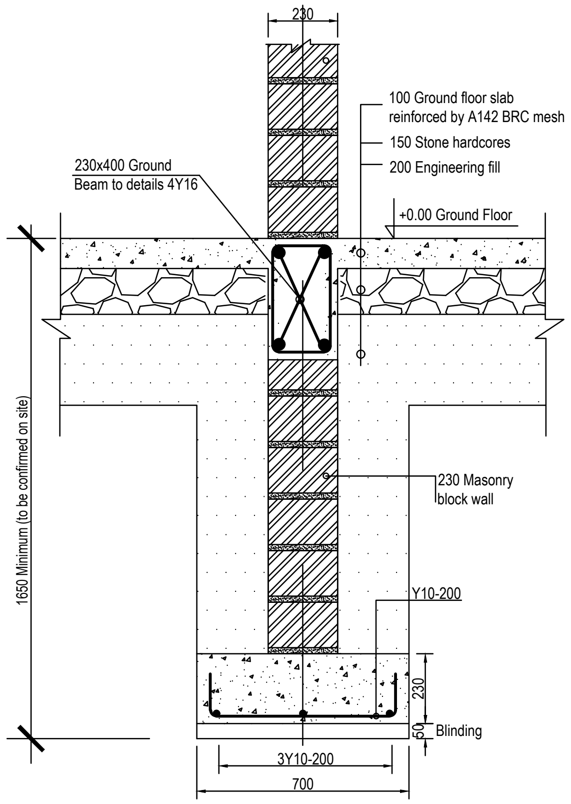
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
GROUND FLOOR CONCRETE LAYOUT (HOSTEL BLOCK)

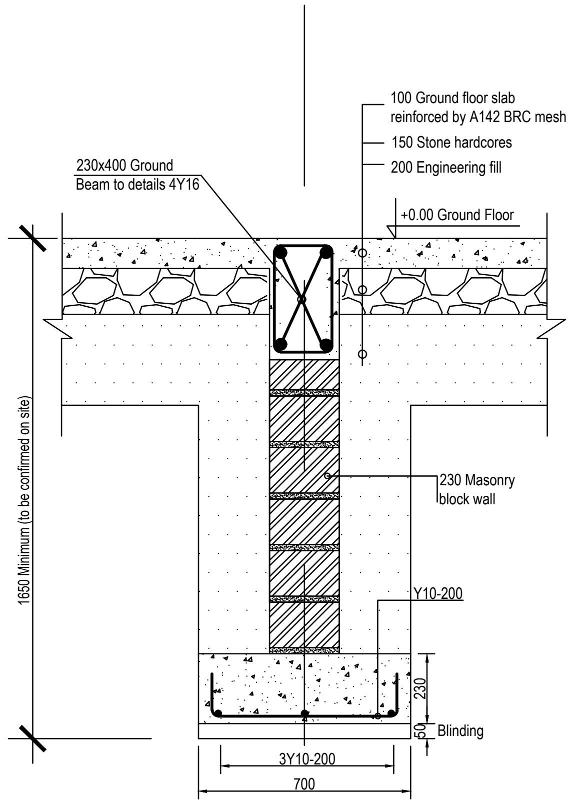
Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:125	March,2025
Drawing Number:	
STR/02	



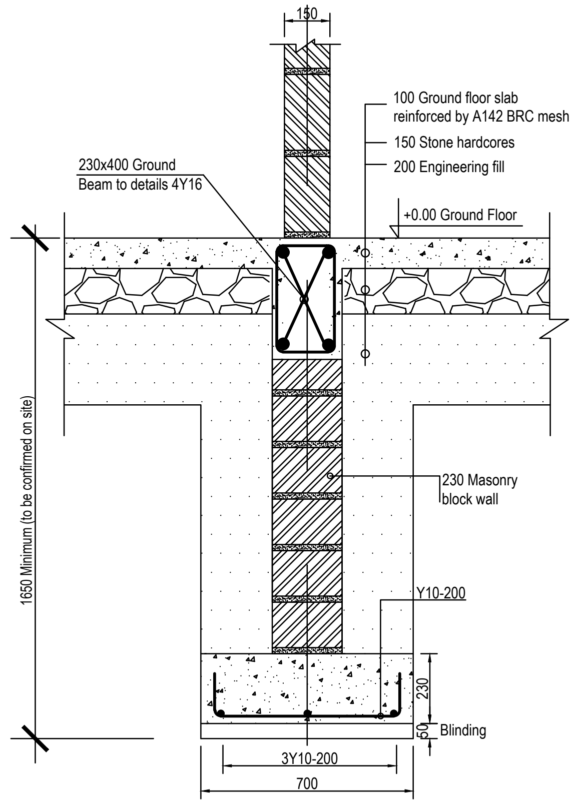
SECTION 1-1,
Scale 1:25



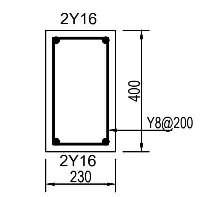
SECTION 2-2,
Scale 1:25



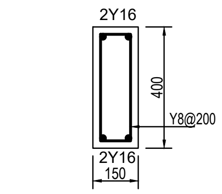
SECTION 3-3,
Scale 1:25



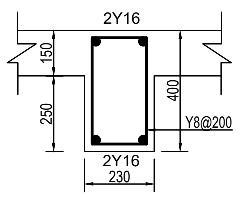
SECTION 4-4,
Scale 1:25



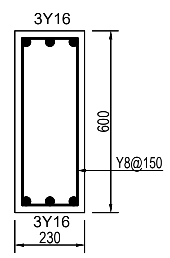
GROUND BEAM SECTION,
Scale 1:25



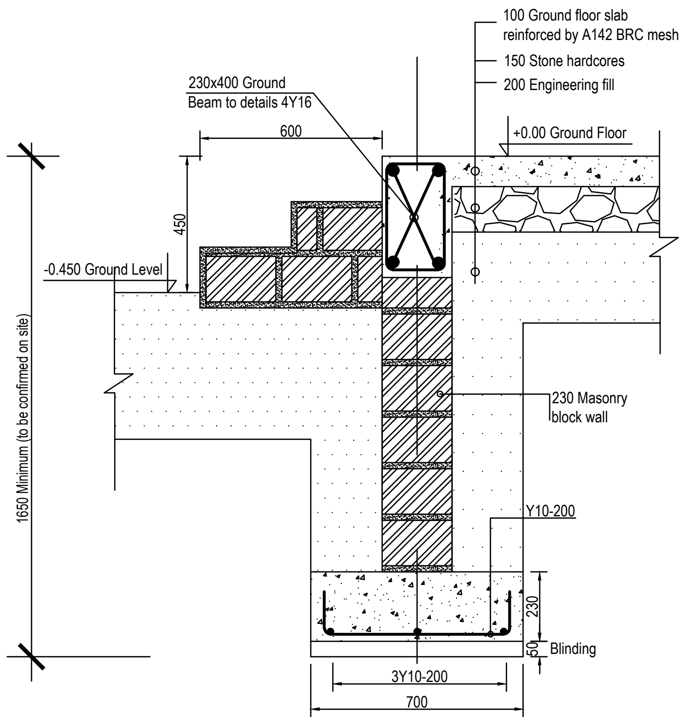
TYPICAL RING BEAM SECTION (RB),
Scale 1:25



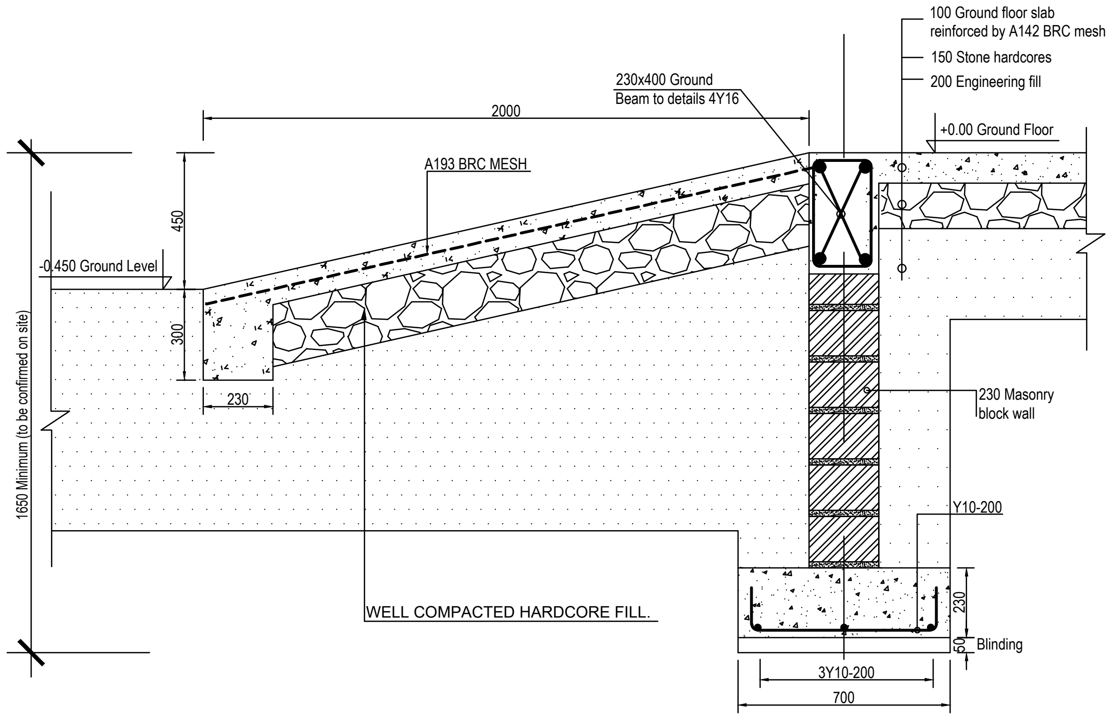
TYPICAL BEAM SECTION (TB),
Scale 1:25



TYPICAL BEAM SECTION (RB02),
Scale 1:25



SECTION 5-5,
Scale 1:25



SECTION 6-6,
Scale 1:25

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix

4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm

5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 250N/mmsq.
   (b) High tensile steel fy = 460N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

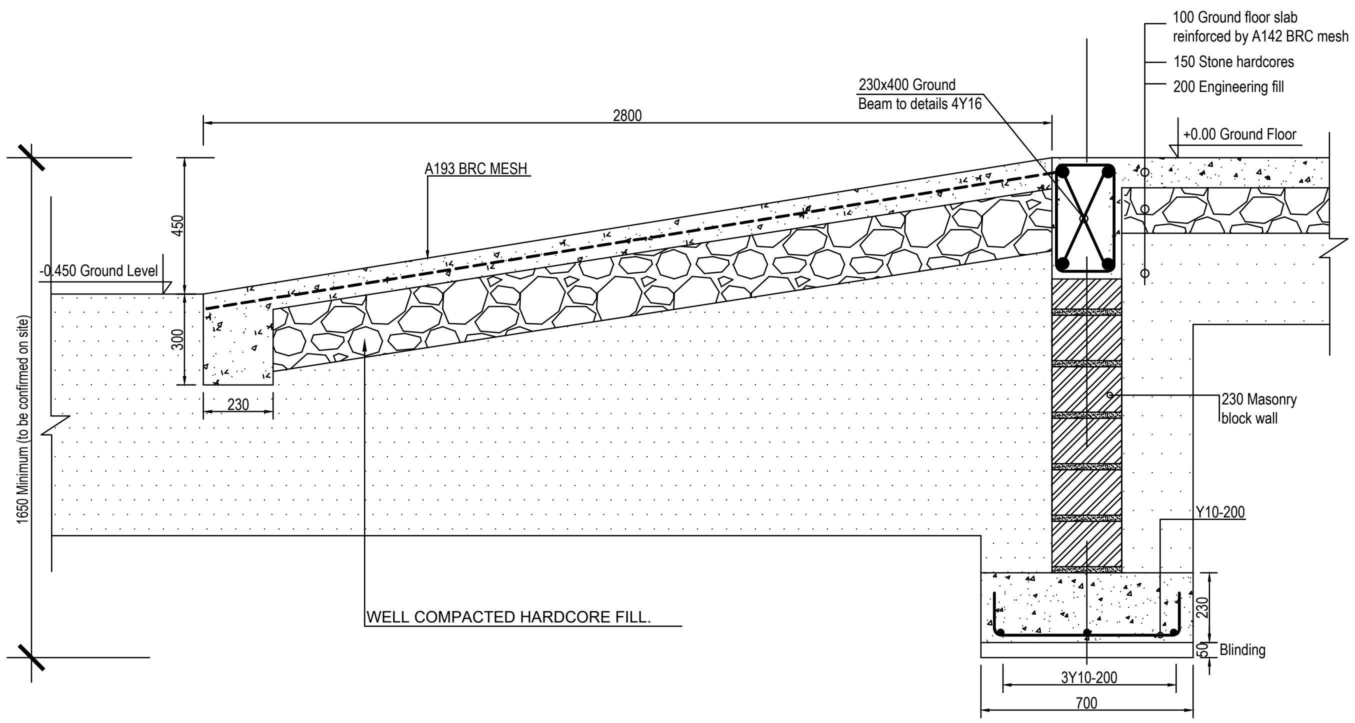
Architect and Interior Designer:
DXE DESIGN ARCHITECTURE ENGINEERING
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

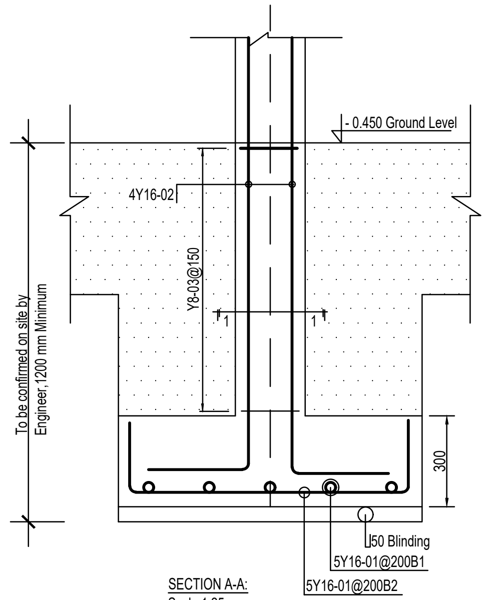
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47,
AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
SECTIONS
(HOSTEL BLOCK)

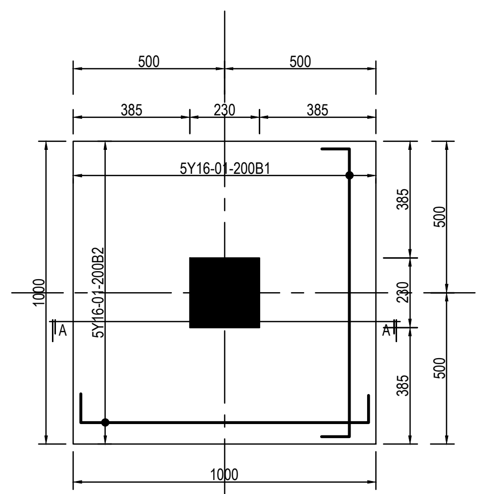
Design By: Joseph M . Lucas	Checked By: Habib Haruna Kitova
Approved By: Habib Haruna Kitova	Drawn By: Hengebert J. Kiloga
Scale: 1:25	Date: March,2025
Drawing Number: STR/03	



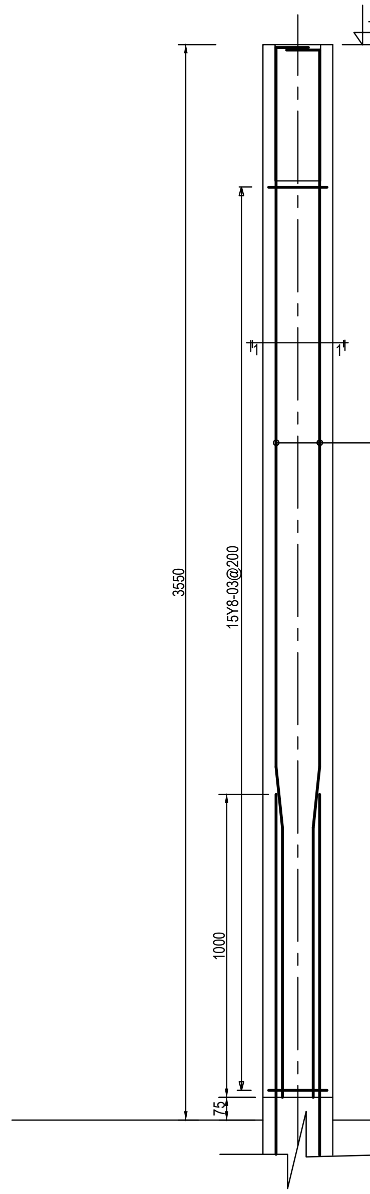
SECTION 7-7,
Scale 1:25



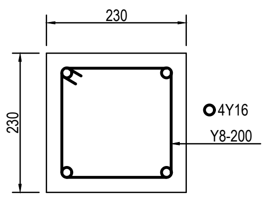
SECTION A-A:
Scale 1:25



FOOTING F1, 1000x1000x300: 2Nos,
Scale 1:25



Column C1, 230x230mm, 2Nos
Scale 1:25



SECTION 1-1

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix

4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm

5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 250N/mmsq.
   (b) High tensile steel fy = 460N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID
QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

Architect and Interior Designer:
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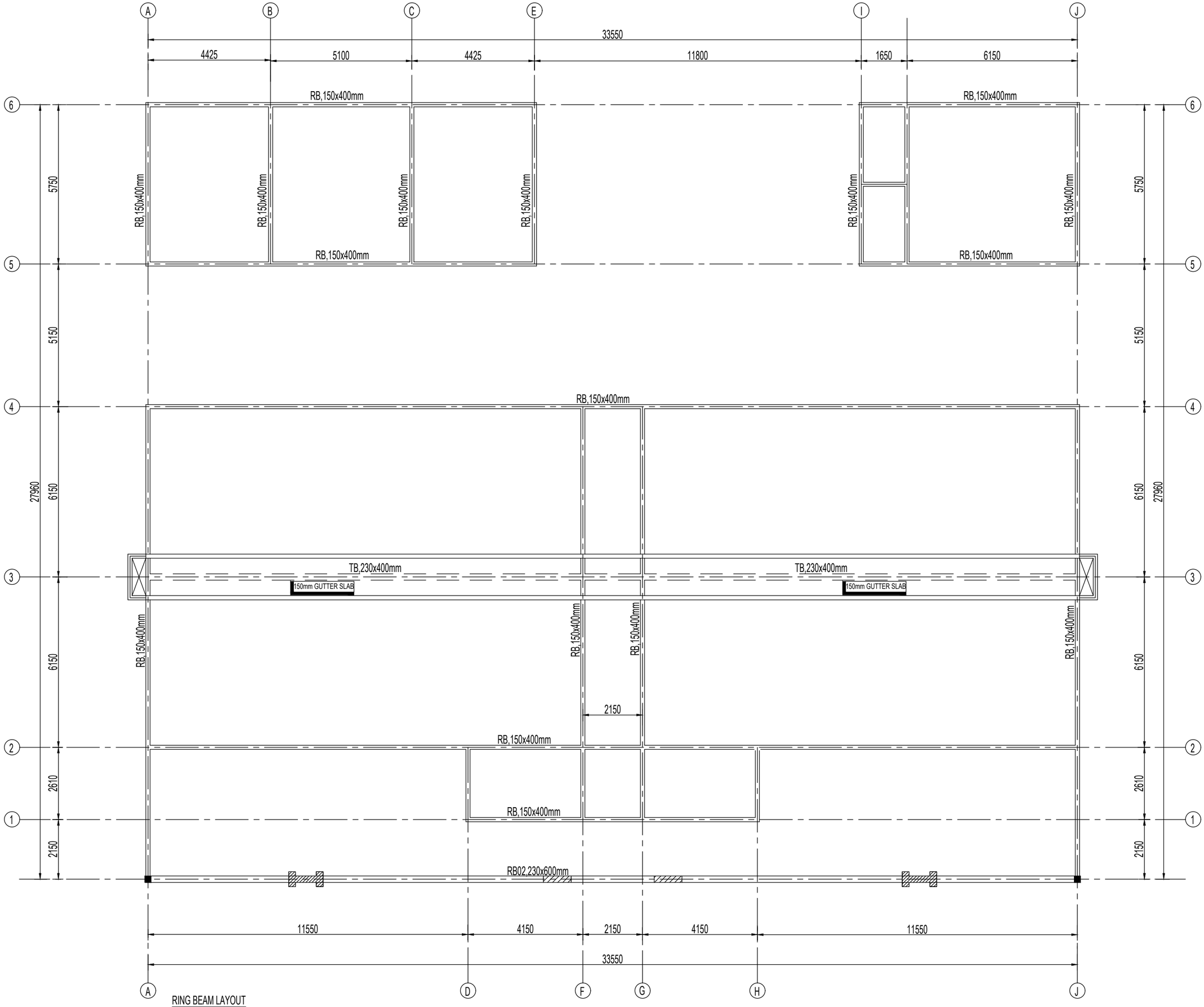
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI
SERVICE PROJECT TO BE BUILT ON
PLOT NO. 777, BLOCK 47,
AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
SECTIONS , FOOTING & COLUMNS
(HOSTEL BLOCK)

Design By: Joseph M . Lucas	Checked By: Habib Haruna Kitova
Approved By: Habib Haruna Kitova	Drawn By: Hengebert J. Kiloga
Scale: 1:25	Date: March,2025
Drawing Number: STR/04	



RING BEAM LAYOUT

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix

4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom

   (d) Columns = 40mm
   (e) Strip foundations = 50mm

5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 250N/mmsq.
   (b) High tensile steel fy = 460N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
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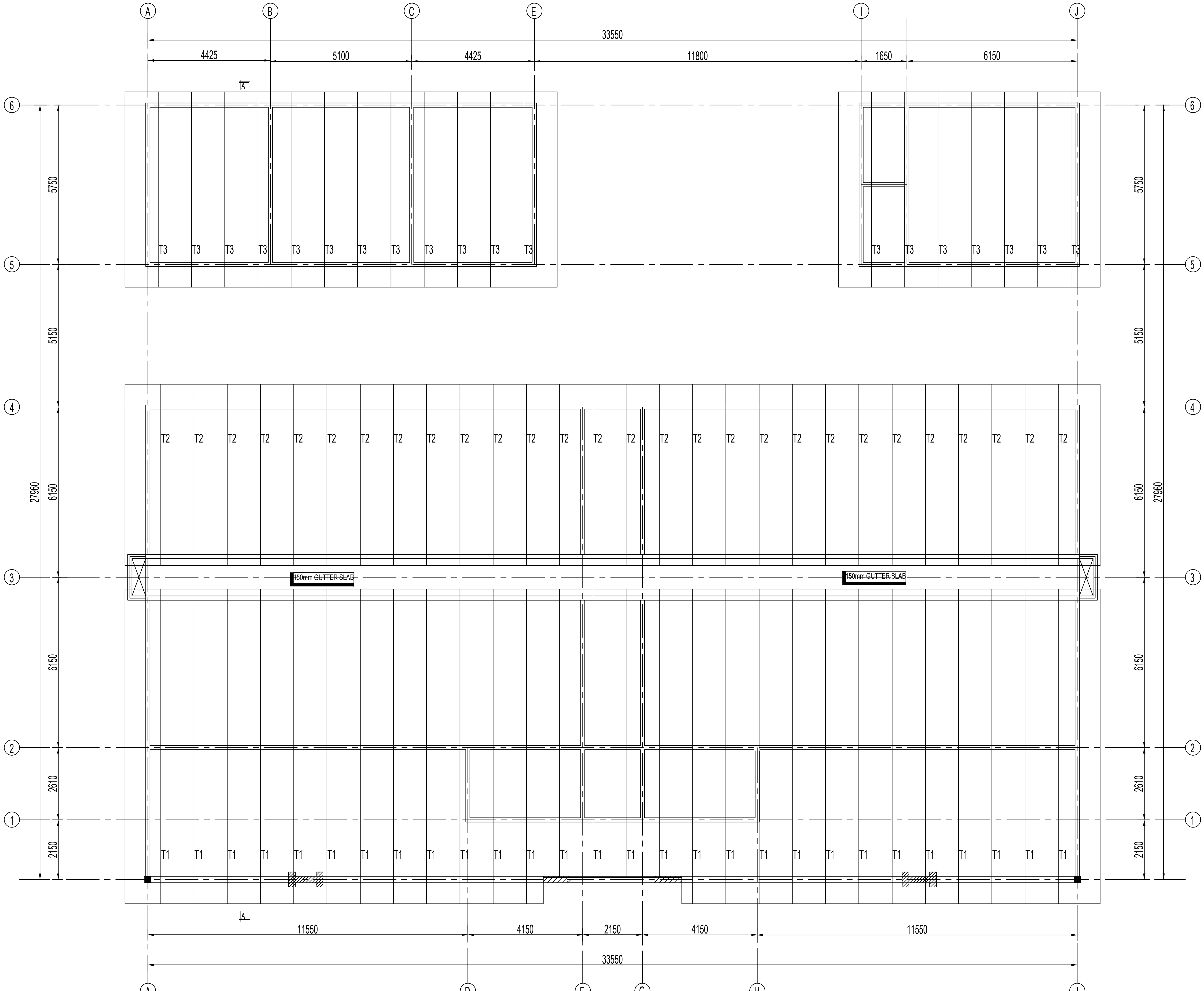
Architect and Interior Designer:
DXE DESIGN ARCHITECTURE ENGINEERING
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
RING BEAMS LAYOUT
(HOSTEL BLOCK)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:125	March,2025
Drawing Number:	
STR/05	



ROOF PLAN

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix

4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom

   (d) Columns = 40mm
   (e) Strip foundations = 50mm

5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 250N/mmsq.
   (b) High tensile steel fy = 460N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
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Architect and Interior Designer:
DXE DESIGN ARCHITECTURE ENGINEERING
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32062
Dar es Salaam, Tanzania
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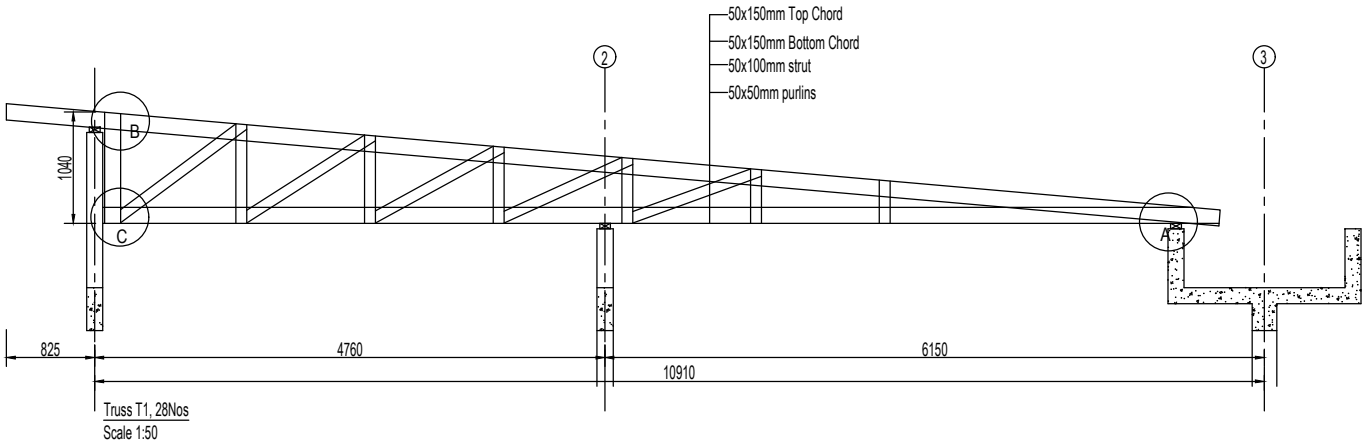
Email: dxe@dxe.co.tz

Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

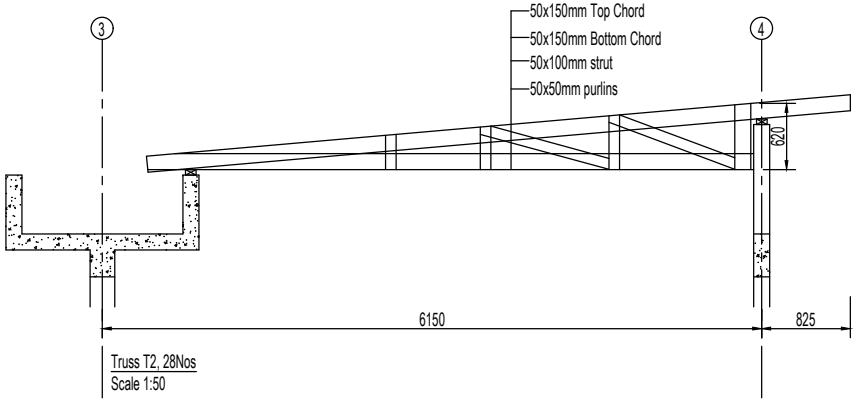
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
ROOF PLAN
(HOSTEL BLOCK)

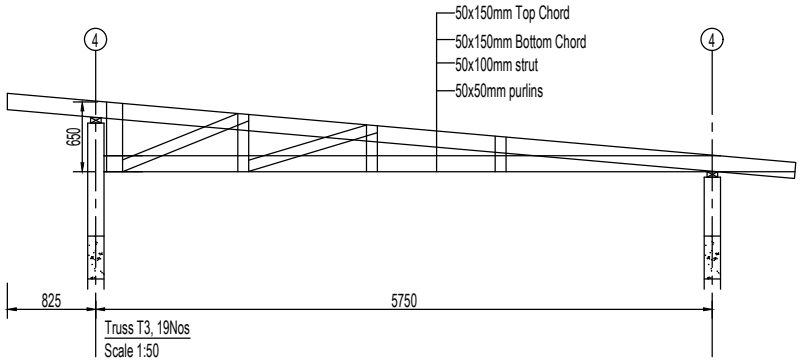
Design By: Joseph M . Lucas	Checked By: Habib Haruna Kitova
Approved By: Habib Haruna Kitova	Drawn By: Hengebert J. Kiloga
Scale: 1:125	Date: March,2025
Drawing Number: STR/06	



Truss T1, 28Nos
Scale 1:50



Truss T2, 28Nos
Scale 1:50



Truss T3, 19Nos
Scale 1:50

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 250N/mmsq.
   (b) High tensile steel fy = 460N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

Architect and Interior Designer:
DXE DESIGN ARCHITECTURE ENGINEERING
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32862,
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+255 712 018805
+255 762 718891
Email: dxe@dxe.co.tz

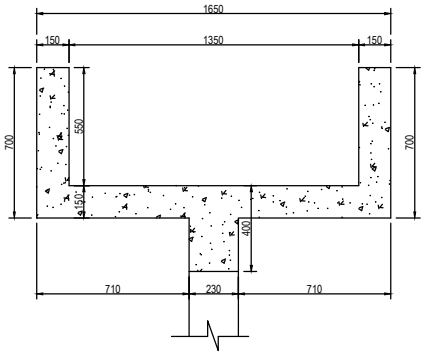
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
TRUSS
(HOSTEL BLOCK)

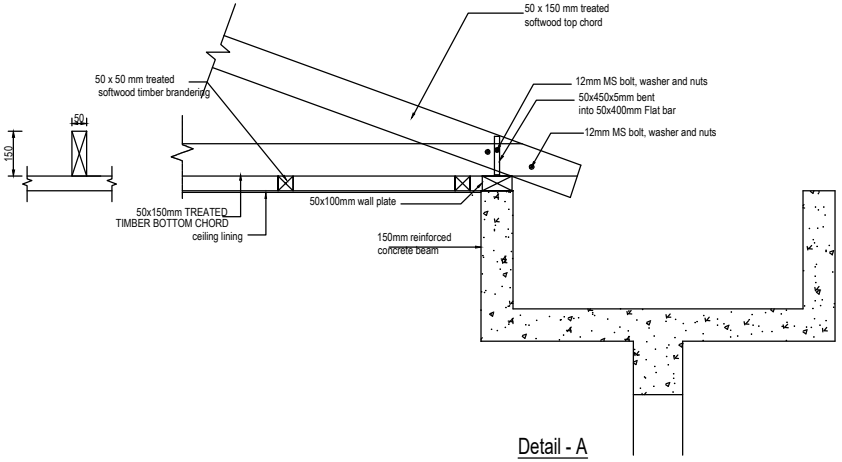
Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:50	March,2025

Drawing Number:
STR/07



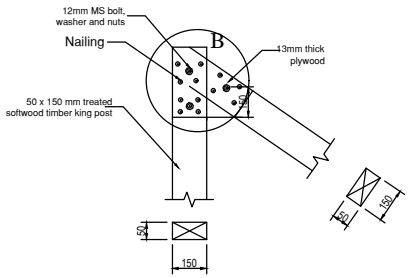
Gutter Dimension

Scale 1:25



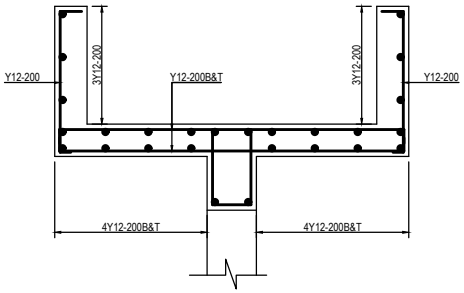
Detail - A

Scale 1:25



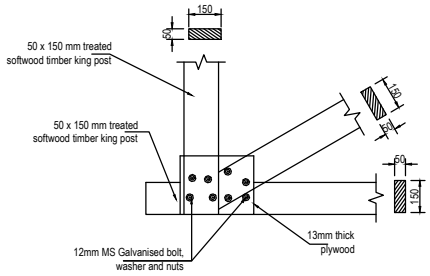
Detail - B

Scale 1:25



Gutter Dimension

Scale 1:25



DETAIL C

SCALE 1:25

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 250N/mmsq.
   (b) High tensile steel fy = 460N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:

THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

Architect and Interior Designer:

DXE DESIGN ARCHITECTURE ENGINEERING

DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32862
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+255 762 718091
Email: dxe@dxe.co.tz

Consulting Engineer:

GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:

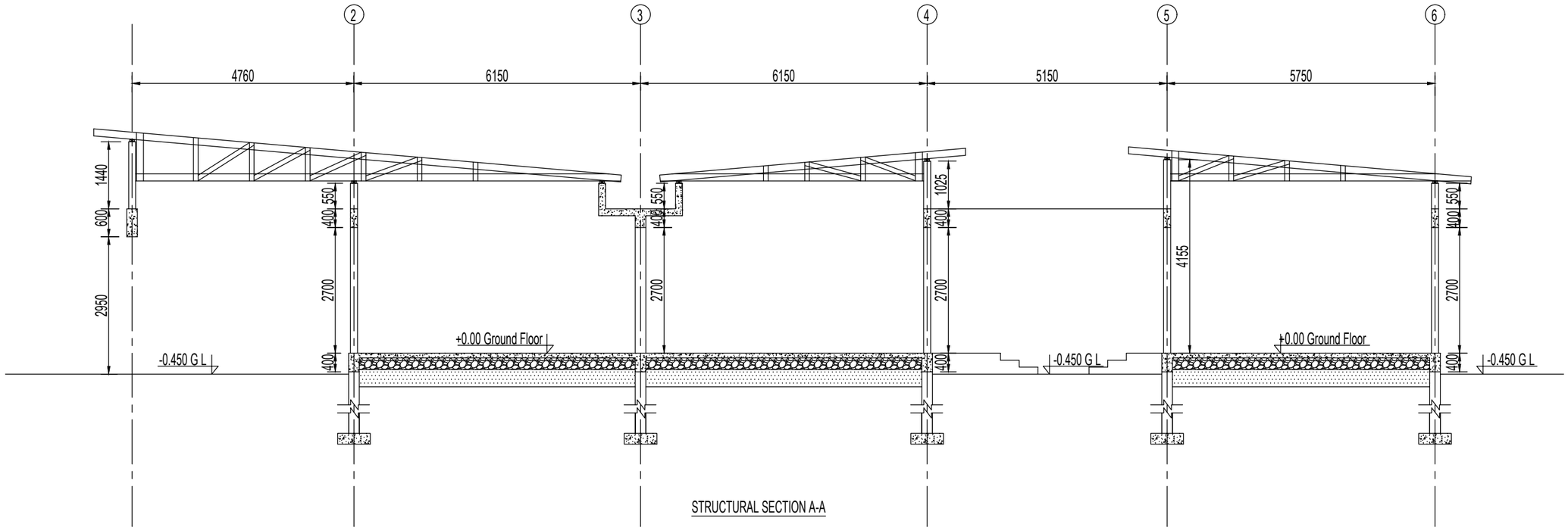
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:

GUTTER & TRUSS DETAILS (HOSTEL BLOCK)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:25	March,2025

Drawing Number: STR/08



STRUCTURAL SECTION A-A

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix

4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm

5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 250N/mmsq.
   (b) High tensile steel fy = 460N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

Architect and Interior Designer:
DXE DESIGN ARCHITECTURE ENGINEERING
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

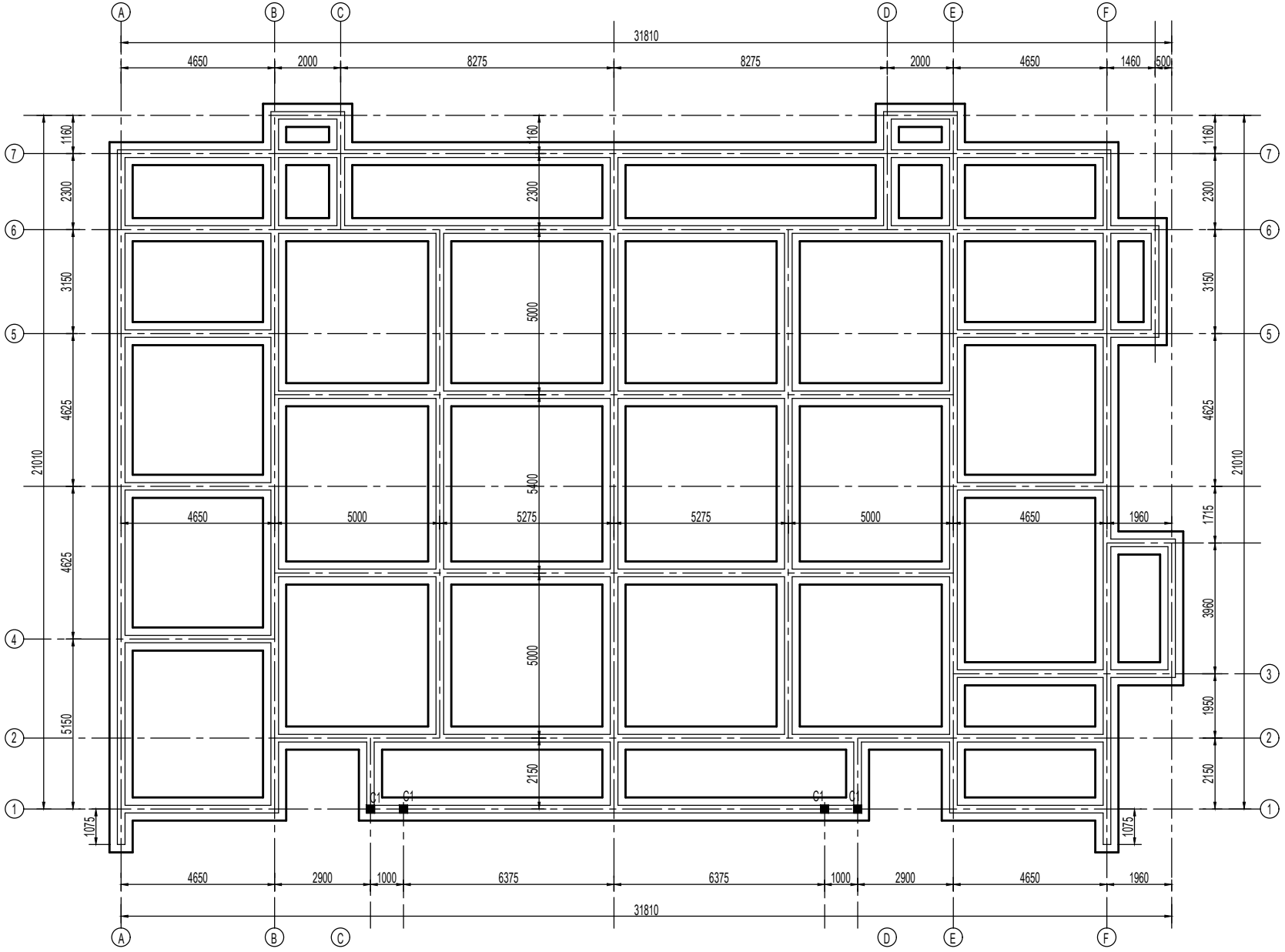
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47,
AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
STRUCTURAL SECTION A-A
(HOSTEL BLOCK)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:100	March,2025

Drawing Number: STR/09



FOUNDATION PLAN

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

Architect and Interior Designer:
DXE
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DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32862,
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+255 712 038505
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Email: dxe@dxe.co.tz

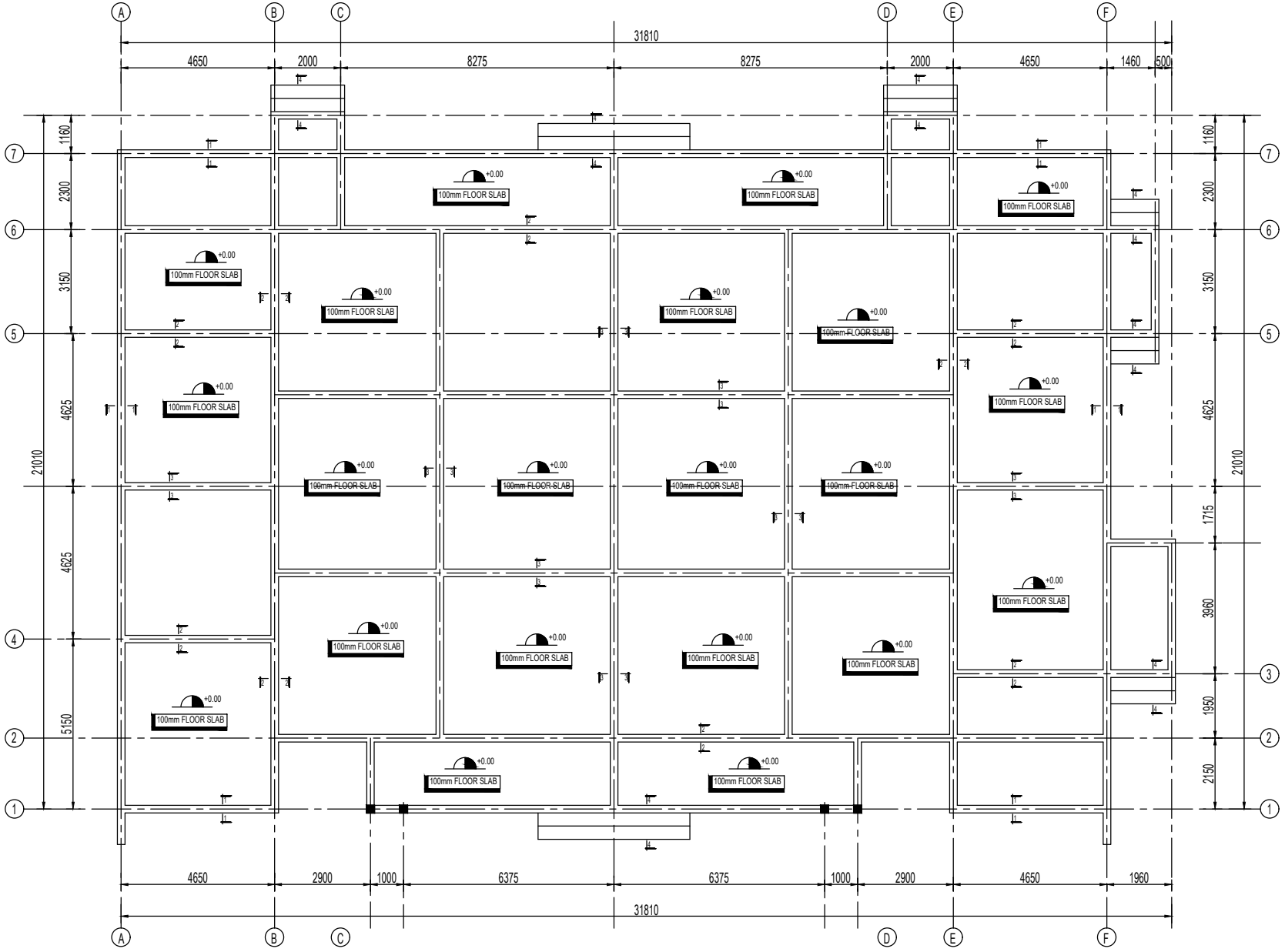
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
FOUNDATION PLAN
(MULTIFUNCTIONAL HALL)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:125	March,2025

Drawing Number:
STR/01



GROUND FLOOR CONCRETE LAYOUT

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 2121,
DAR ES SALAAM.

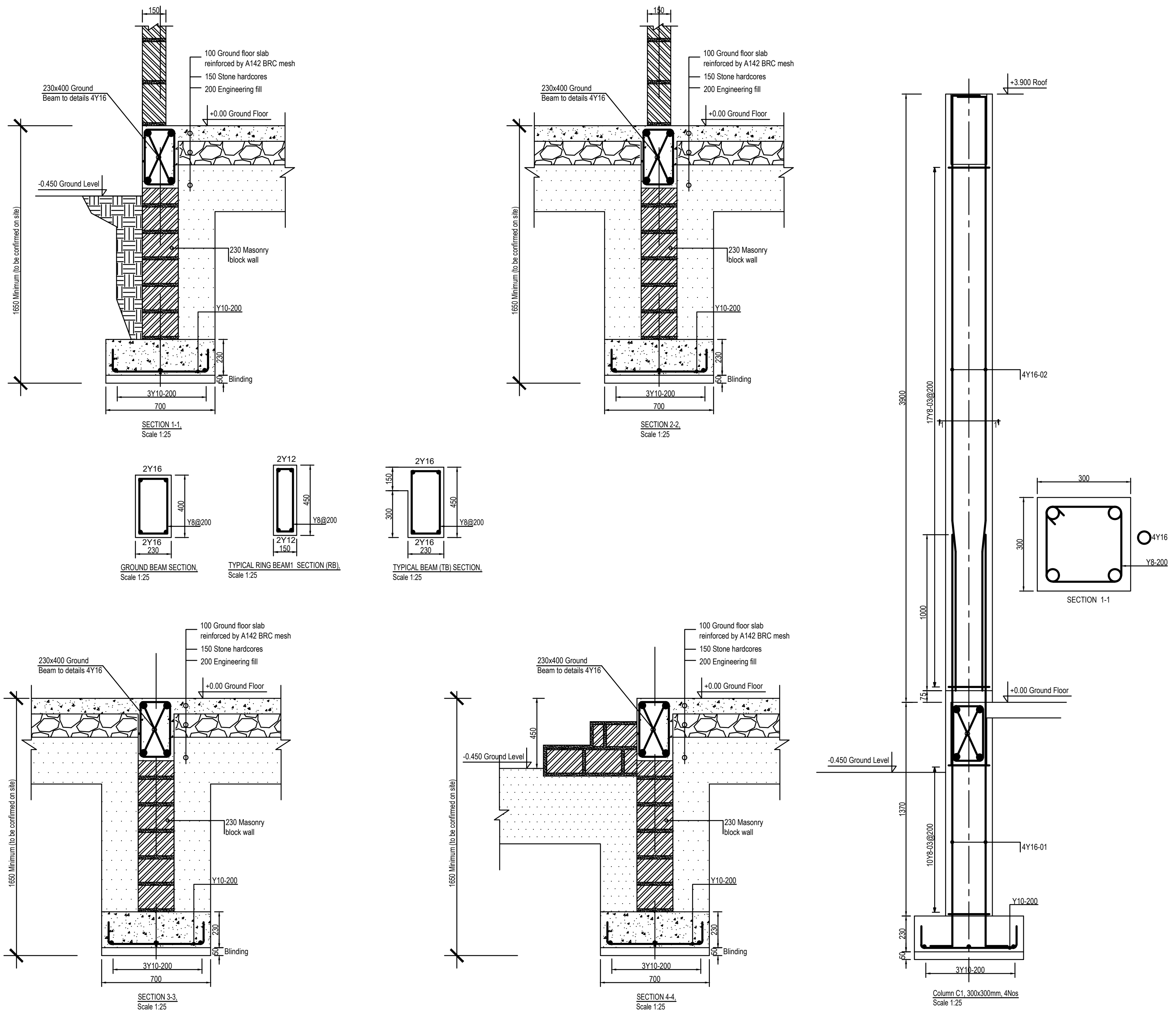
Architect and Interior Designer:
DXE
DESIGN ARCHITECTURE ENGINEERING
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32862,
Dar es Salaam, Tanzania
+255 712 036505
+255 762 718891
Email: dxe@dxe.co.tz

Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
GROUND FLOOR CONCRETE LAYOUT (MULTIFUNCTIONAL HALL)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:125	March,2025
Drawing Number:	
STR/02	



GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
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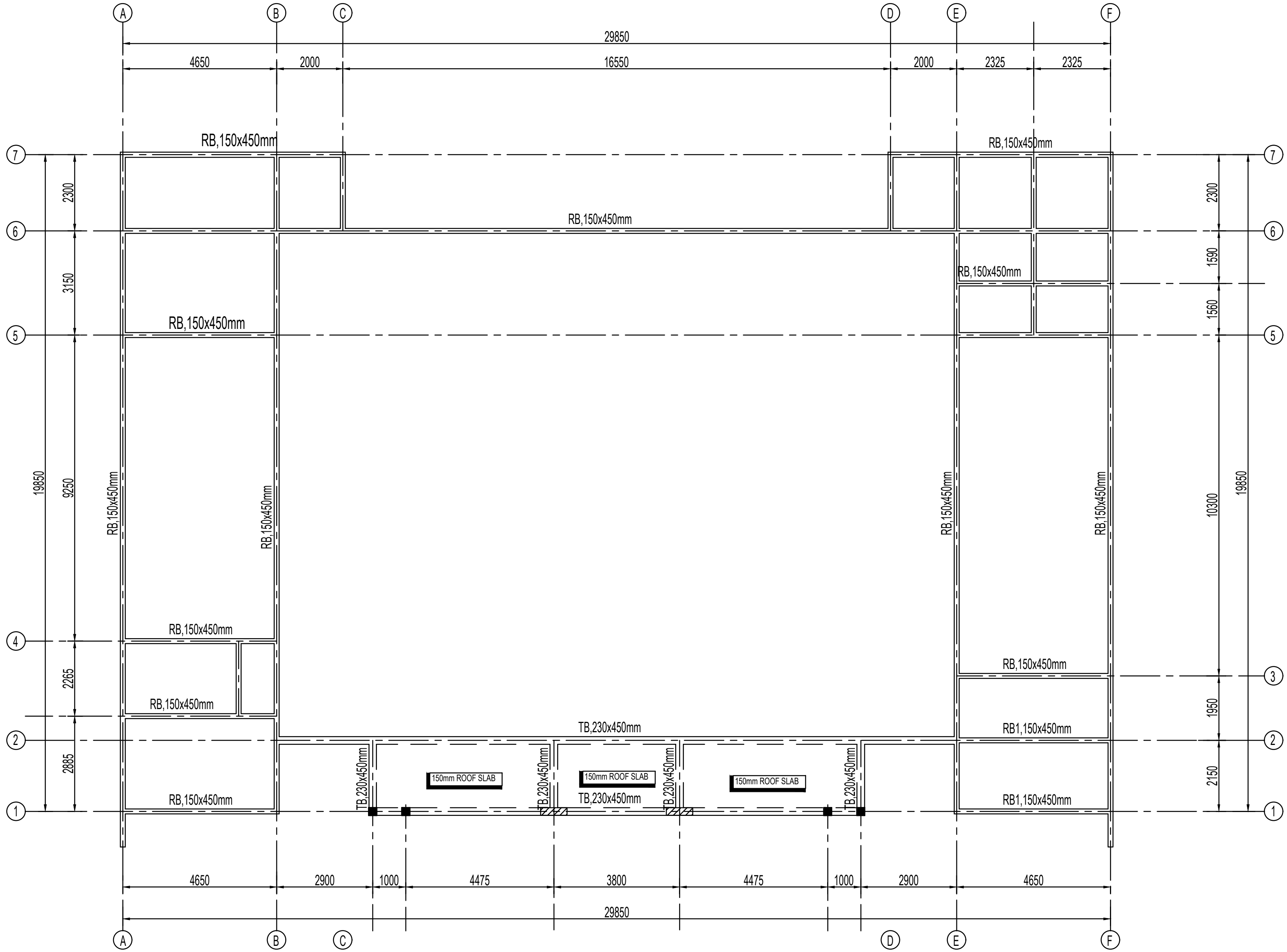
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
SECTIONS & COLUMNS (MULTIFUNCTIONAL HALL)

Design By: Joseph M . Lucas	Checked By: Habib Haruna Kitova
Approved By: Habib Haruna Kitova	Drawn By: Hengebert J. Kiloga
Scale: 1:25	Date: March,2025
Drawing Number: STR/03	



RING BEAM LAYOUT

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:

Serial Number	Description	Date

Client Name and Address:

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Consulting Engineer:

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CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

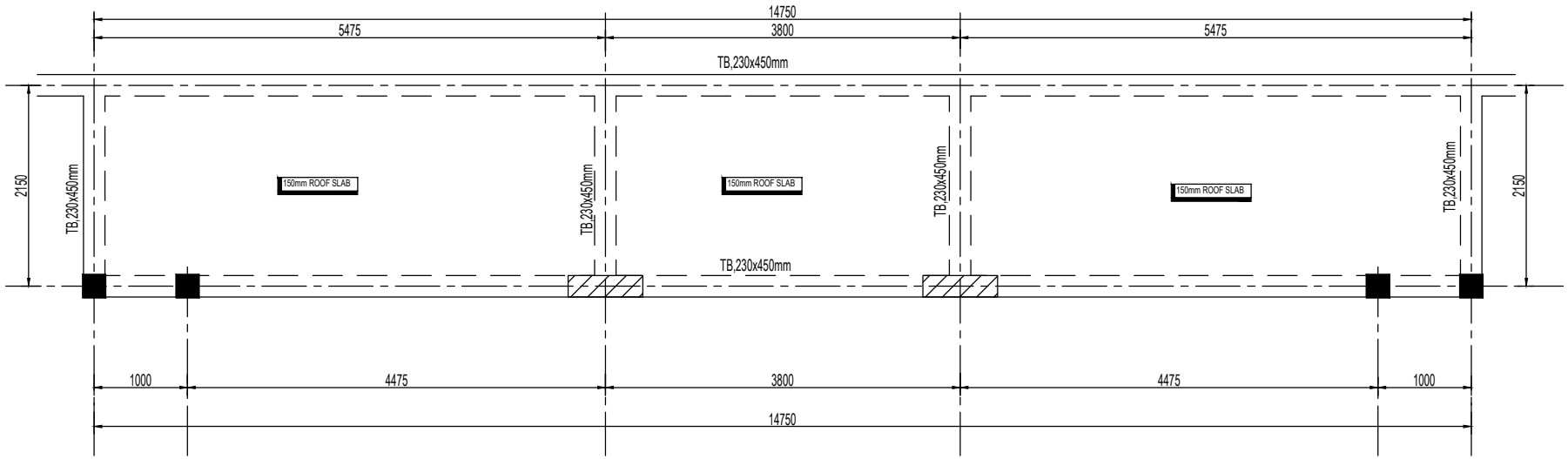
Project Name and Address:

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

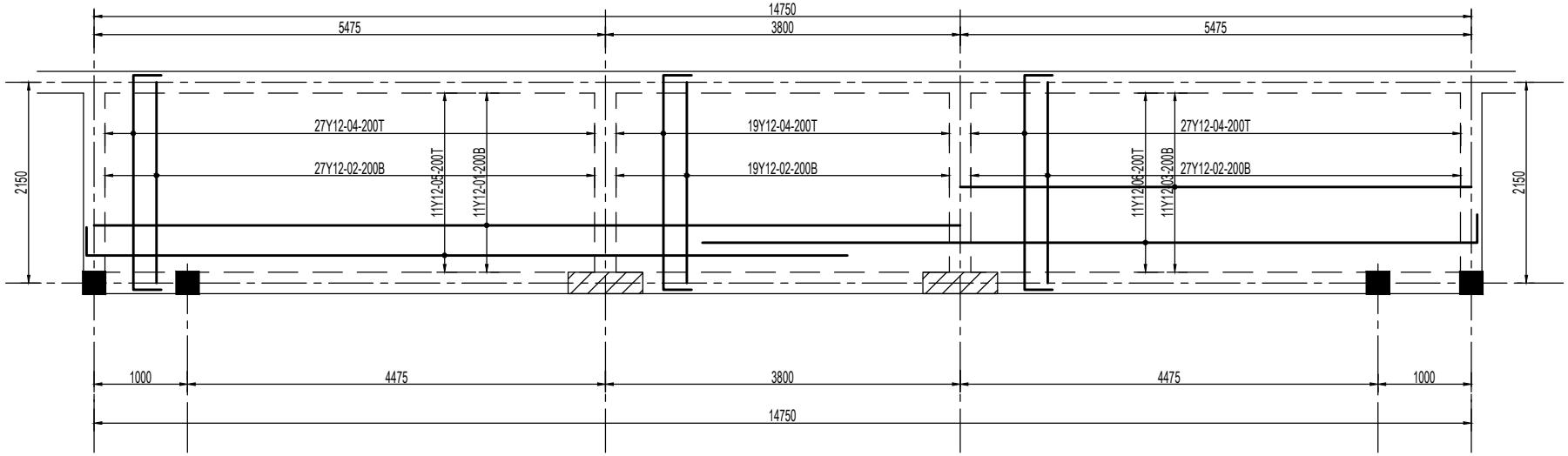
Drawing Tittle:

RING BEAM LAYOUT (MULTIFUNCTIONAL HALL)

Design By: Joseph M . Lucas	Checked By: Habib Haruna Kitova
Approved By: Habib Haruna Kitova	Drawn By: Hengebert J. Kiloga
Scale: 1:125	Date: March,2025
Drawing Number: STR/04	



ROOF CONCRETE LAYOUT



ROOF REINFORCEMENT DETAIL

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grade 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix

4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm

5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
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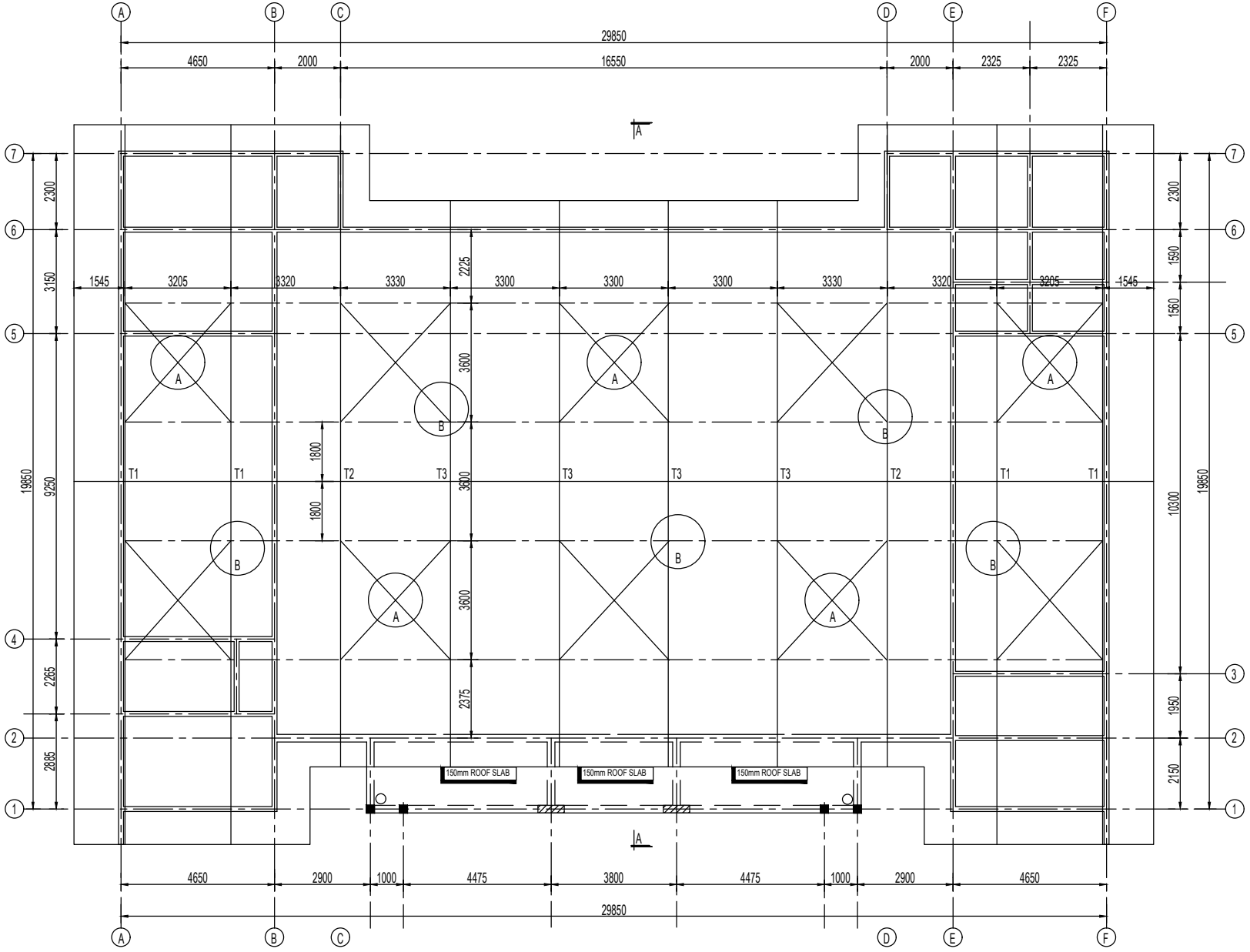
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
ROOF CONCRETE LAYOUT & REINFORCEMENT DETAIL (MULTIFUNCTIONAL HALL)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:50	March,2025
Drawing Number:	
STR/05	



ROOF PLAN

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
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   (a) Floor slabs = 20mm
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   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
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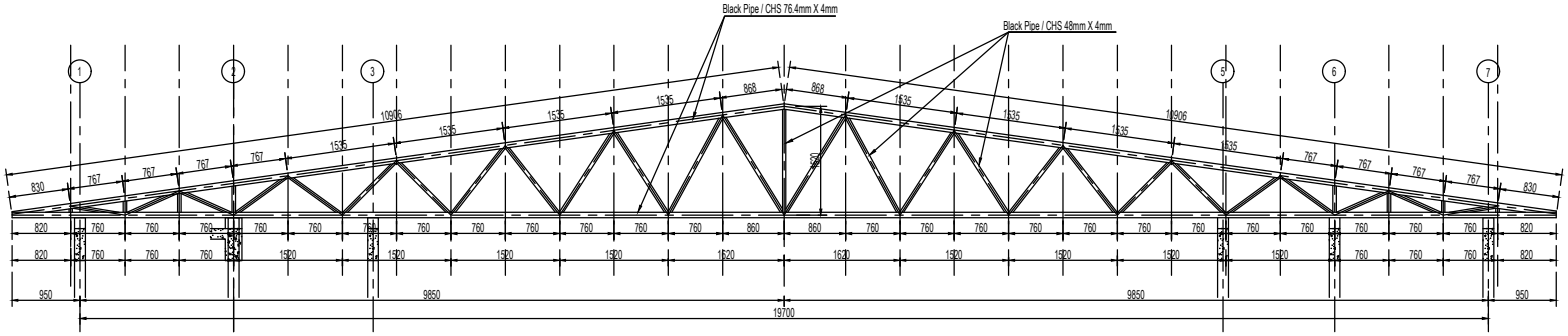
Email: dxe@dxe.co.tz

Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

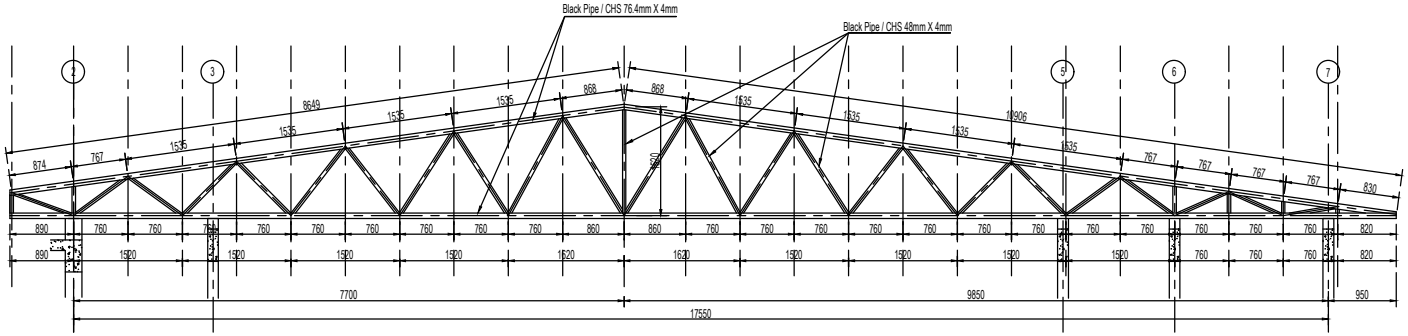
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
ROOF PLAN
(MULTIFUNCTIONAL HALL)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:125	March,2025
Drawing Number:	
STR/06	



Truss T1, 4Nos
Scale 1:75



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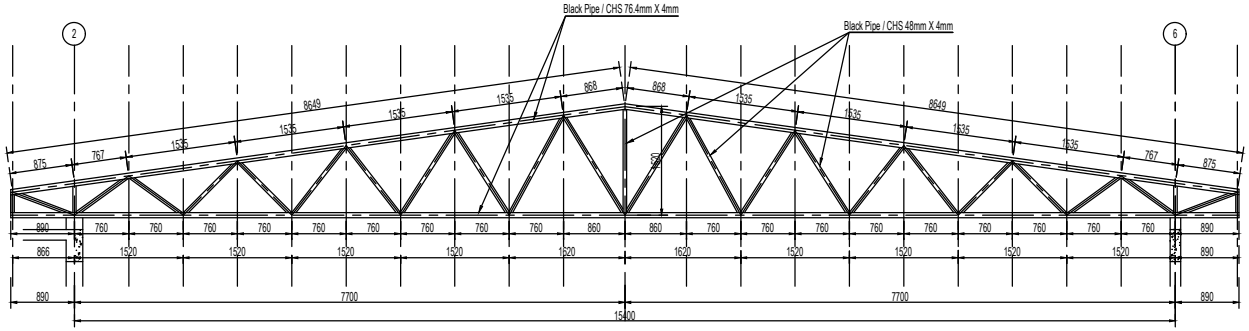
Scale 1:75



Truss T3, 4Nos
Scale 1:75

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grade 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix

4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm

5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

Architect and Interior Designer:
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32862,
Dar es Salaam, Tanzania
+255 712 038505
+255 762 718091
Email: dxe@dxe.co.tz

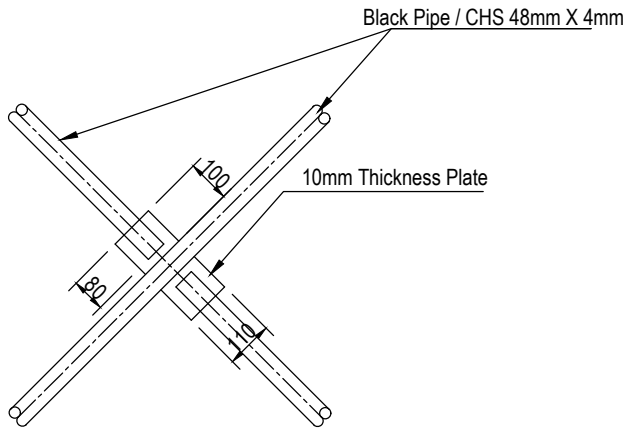
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

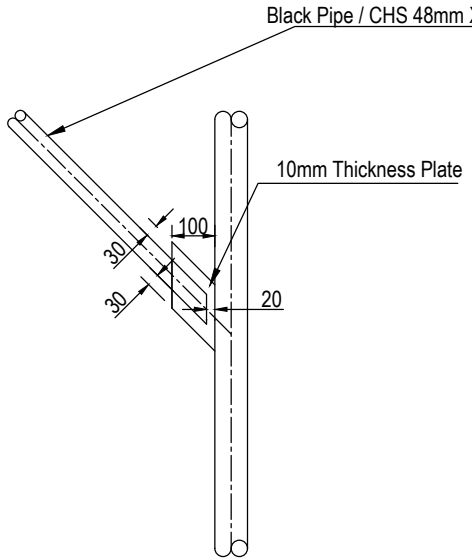
Drawing Tittle:
TRUSS
(MULTIFUNCTIONAL HALL)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:75	March,2025

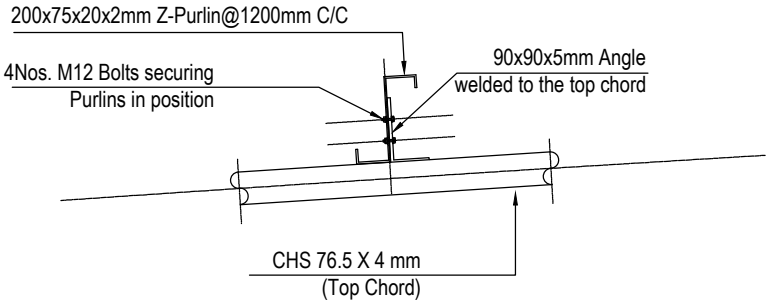
Drawing Number:
STR/07



DETAIL A



DETAIL B



PURLING CONNECTION DETAIL

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix

4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm

5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 2121,
DAR ES SALAAM.

Architect and Interior Designer:
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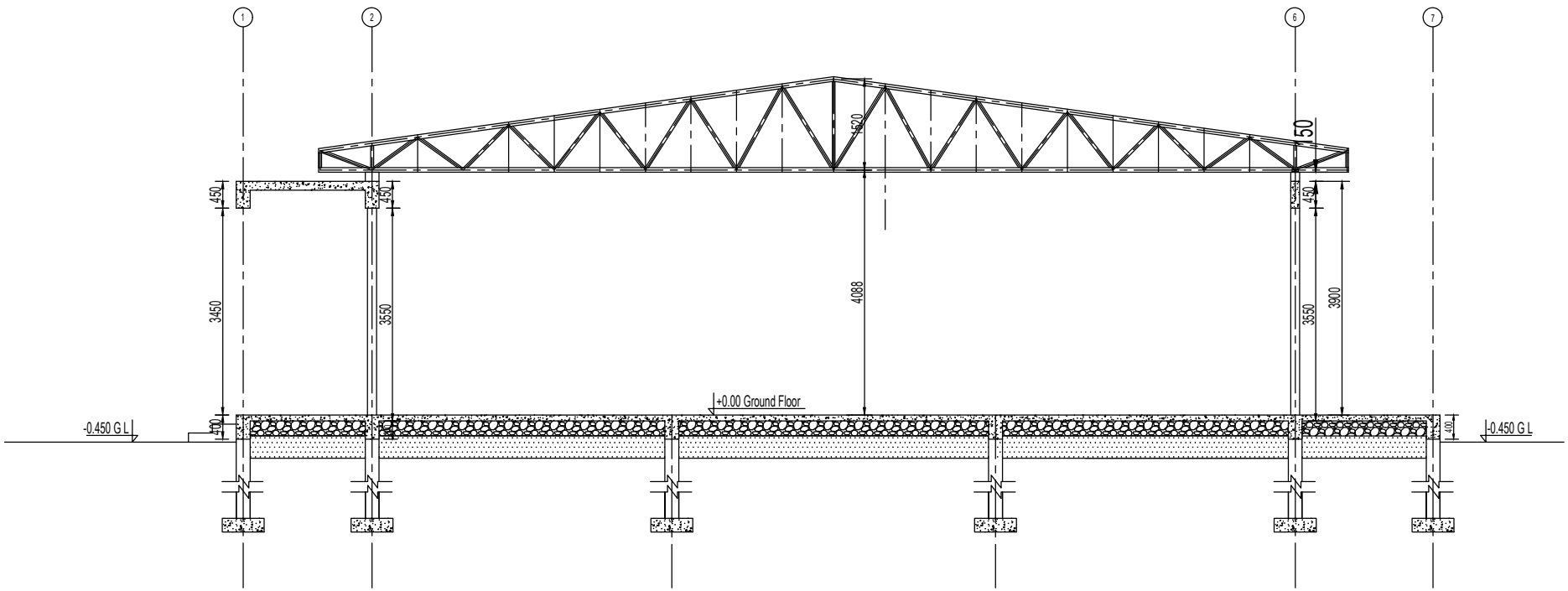
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
BRACING DETAIL
(MULTIFUNCTIONAL HALL)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:12.5	March,2025

Drawing Number:
STR/08



STRUCTURAL SECTION A-A

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix

4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm

5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
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Consulting Engineer:
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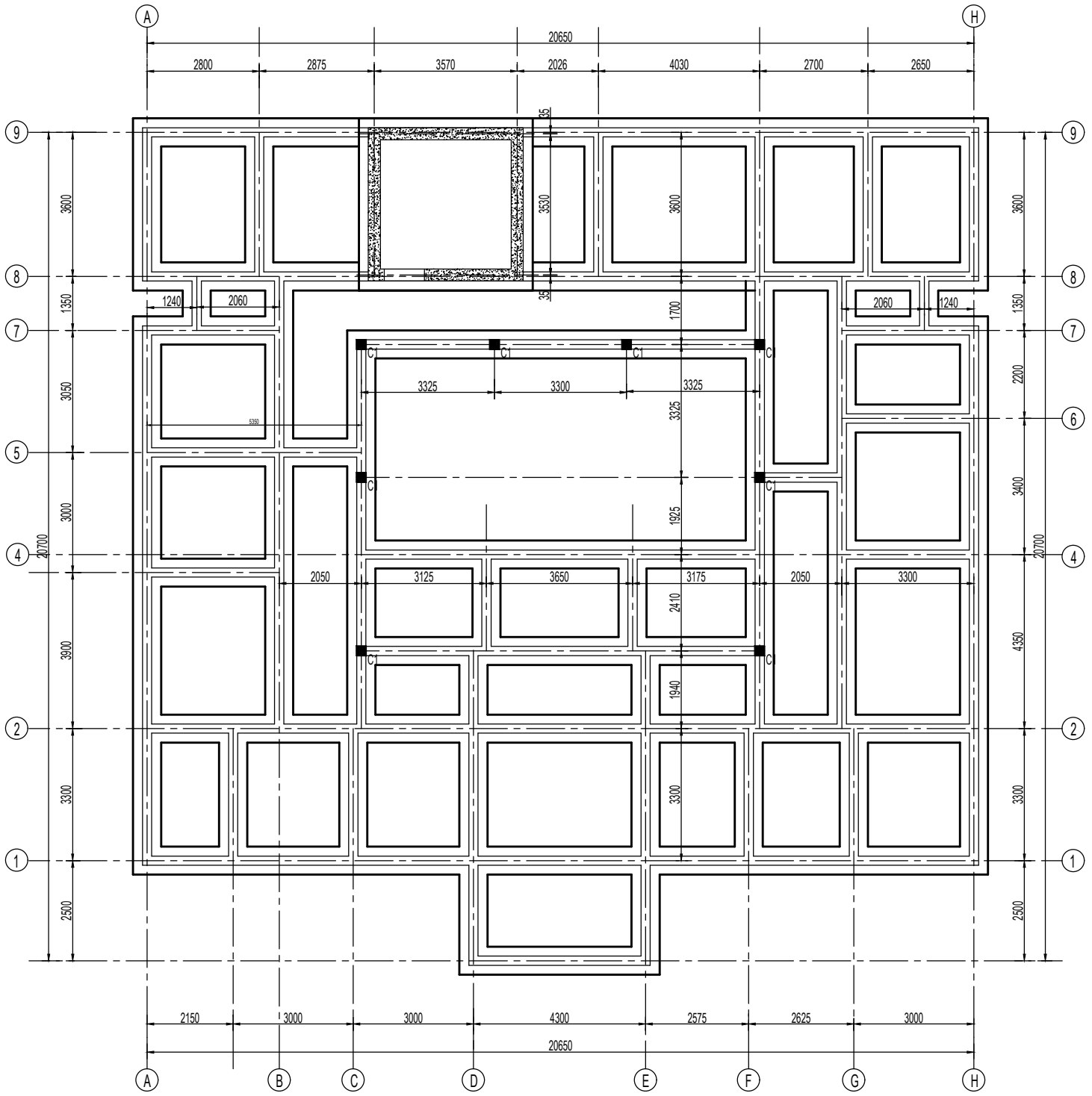
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
STRUCTURAL SECTION A-A
(MULTIFUNCTIONAL HALL)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:75	March,2025

Drawing Number:
STR/09



FOUNDATION PLAN

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
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DXE Associates
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+255 762 710891
Email: dxe@dxe.co.tz

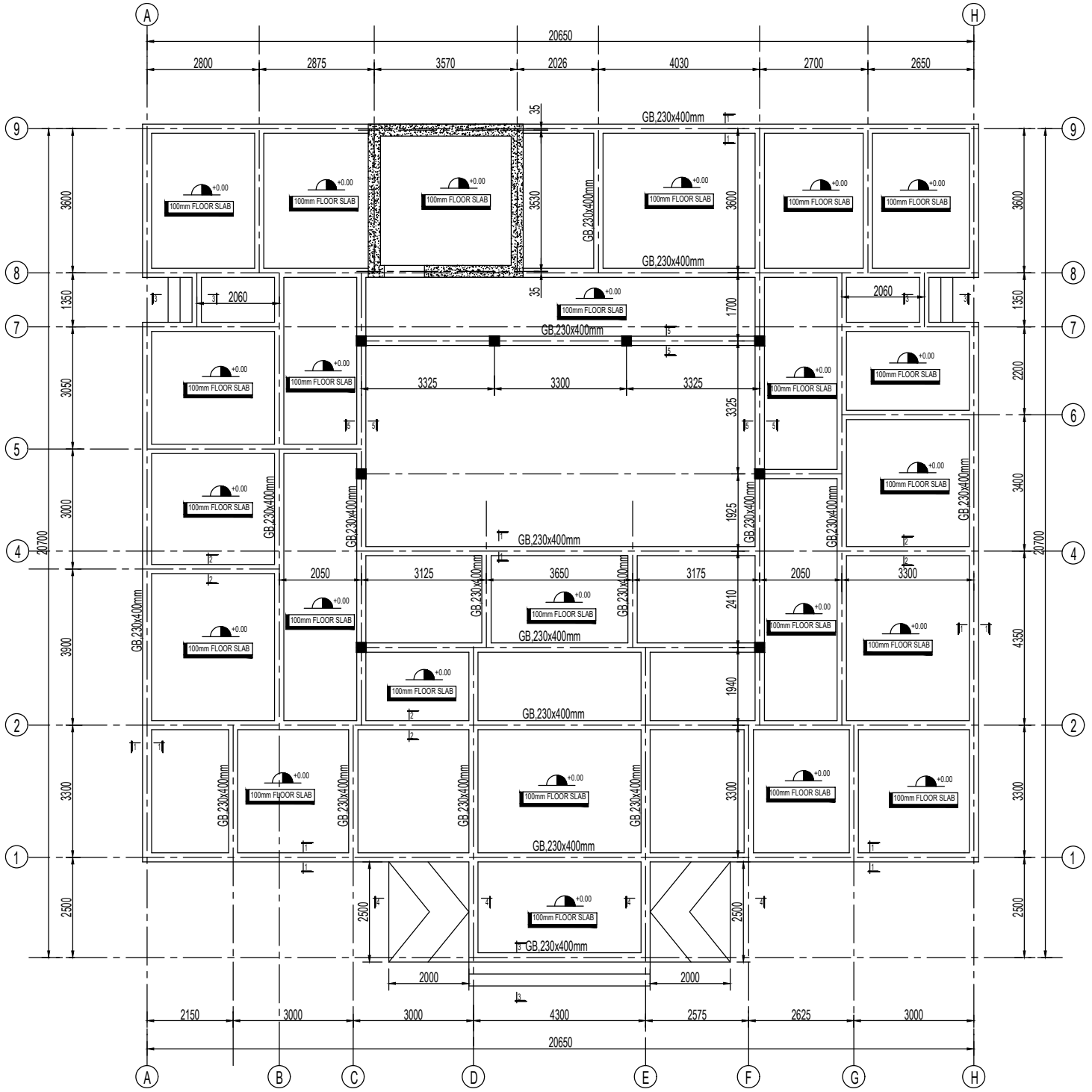
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
FOUNDATION PLAN
(POLYCLINIC)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:100	March,2025

Drawing Number:
STR/01



GROUND FLOOR CONCRETE LAYOUT

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
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   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
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   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

Architect and Interior Designer:
DXE DESIGN ARCHITECTURE ENGINEERING
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32862,
Dar es Salaam, Tanzania
+255 712 018805
+255 762 718891
Email: dxe@dxe.co.tz

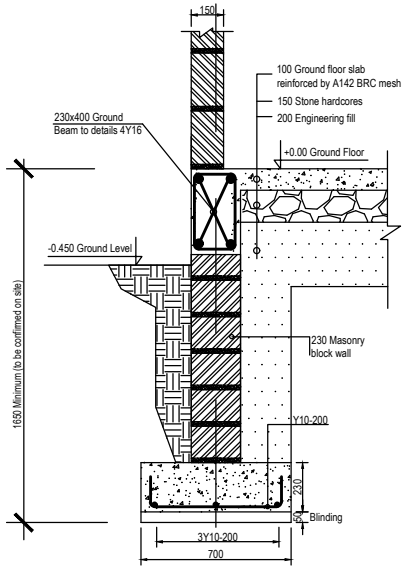
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

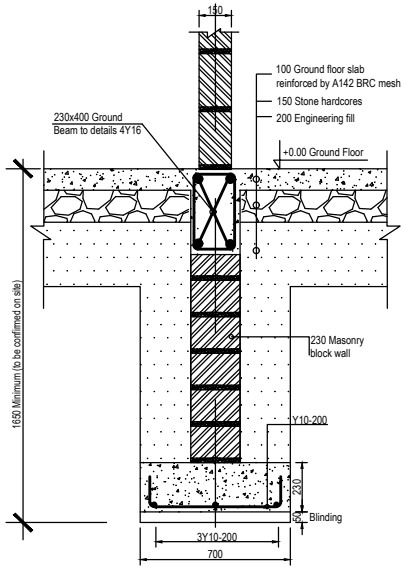
Drawing Tittle:
GROUND FLOOR CONCRETE LAYOUT (POLYCLINIC)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:100	March,2025

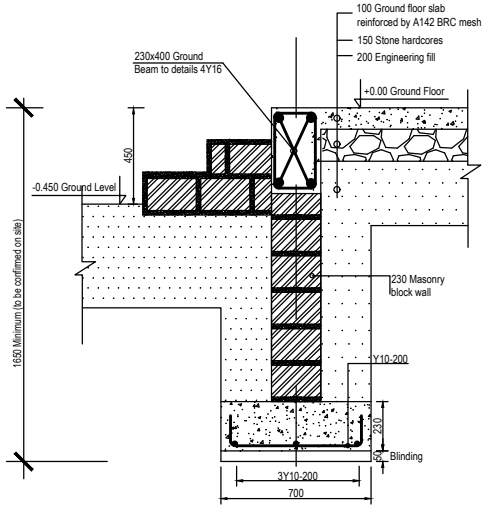
Drawing Number: STR/02



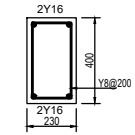
SECTION 1-1,
Scale 1:25



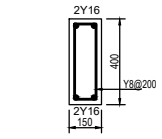
SECTION 2-2,
Scale 1:25



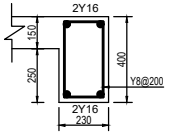
SECTION 3-3,
Scale 1:25



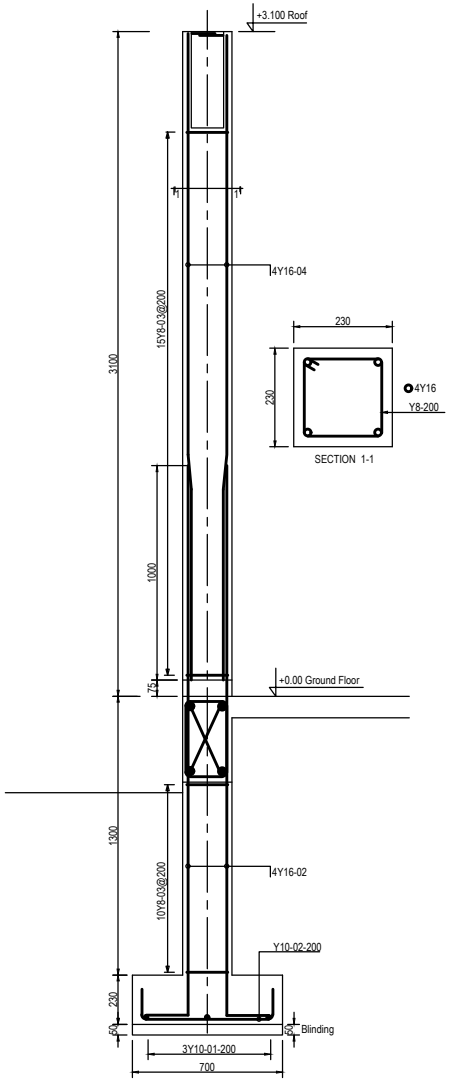
GROUND BEAM SECTION,
Scale 1:25



TYPICAL RING BEAM SECTION (RB),
Scale 1:25

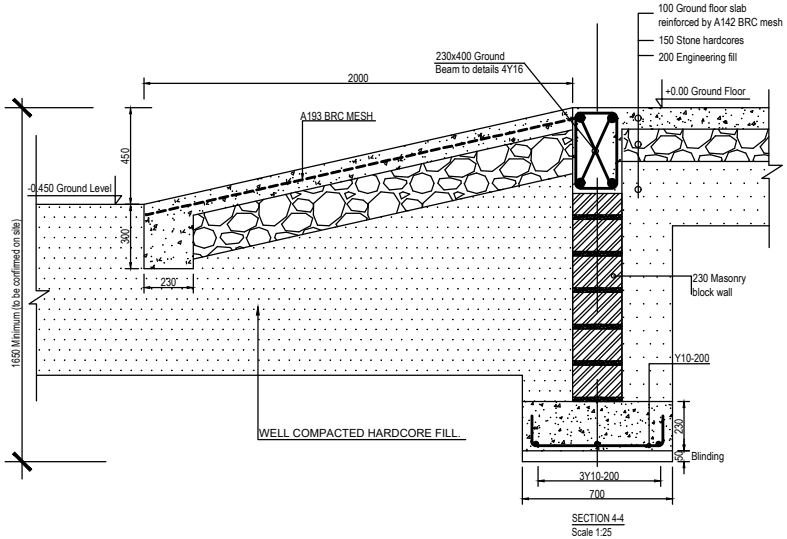


TYPICAL BEAM SECTION (TB),
Scale 1:25

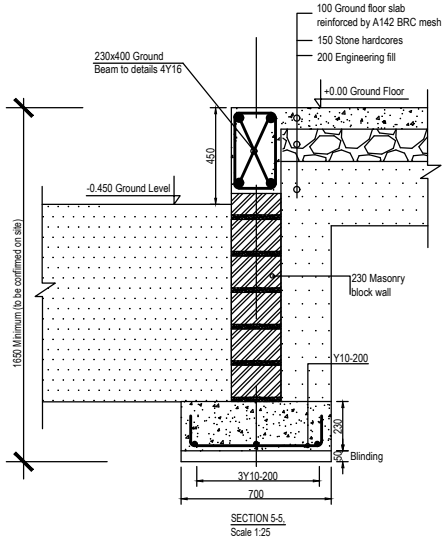


SECTION 1-1

Column C1, 230x230mm, 8Nos
Scale 1:25



SECTION 4-4
Scale 1:25



SECTION 5-5,
Scale 1:25

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grade 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:

Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
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Architect and Interior Designer:
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DESIGN ARCHITECTURE ENGINEERING
DXE Associates
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O. Box 32062
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Email: dxe@dxe.co.tz

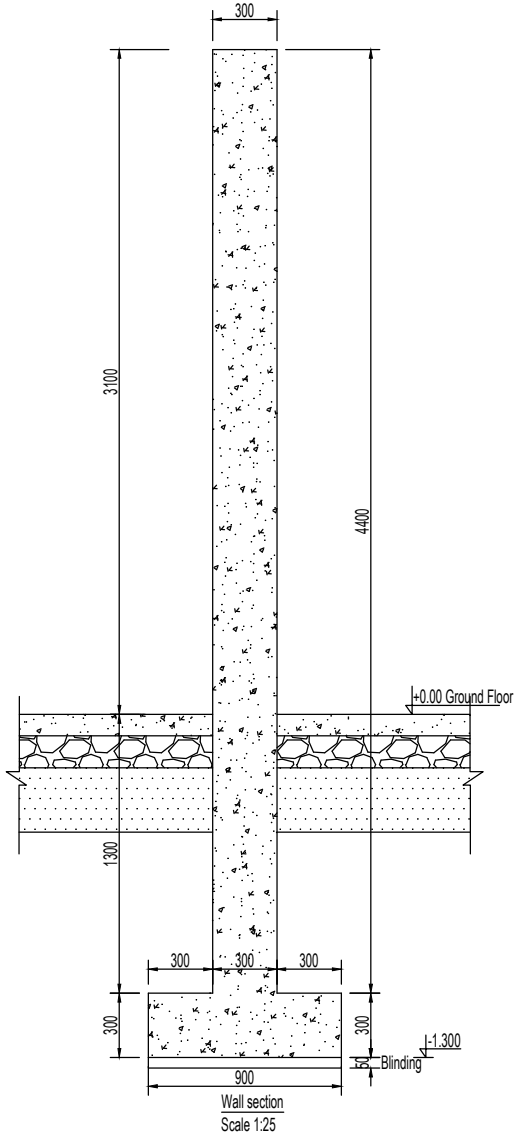
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

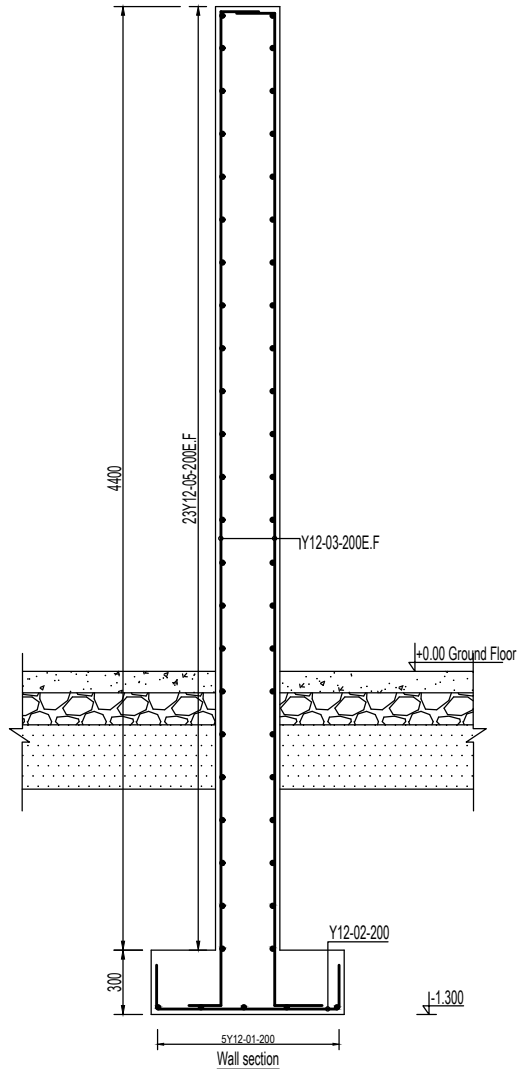
Drawing Tittle:
SECTION & COLUMNS (POLYCLINIC)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:25	March,2025

Drawing Number:
STR/03



Wall section
Scale 1:25



Wall section
Scale 1:25

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
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   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix

4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm

5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
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+255 712 038805
+255 762 718091
Email: dxe@dxe.co.tz

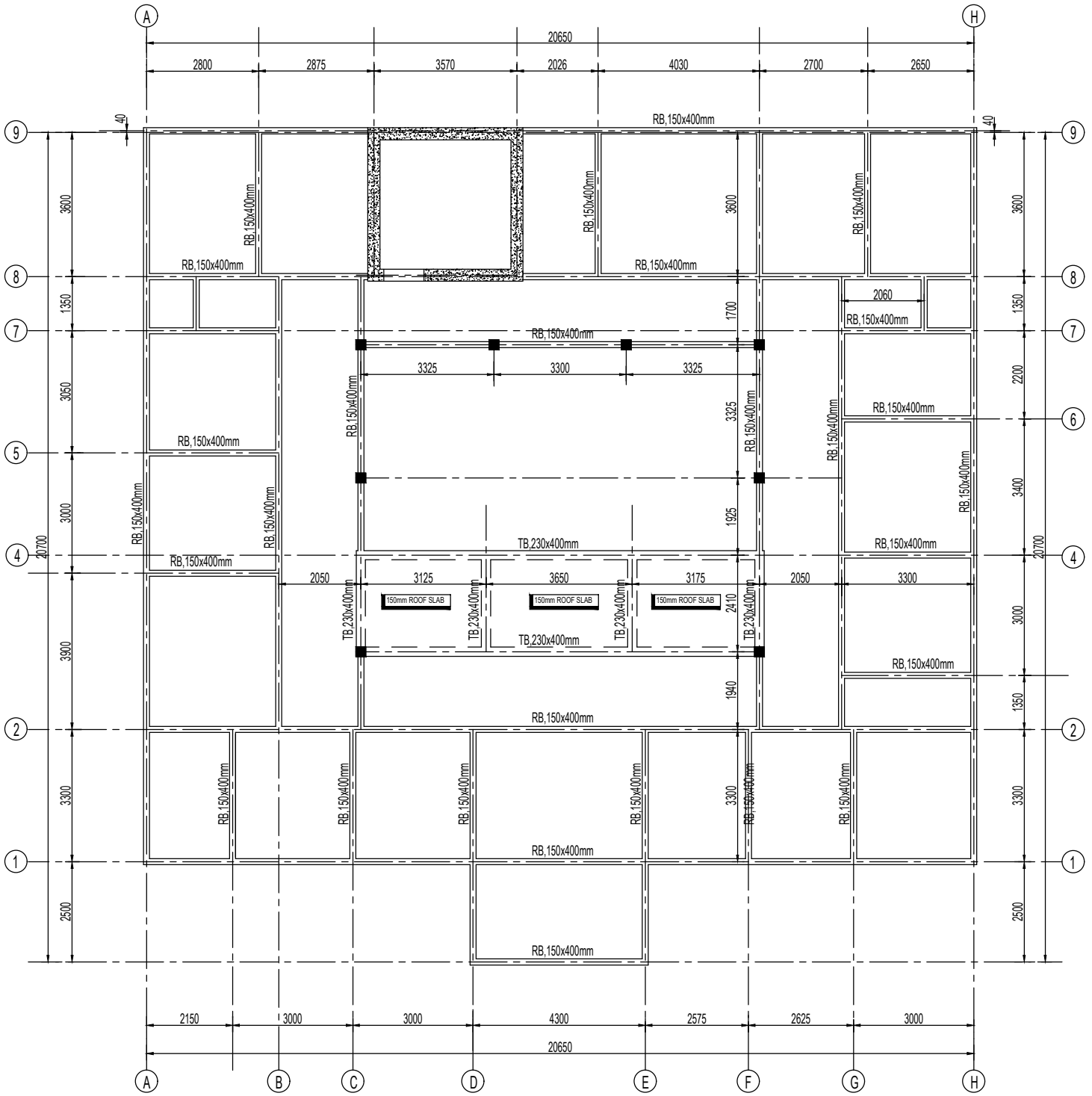
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
STRONG WALL SECTION (POLYCLINIC)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:25	March,2025

Drawing Number:
STR/04



RING BEAM LAYOUT

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
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Client Name and Address:
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DXE Associates
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O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718091
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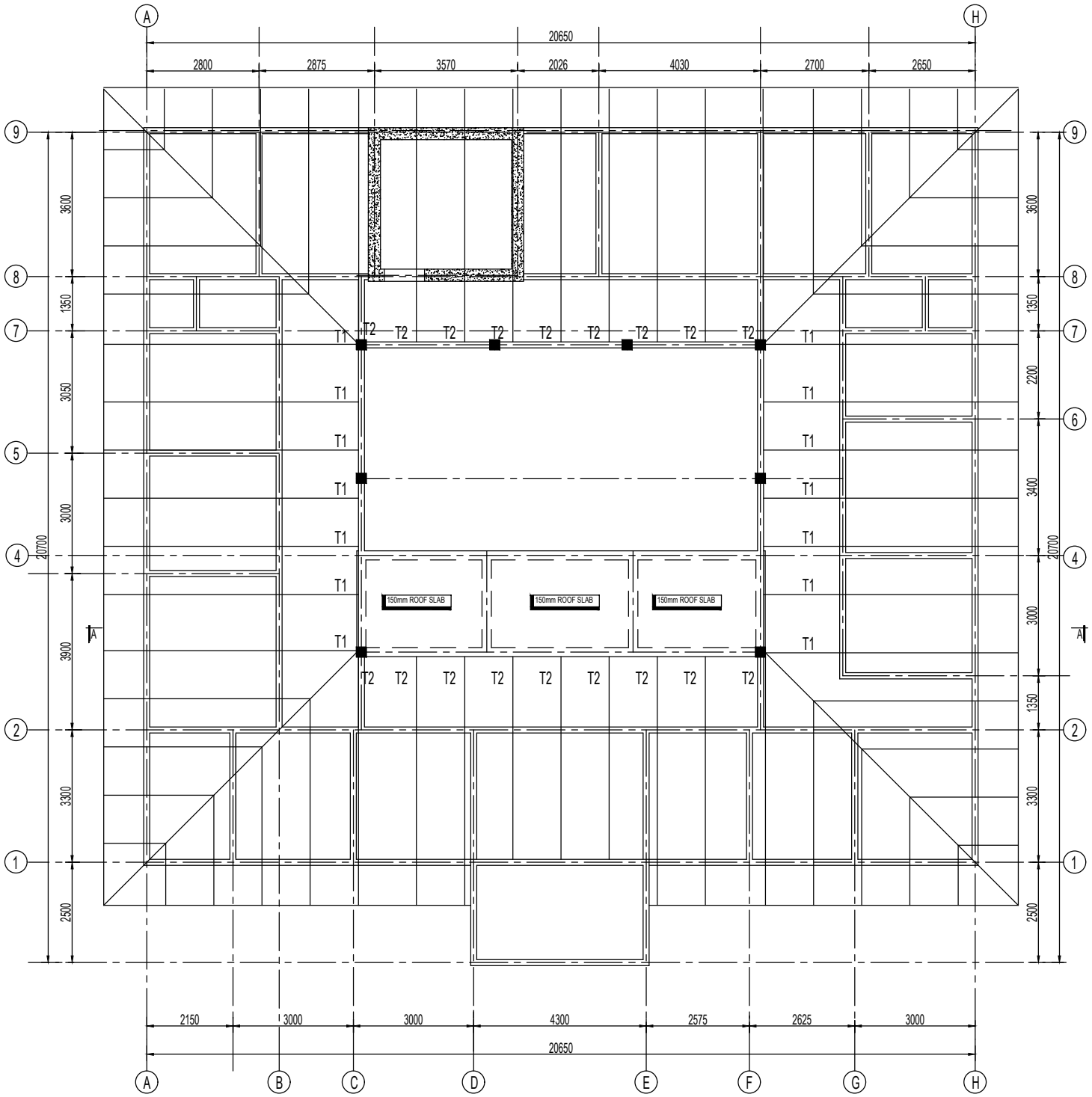
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
RING BEAM LAYOUT (POLYCLINIC)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:100	March,2025

Drawing Number: STR/05



ROOF PLAN

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
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   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
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Architect and Interior Designer:
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DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32862
Dar es Salaam, Tanzania
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+255 762 718091
Email: dxe@dxe.co.tz

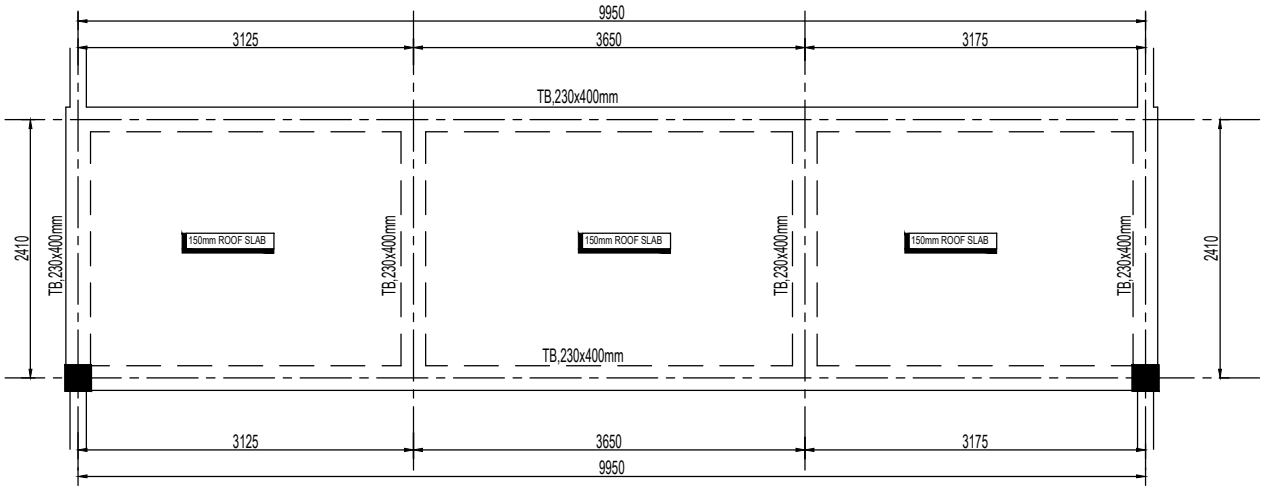
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

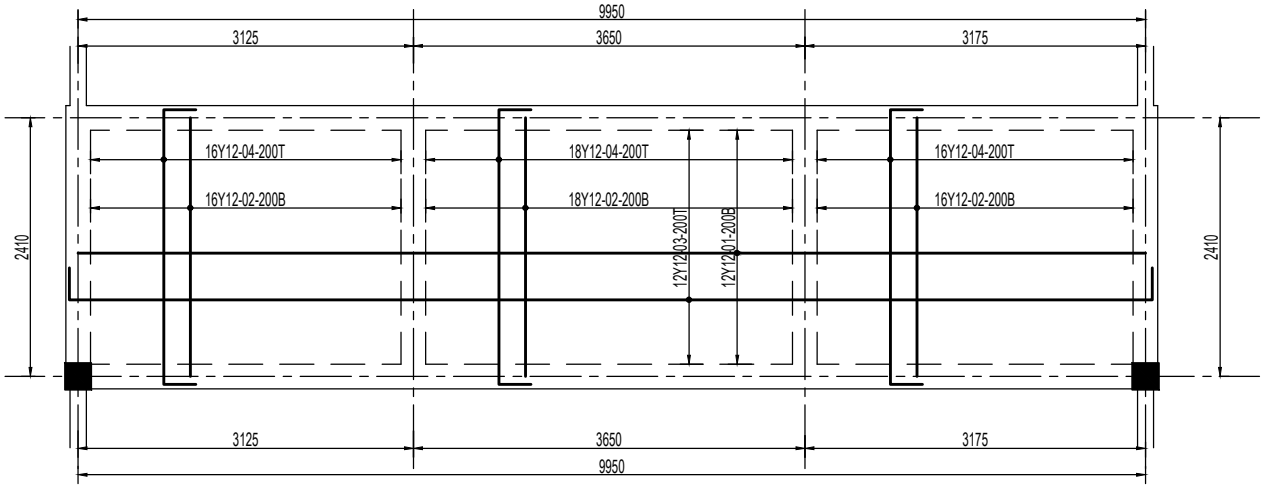
Drawing Tittle:
ROOF PLAN
(POLYCLINIC)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:100	March,2025

Drawing Number: STR/06



ROOF CONCRETE LAYOUT



ROOF REINFORCEMENT DETAIL

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix

4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm

5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
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DXE Associates
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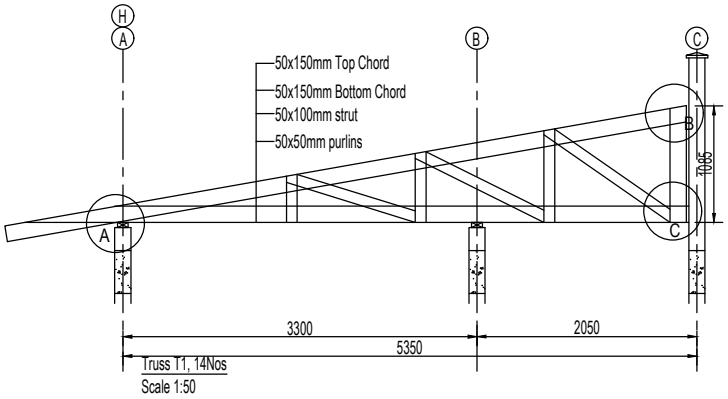
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

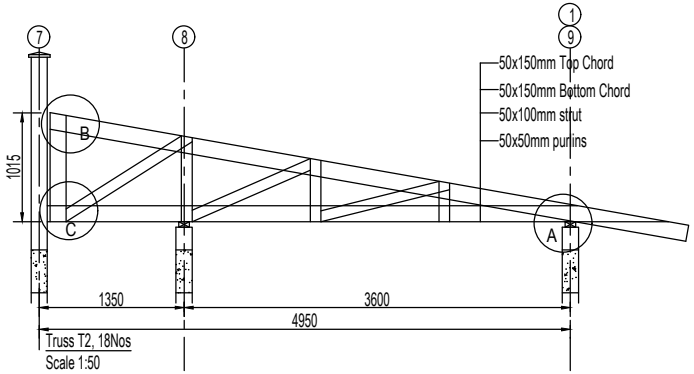
Drawing Tittle:
ROOF CONCRETE LAYOUT & REINFORCEMENT DETAIL (POLYCLINIC)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:50	March,2025

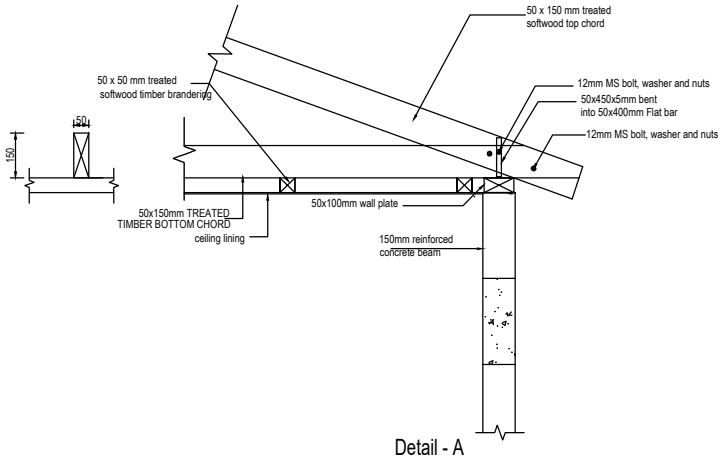
Drawing Number: STR/07



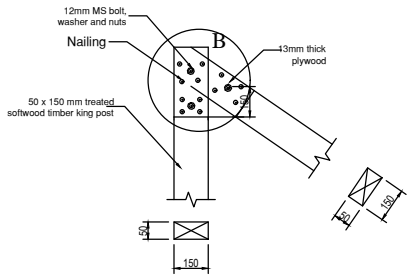
Truss T1, 14Nos
Scale 1:50



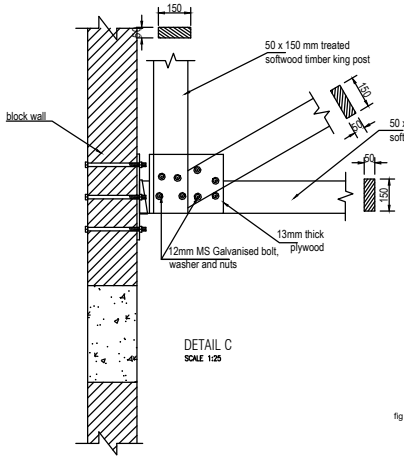
Truss T2, 18Nos
Scale 1:50



Detail - A
Scale 1:25



Detail - B
Scale 1:25



DETAIL C
SCALE 1:25

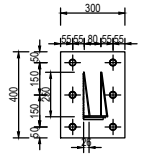


fig 1: -12 mm thick plate cut to the required size
-6 M16 approved expanded bolts to be used
feeted in predriled holes in concrete

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
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   (a) Mild steel fy = 410N/mmsq.
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6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
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Revisions:		
Serial Number	Description	Date

Client Name and Address:
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Email: dxe@dxe.co.tz

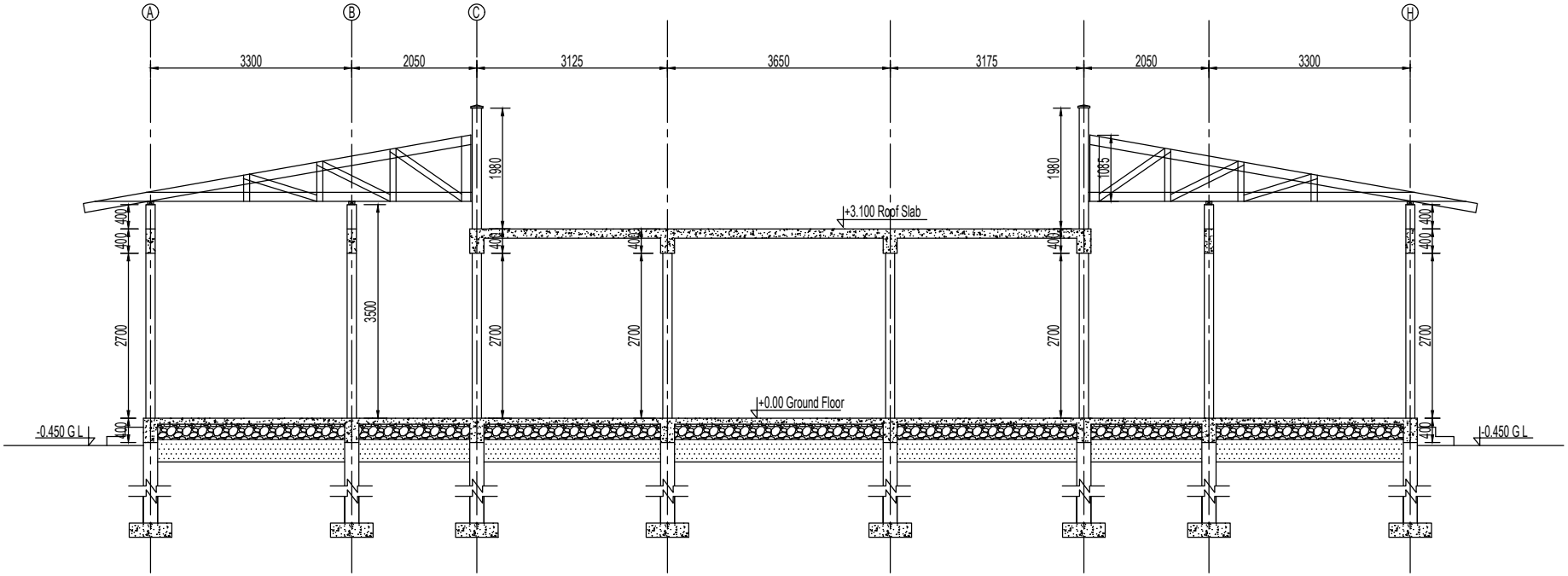
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
TRUSS & DETAIL (POLYCLINIC)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
As Shown	March,2025

Drawing Number:
STR/08



STRUCTURAL SECTION A-A

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix

4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
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   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm

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   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

Architect and Interior Designer:
DXE DESIGN ARCHITECTURE ENGINEERING
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32062
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718091
Email: dxe@dxe.co.tz

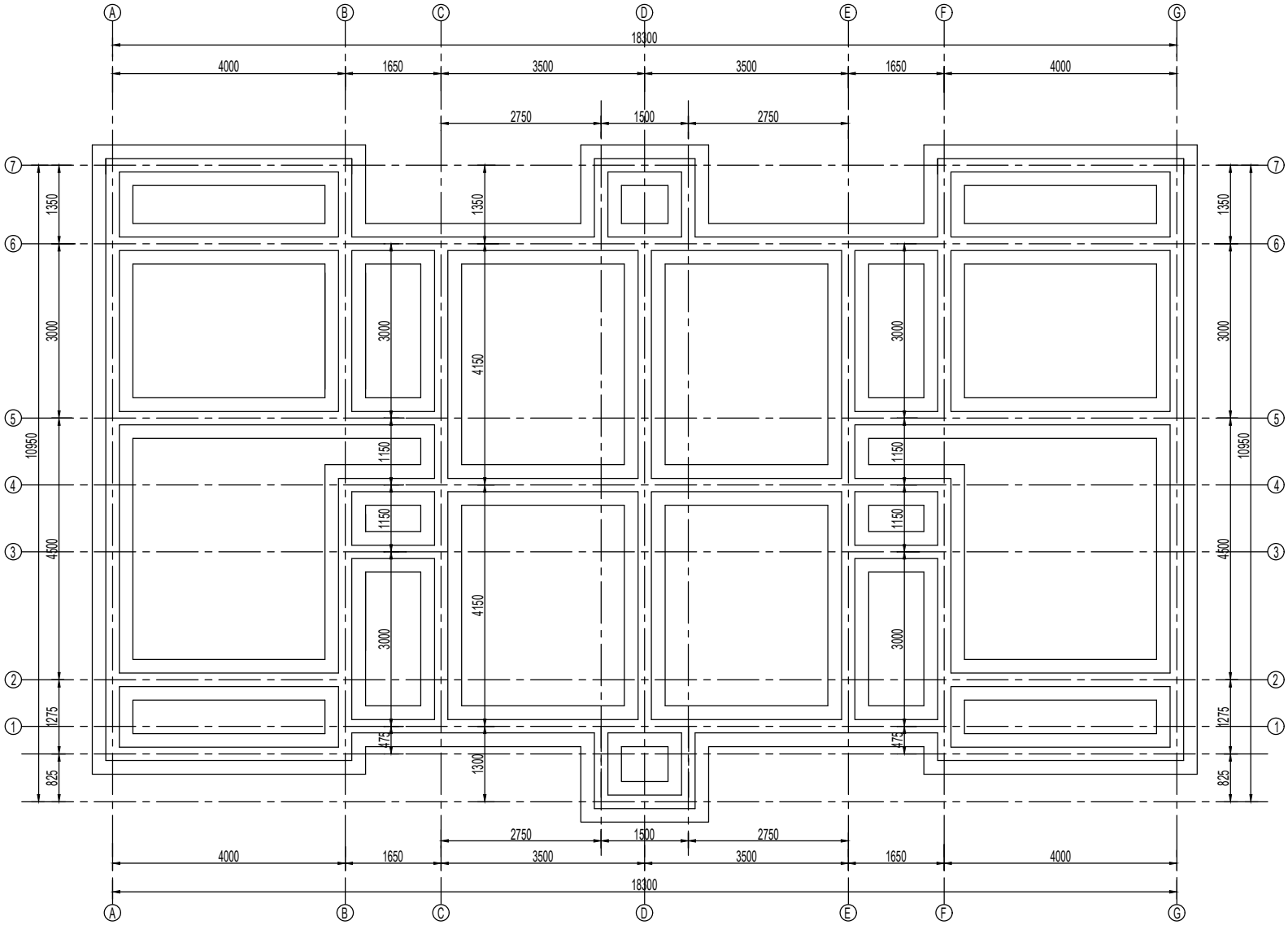
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
STRUCTURAL SECTION A-A (POLYCLINIC)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:75	March,2025

Drawing Number:
STR/09



FOUNDATION PLAN

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
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Revisions:		
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Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
FOUNDATION PLAN
(RESIDENTIAL HOUSE)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:75	March,2025

Drawing Number:
STR/01

GROUND FLOOR CONCRETE LAYOUT

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
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   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
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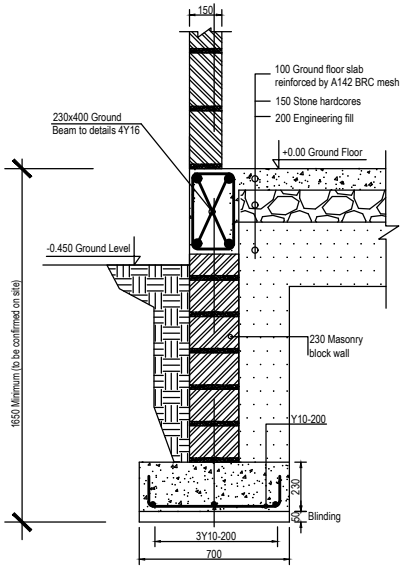
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

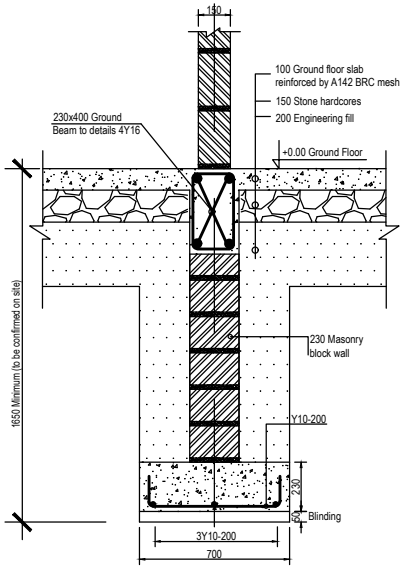
Drawing Tittle:
GROUND FLOOR CONCRETE LAYOUT (RESIDENTIAL HOUSE)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:75	March,2025

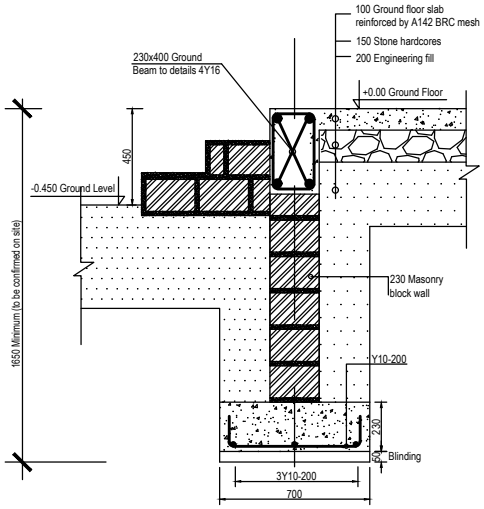
Drawing Number: STR/02



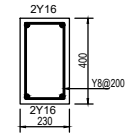
SECTION 1-1.
Scale 1:25



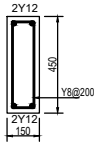
SECTION 2-2.
Scale 1:25



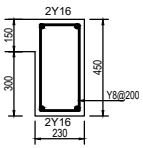
SECTION 3-3.
Scale 1:25



GROUND BEAM SECTION.
Scale 1:25



TYPICAL RING BEAM1 SECTION (RB).
Scale 1:25



TYPICAL BEAM (TB) SECTION.
Scale 1:25

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm
5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.
6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
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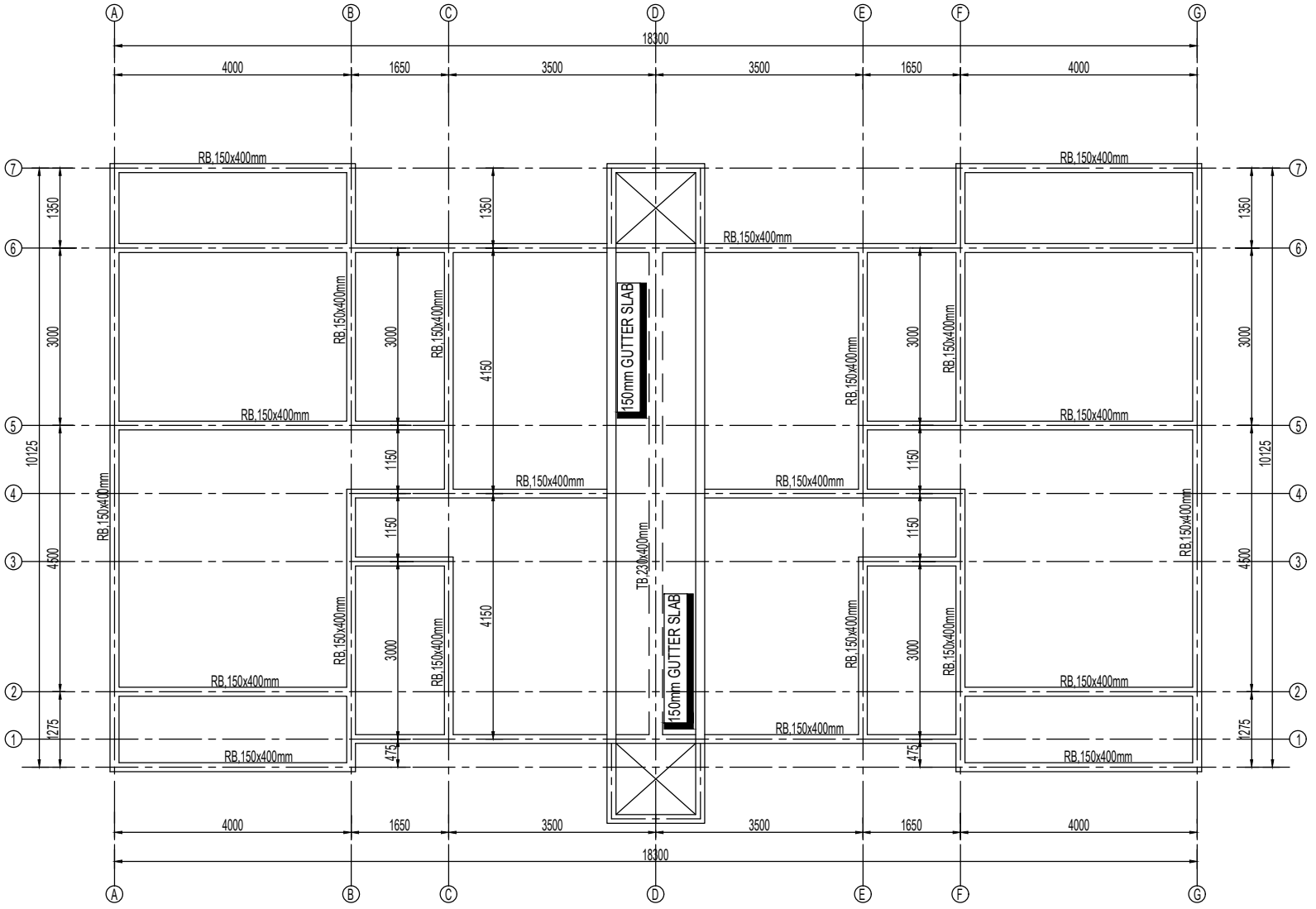
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
SECTIONS
(RESIDENTIAL HOUSE)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:25	March,2025

Drawing Number:
STR/03



RING BEAM LAYOUT

GENERAL NOTES

1. All measurements are in millimetres.
2. Structural drawings to be read inconjuncion with architectural drawings.
3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
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   (a) Mild steel fy = 410N/mmsq.
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6. Timber works shall comply with CP 112 and shall be cell impregnated timber.
7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
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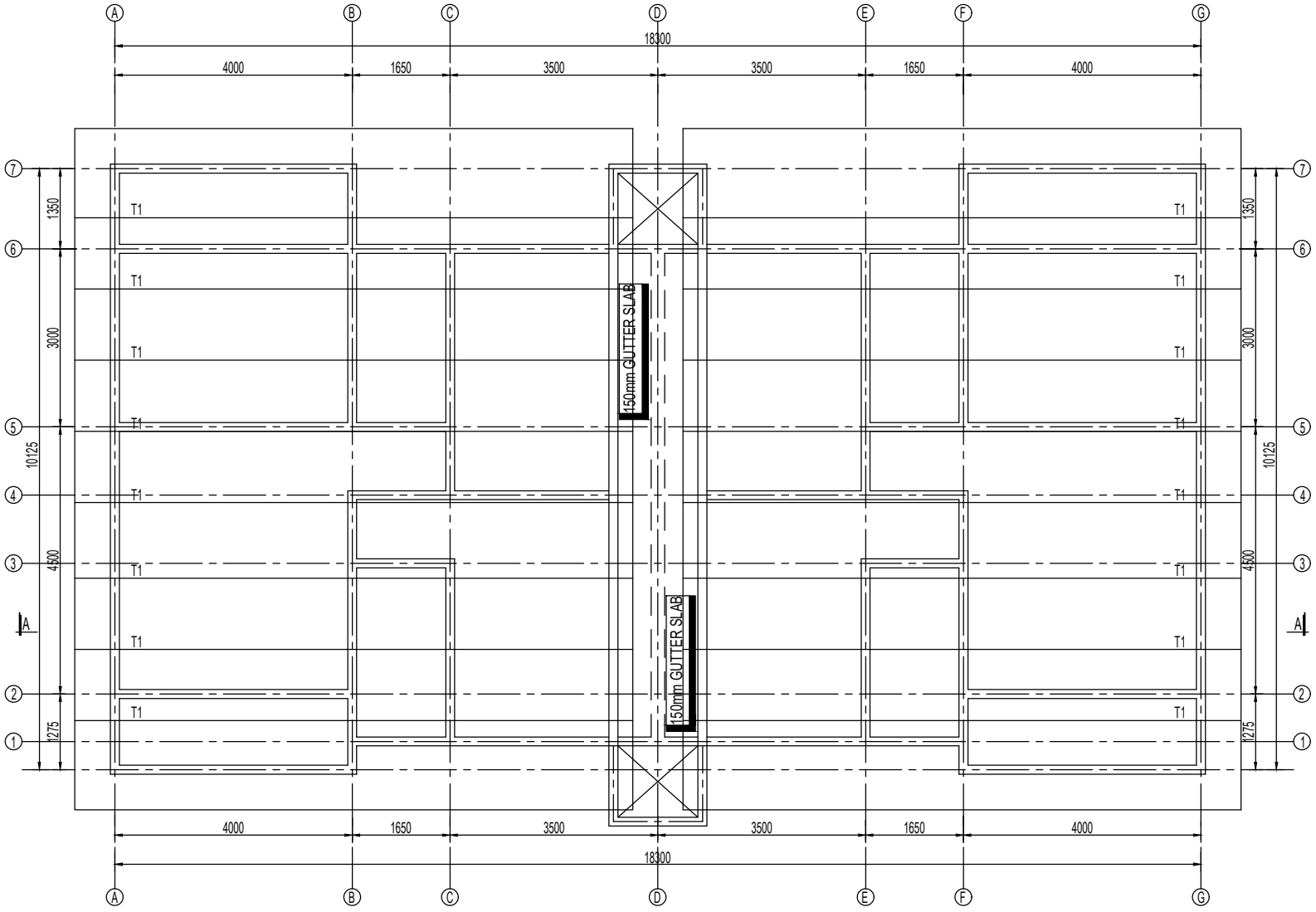
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
RING BEAM LAYOUT
(RESIDENTIAL HOUSE)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:75	March,2025

Drawing Number: STR/04



ROOF PLAN

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix

4. Cover to reinforcements shall be :-
   (a) Floor slabs = 20mm
   (b) Floor beams = 30mm
   (c) Columns footings = 50mm sides
   = 75mm bottom
   (d) Columns = 40mm
   (e) Strip foundations = 50mm

5. Reinforcements shall comply to BS 4466. code if practice:-
   (a) Mild steel fy = 410N/mmsq.
   (b) High tensile steel fy = 500N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
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Architect and Interior Designer:
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
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Dar es Salaam, Tanzania
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Email: dxe@dxe.co.tz

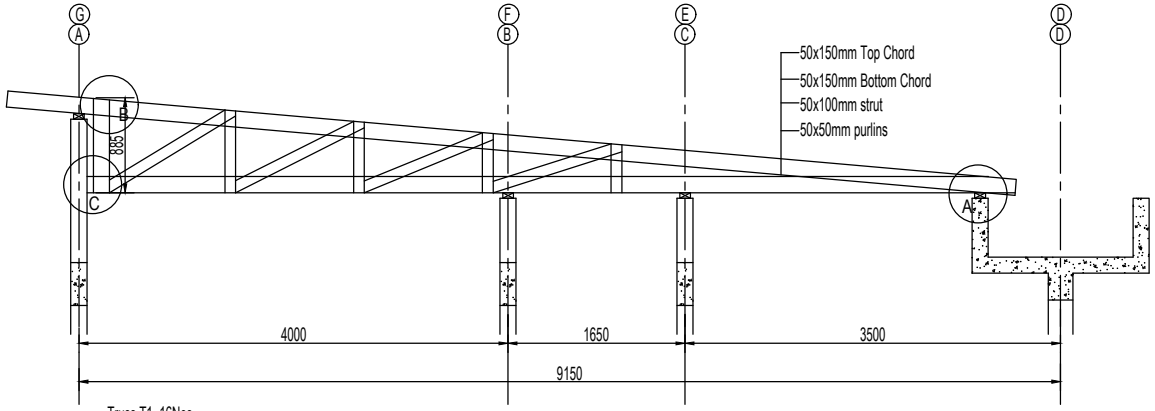
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
ROOF PLAN
(RESIDENTIAL HOUSE)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:75	March,2025

Drawing Number:
STR/05



Truss T1, 16Nos
Scale 1:50

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
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   (a) Floor slabs = 20mm
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Revisions:		
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CONSULTING PROFESSIONAL
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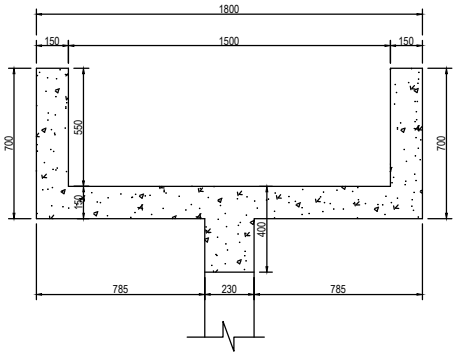
Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
TRUSS
(RESIDENTIAL HOUSE)

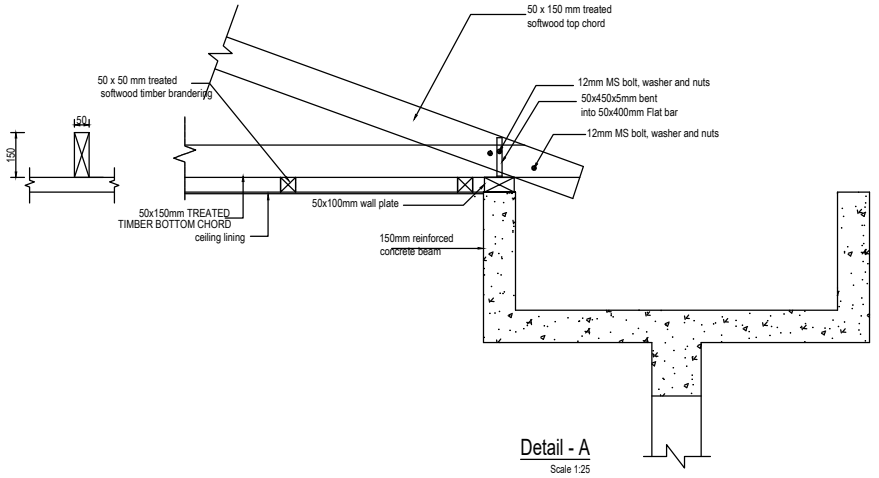
Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:50	March,2025

Drawing Number:
STR/06



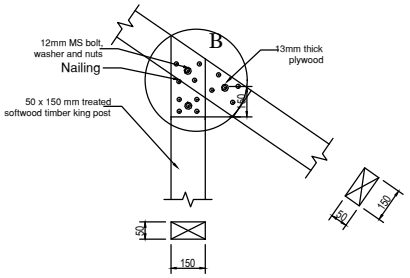
Gutter Dimension

Scale 1:25



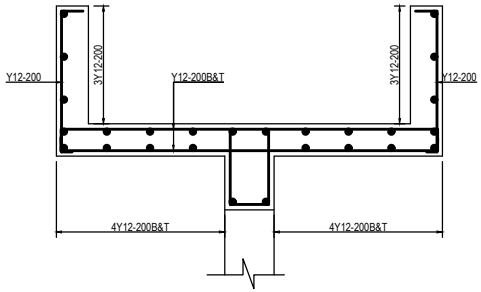
Detail - A

Scale 1:25



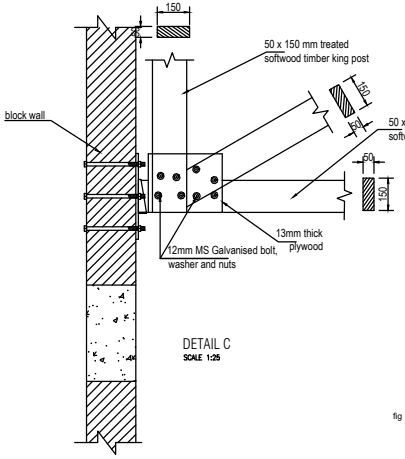
Detail - B

Scale 1:25



Gutter Dimension

Scale 1:25



DETAIL C

SCALE 1:25

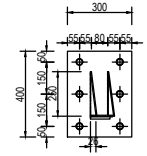


fig 1: -12 mm thick plate cut to the required size
-6 M16 approved expanded bolts to be used
feeted in predrilled holes in concrete

GENERAL NOTES

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   (d) Strip foundation = Grade 20 (1:2:4)mix
   (e) Mass concrete = Grade 15 (1 :3: 6)mix
   (f) Blinding concrete=Grade 10 (1:4:8)mix
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   (b) Floor beams = 30mm
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Revisions:		
Serial Number	Description	Date

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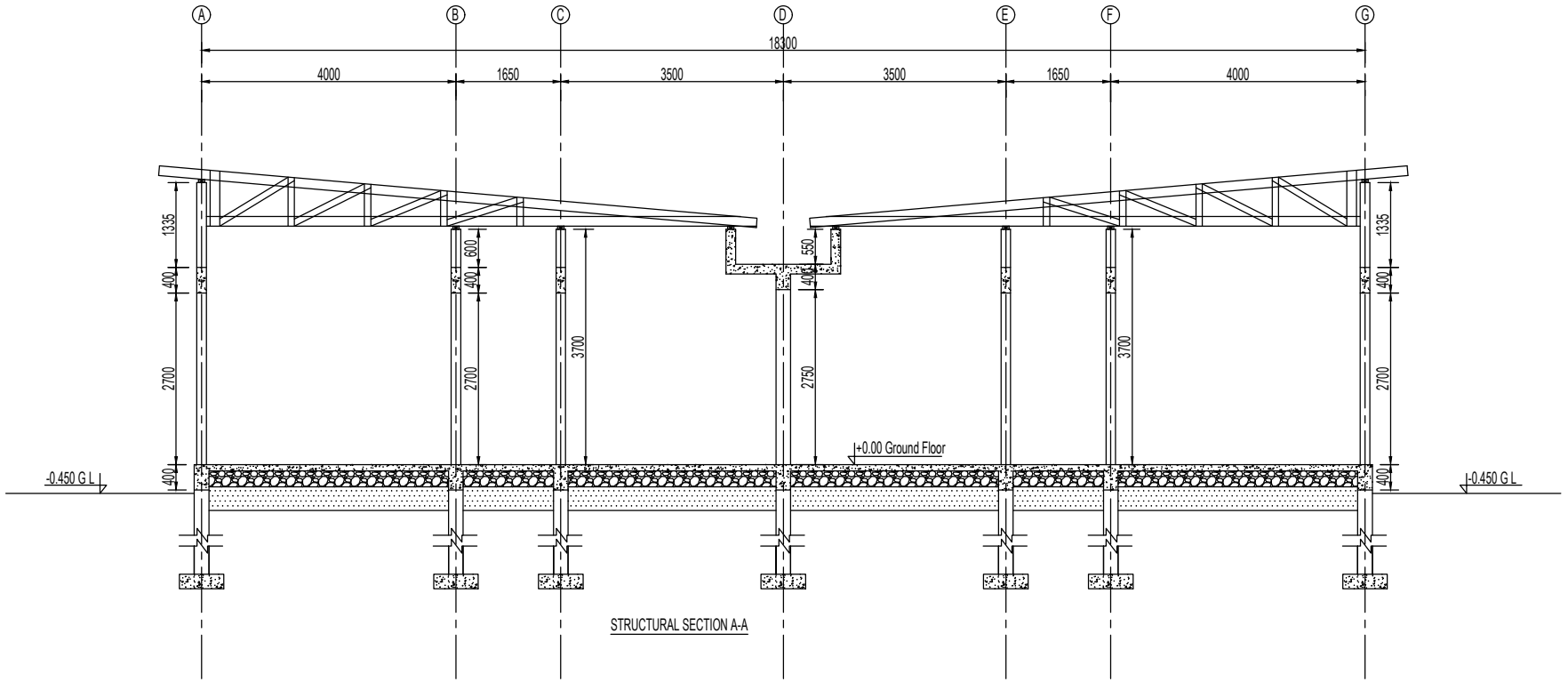
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
GUTTER & TRUSS DETAILS (RESIDENTIAL HOUSE)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:25	March,2025

Drawing Number: STR/07



STRUCTURAL SECTION A-A

GENERAL NOTES

1. All measurements are in millimetres.

2. Structural drawings to be read inconjuncion with architectural drawings.

3. Unless otherwise specified concrete shall be :-
   (a) Floor slabs = Grade 25 (1: 1.5: 3)mix
   (b) Floor beams = Grade 25 (1: 1.5: 3)mix
   (c) Column footings=Grage 25 (1:1.5:3)mix
   (d) Strip foundation = Grade 20 (1:2:4)mix
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4. Cover to reinforcements shall be :-
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   (b) High tensile steel fy = 500N/mmsq.

6. Timber works shall comply with CP 112 and shall be cell impregnated timber.

7. Starter bars for Columns should not be cut prior for approval of foundation depth by the structural Engineer.

Revisions:		
Serial Number	Description	Date

Client Name and Address:
THE REGISTERED TRUSTEES OF MASJID QUBAH AND ISLAMIC CENTRE
P.O.BOX 21121,
DAR ES SALAAM.

Architect and Interior Designer:
DXE
DESIGN ARCHITECTURE ENGINEERING
DXE Associates
Plot No. 17 & 18 Haile Selassie Road, Oysterbay
O. Box 32862,
Dar es Salaam, Tanzania
+255 712 038805
+255 762 718891
Email: dxe@dxe.co.tz

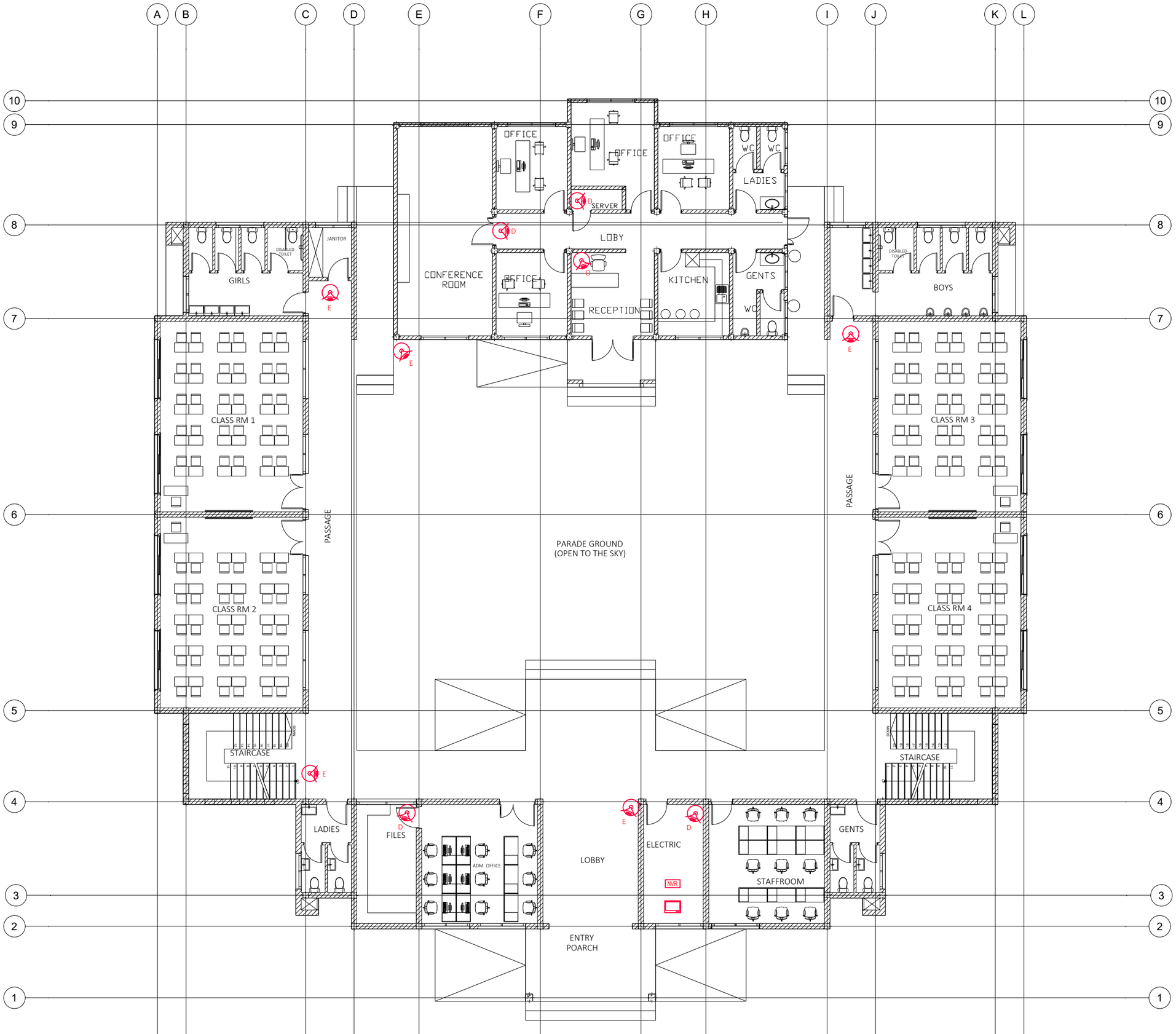
Consulting Engineer:
GALAXY PROJECT SERVICES LTD
CONSULTING PROFESSIONAL
P.O.BOX 32600,
DAR ES SALAAM.

Project Name and Address:
PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT NO. 777, BLOCK 47, AT KIJITONYAMA DAR ES SALAAM.

Drawing Tittle:
STRUCTURAL SECTION A-A
(RESIDENTIAL HOUSE)

Design By:	Checked By:
Joseph M . Lucas	Habib Haruna Kitova
Approved By:	Drawn By:
Habib Haruna Kitova	Hengebert J. Kiloga
Scale:	Date:
1:75	March,2025

Drawing Number:
STR/08



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

D	DENOTES CEILING MOUNTED IP DOME CAMERA
E	DENOTES EXTERNAL BULLET IP CAMERA
	DENOTES CCTV MONITOR

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

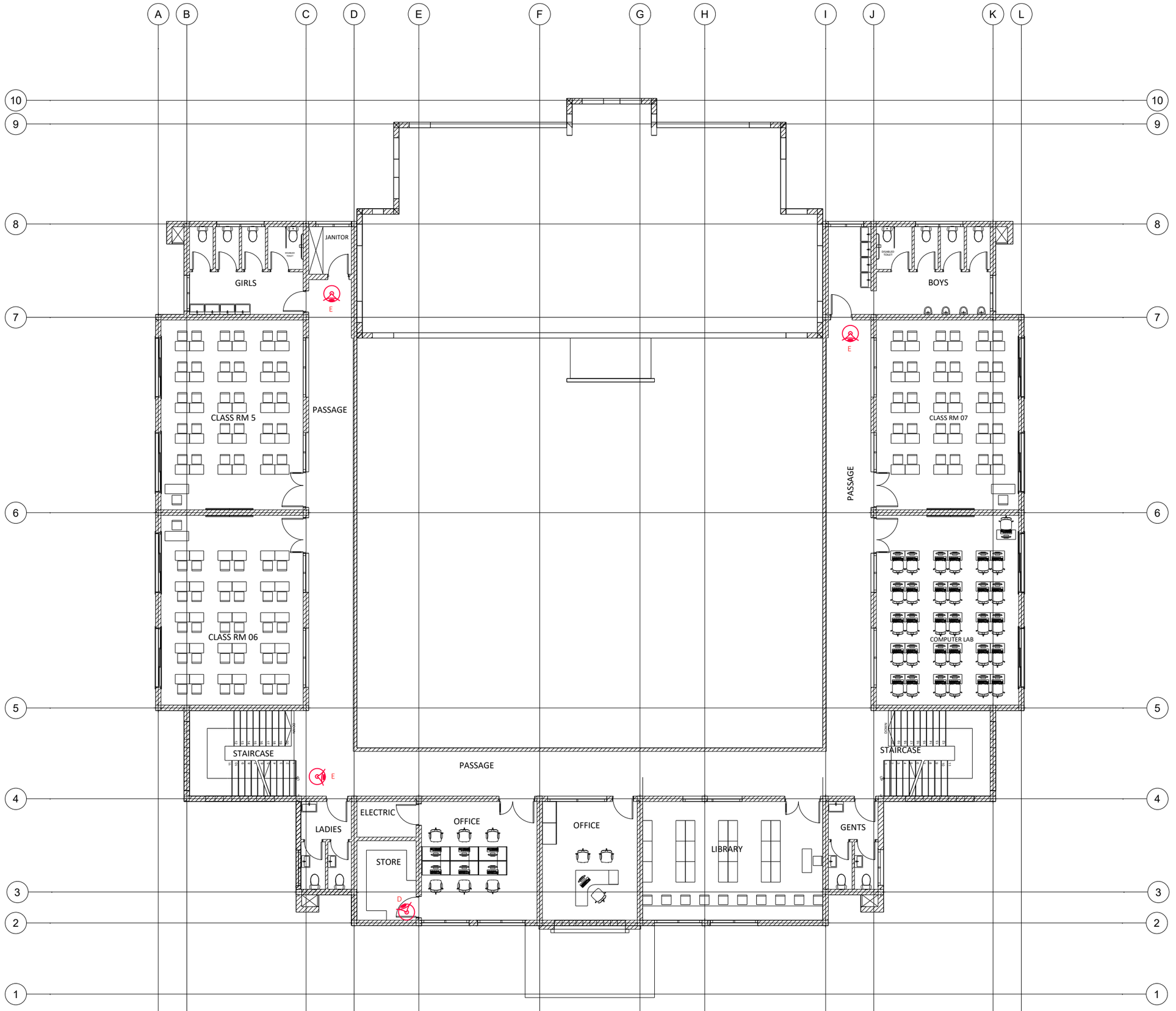
PROPOSED CCTV LAYOUT
CLASSROOMS - GROUND FLOOR

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date: MAR 2025	Date: MAR 2025	Date: MAR 2025	Date: MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-SC-108

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

D	DENOTES CEILING MOUNTED IP DOME CAMERA
E	DENOTES EXTERNAL BULLET IP CAMERA
	DENOTES CCTV MONITOR

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

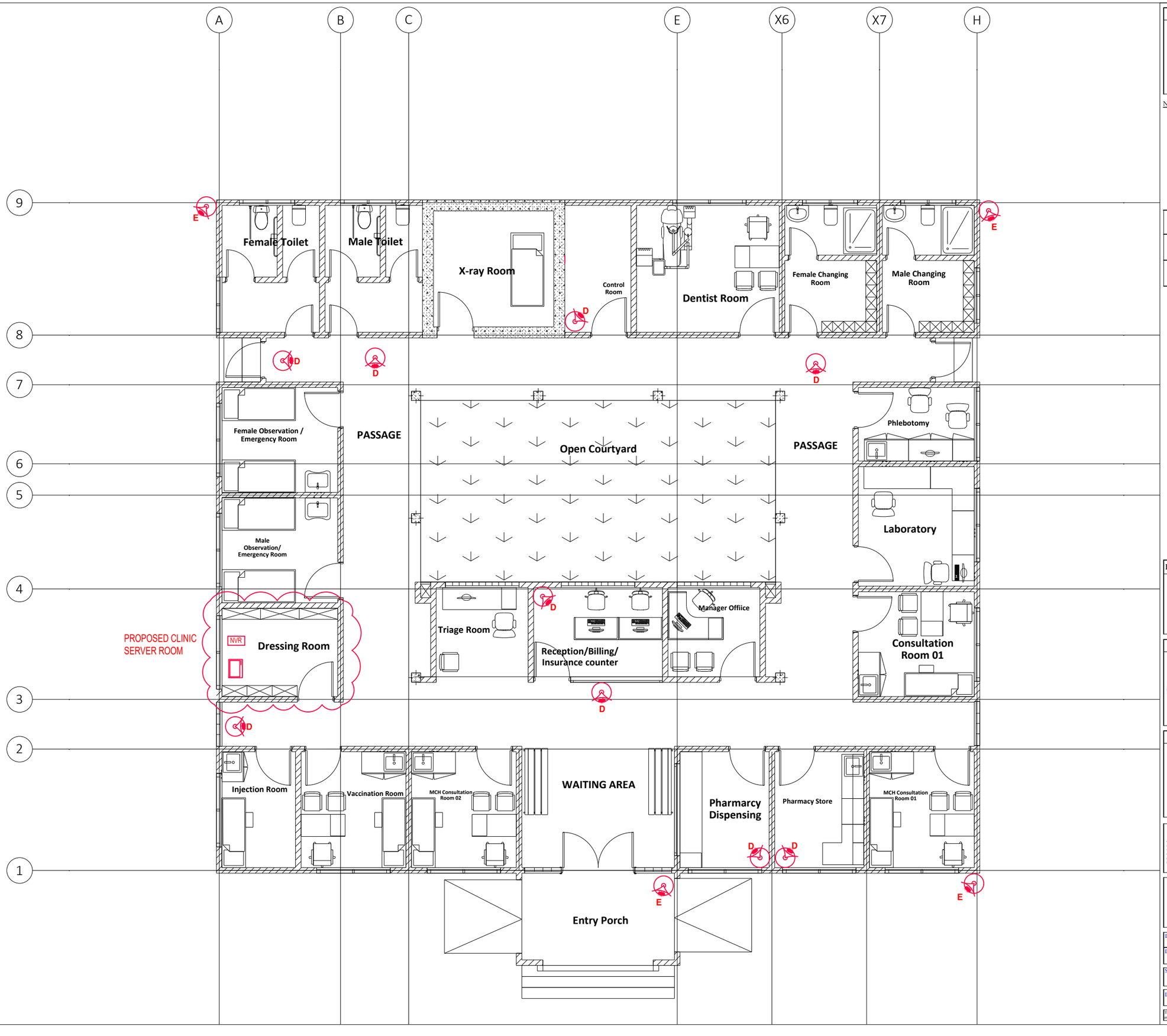
PROPOSED CCTV LAYOUT
CLASSROOMS - FIRST FLOOR

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date	Date	Date	Date
MAR 2025	MAR 2025	MAR 2025	MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-SC-109

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

D	DENOTES CEILING MOUNTED IP DOME CAMERA
E	DENOTES EXTERNAL BULLET IP CAMERA
	DENOTES CCTV MONITOR

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

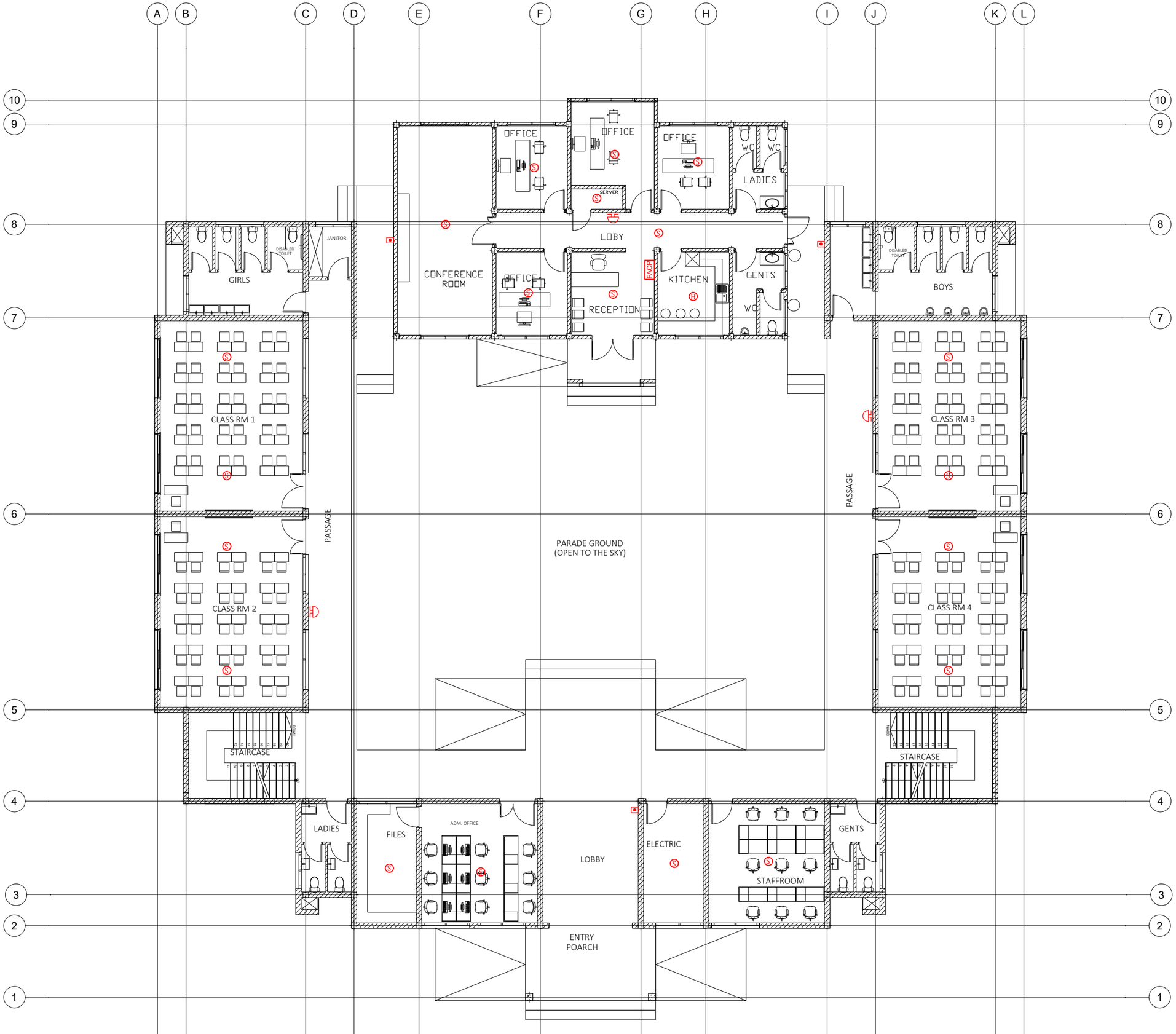
PROPOSED CCTV LAYOUT
POLYCLINIC

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date MAR 2025	Date MAR 2025	Date MAR 2025	Date MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-SC-101

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

S	DENOTES SMOKE DETECTOR
H	DENOTES HEAT DETECTOR
FCP	DENOTES FIRE ALARM CONTROL PANEL
	DENOTES BREAK GLASS
	DENOTES FIRE ALARMS SOUNDER WITH BEACON

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

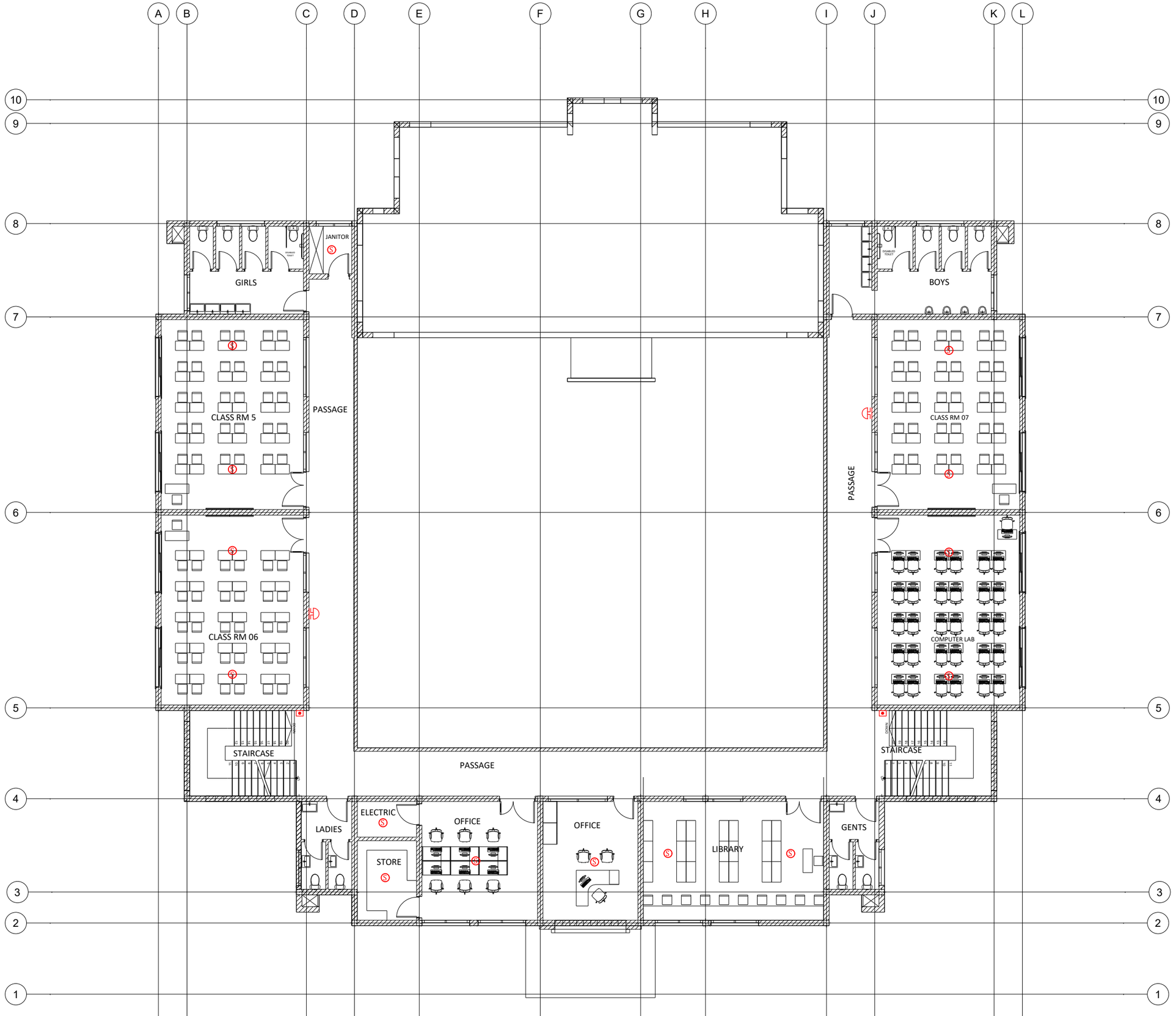
PROPOSED FIRE DETECTION LAYOUT
CLASSROOMS - GROUND

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date: MAR 2025	Date: MAR 2025	Date: MAR 2025	Date: MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-SC-106

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

S	DENOTES SMOKE DETECTOR
H	DENOTES HEAT DETECTOR
FCP	DENOTES FIRE ALARM CONTROL PANEL
	DENOTES BREAK GLASS
	DENOTES FIRE ALARMS SOUNDER WITH BEACON

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

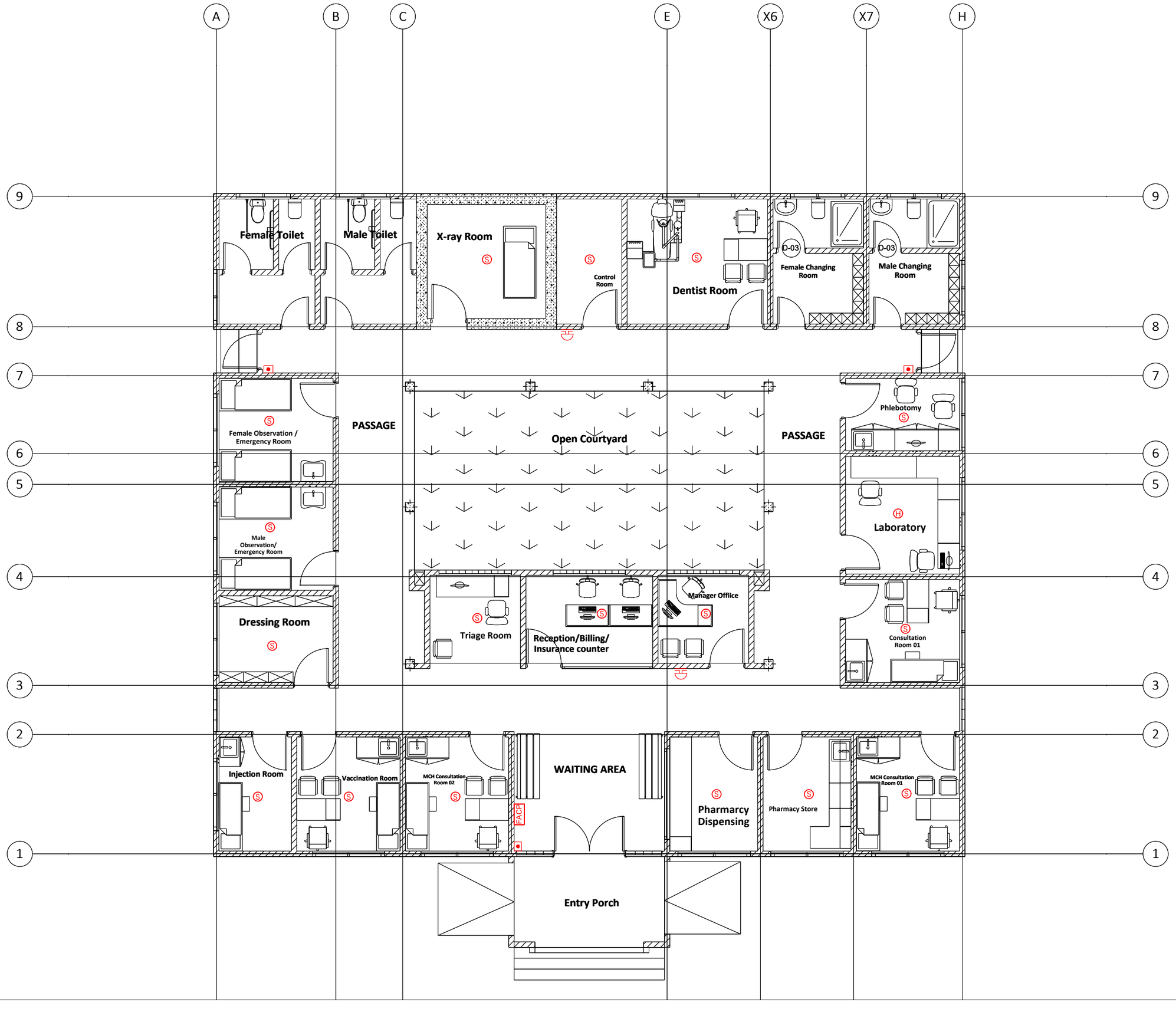
PROPOSED FIRE DETECTION LAYOUT
CLASSROOMS - FIRST

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date: MAR 2025	Date: MAR 2025	Date: MAR 2025	Date: MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-SC-107

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

S	DENOTES SMOKE DETECTOR
H	DENOTES HEAT DETECTOR
FCP	DENOTES FIRE ALARM CONTROL PANEL
	DENOTES BREAK GLASS
	DENOTES FIRE ALARMS SOUNDER WITH BEACON

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

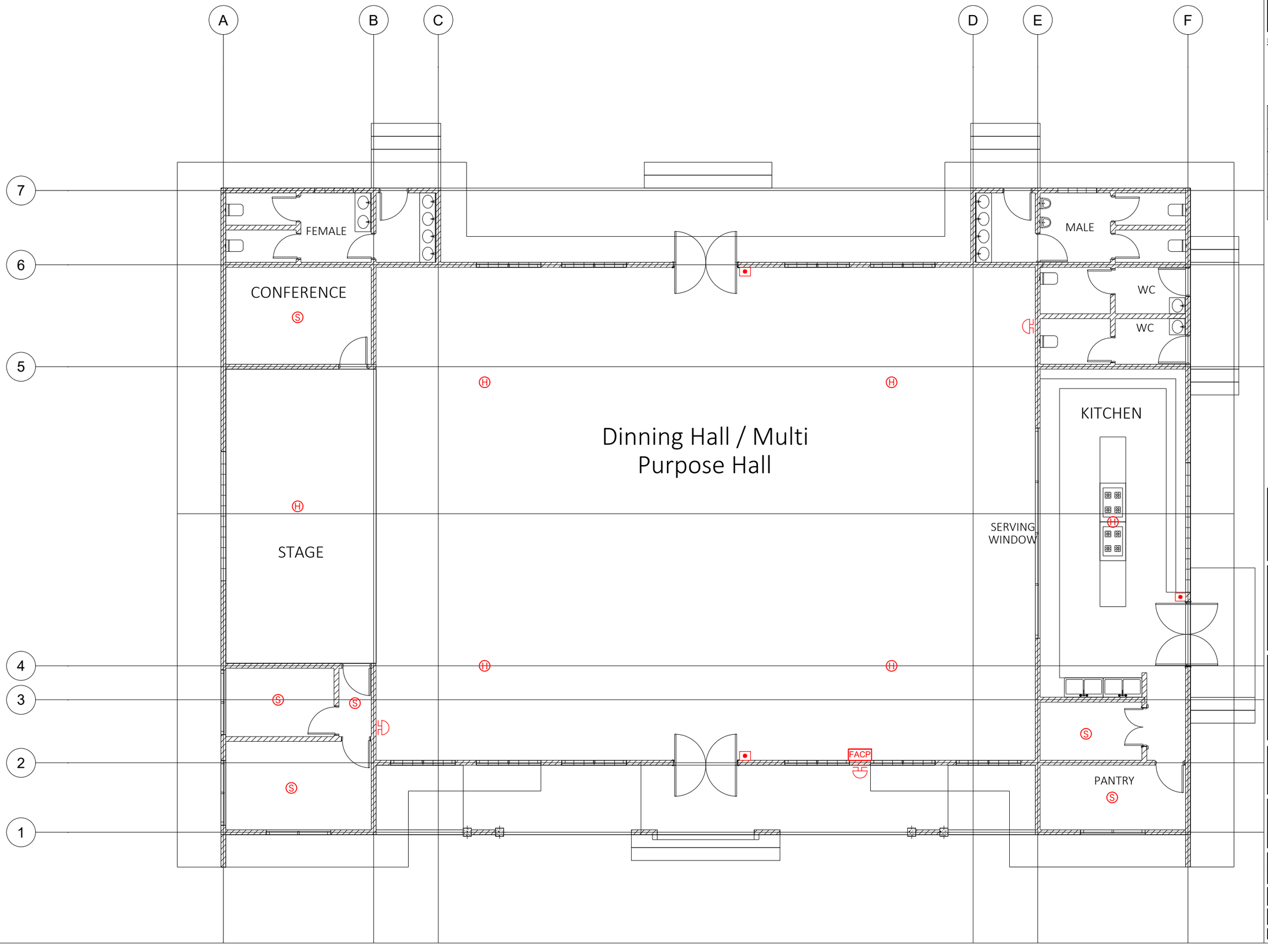
PROPOSED FIRE DETECTION LAYOUT
POLYCLINIC

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date: MAR 2025	Date: MAR 2025	Date: MAR 2025	Date: MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-SC-102

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

S	DENOTES SMOKE DETECTOR
H	DENOTES HEAT DETECTOR
FCP	DENOTES FIRE ALARM CONTROL PANEL
	DENOTES BREAK GLASS
	DENOTES FIRE ALARMS SOUNDER WITH BEACON

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

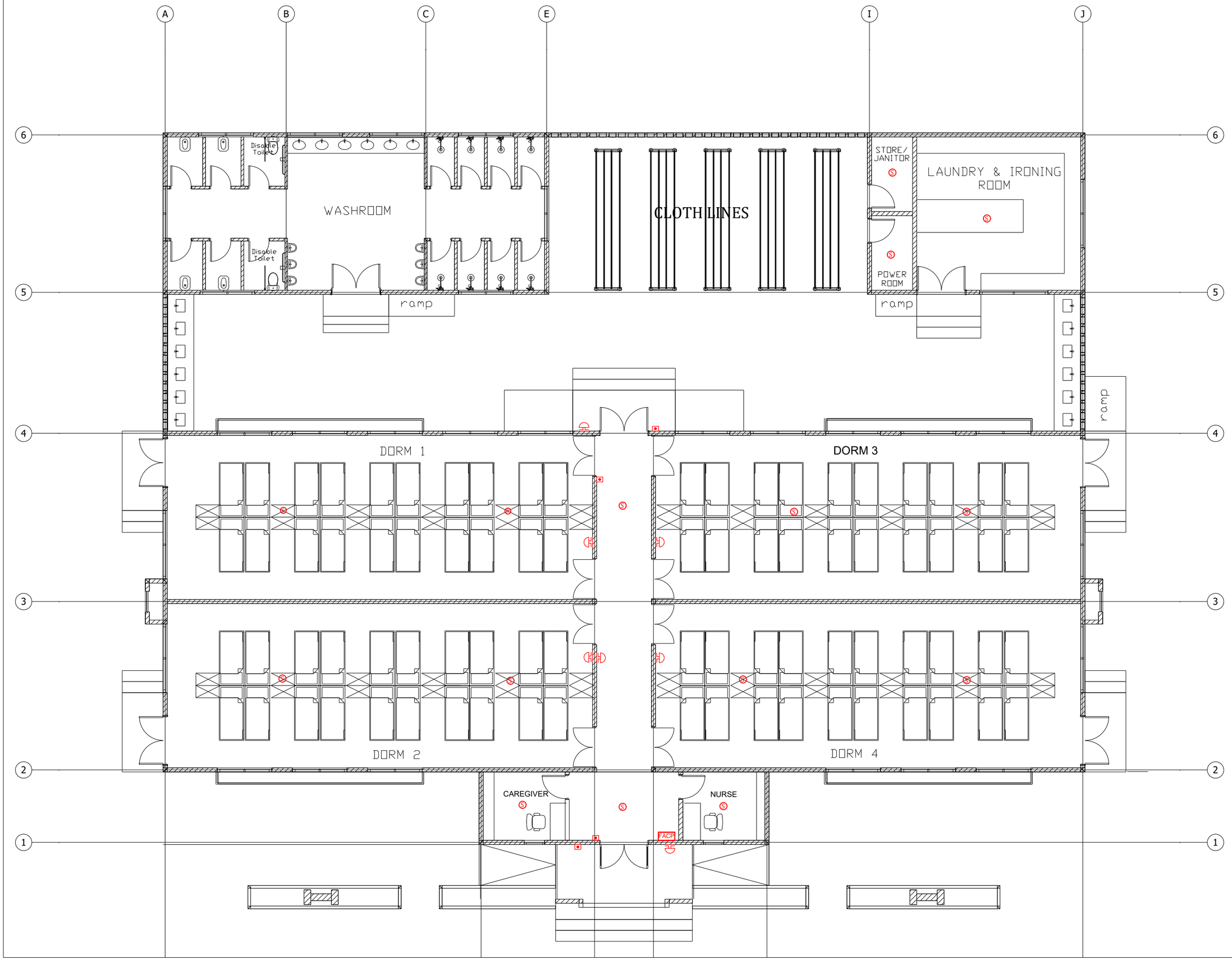
PROPOSED FIRE DETECTION LAYOUT
MULTIFUNCTIONAL

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date: MAR 2025	Date: MAR 2025	Date: MAR 2025	Date: MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-SC-104

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

S	DENOTES SMOKE DETECTOR
H	DENOTES HEAT DETECTOR
FCP	DENOTES FIRE ALARM CONTROL PANEL
	DENOTES BREAK GLASS
	DENOTES FIRE ALARMS SOUNDER WITH BEACON

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

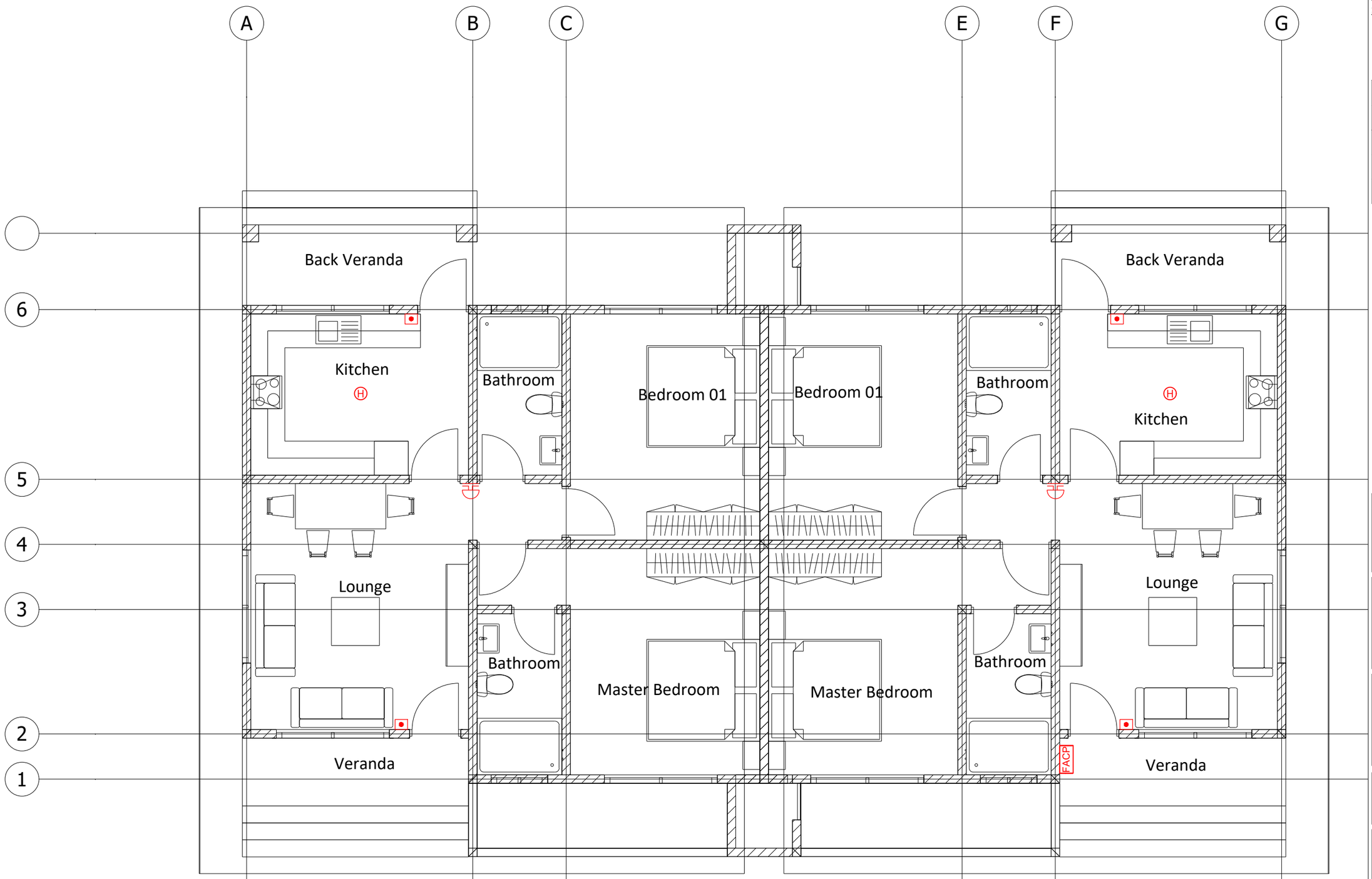
Drawing title

PROPOSED FIRE DETECTION LAYOUT
HOSTEL

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date	Date	Date	Date
MAR 2025	MAR 2025	MAR 2025	MAR 2025

Scale	Status
NTS	P

Drawing no.	Revision
2025/TS/1089-SC-103	



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

S	DENOTES SMOKE DETECTOR
H	DENOTES HEAT DETECTOR
FCP	DENOTES FIRE ALARM CONTROL PANEL
	DENOTES BREAK GLASS
	DENOTES FIRE ALARMS SOUNDER WITH BEACON

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

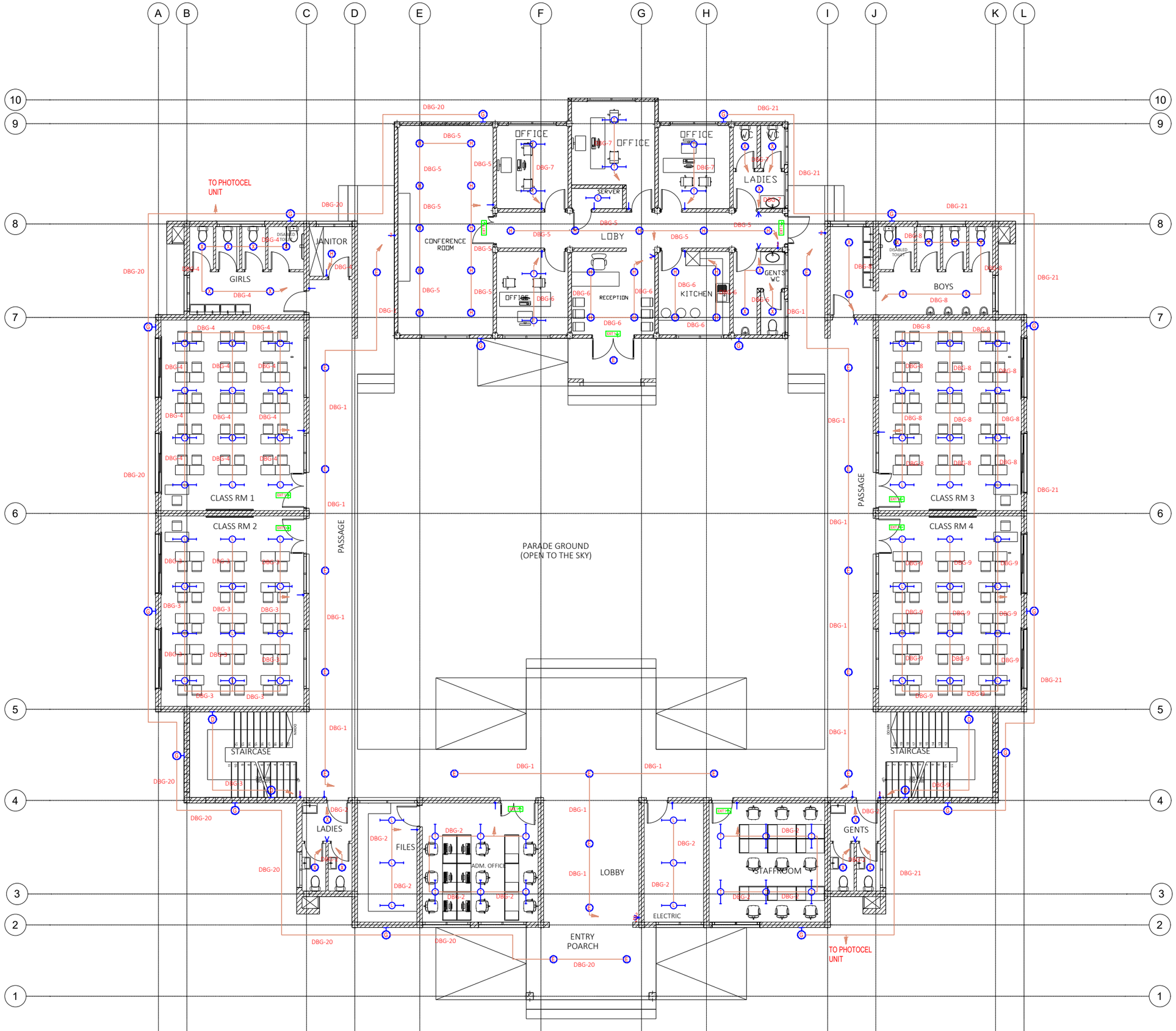
PROPOSED FIRE DETECTION LAYOUT
RESIDENTIAL

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date: MAR 2025	Date: MAR 2025	Date: MAR 2025	Date: MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-SC-105

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

	DENOTES 10AMP 1 GANG 1 WAY LIGHT SWITCH
	DENOTES 10AMP 2 GANG 1 WAY LIGHT SWITCH
	DENOTES 10AMP 1 GANG 2 WAY LIGHT SWITCH
	DENOTES 10AMP 2 GANG 2 WAY LIGHT SWITCH
	DENOTES 10AMP 3 GANG 1 WAY LIGHT SWITCH
G	DENOTES WALL MOUNTED LIGHT AS LIGHTING DIRECT NASHVILLE ORDER CODE NNA28/2D/HF COMPLETE WITH LAMPS AND ALL OTHER ACCESSORIES
H	DENOTES NEW RECESSED LED DOWNLIGHT 260mm DIAMETER AS SMART SENSE LIGHTING COMPLETE WITH DIFFUSER AND ALL OTHER ACCESSORIES
E	DENOTES SURFACE DOWNLIGHT AS LIGHTING DIRECT TENESEE ORDER CODE NTN28/2D/HF COMPLETE WITH LAMPS AND ALL OTHER ACCESSORIES
X	DENOTES RECCESSED WATER PROOF DOWNLIGHTS AS EGLO CATALOGUE FUEVA 5 COMPLETE WITH LAMPS AND ALL ACCESORIES
EXIT	DENOTES CEILING MOUNTED ONE SIDED EXIT SIGNAGE, WITH 3HRS EMERGENCY BATTERY PACK
T	DENOTES 4FEET LED LINEAR T8 SURFACE MOUNTED LIGHT AS LIGHTING DIRECT WYOMING COMPLETE WITH LAMPS, DIFFUSER AND ALL OTHER ACCESSORIES
L	DENOTES IP22, 4 FT LINEAR FLUORESCENT SURFACE MOUNTED LED LIGHT AS NVC PHOENIX COMPLETE WITH ALL OTHER ACCESSORIES
D	DENOTES SURFACE MOUNTED LED DOWNLIGHT 260mm DIAMETER AS LIGHTING DIRECT POLO COMPLETE WITH DIFFUSER AND ALL OTHER ACCESSORIES
EXIT2	DENOTES TWO SIDED EXIT SIGNAGE, WITH 3HRS EMERGENCY BATTERY PACK

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

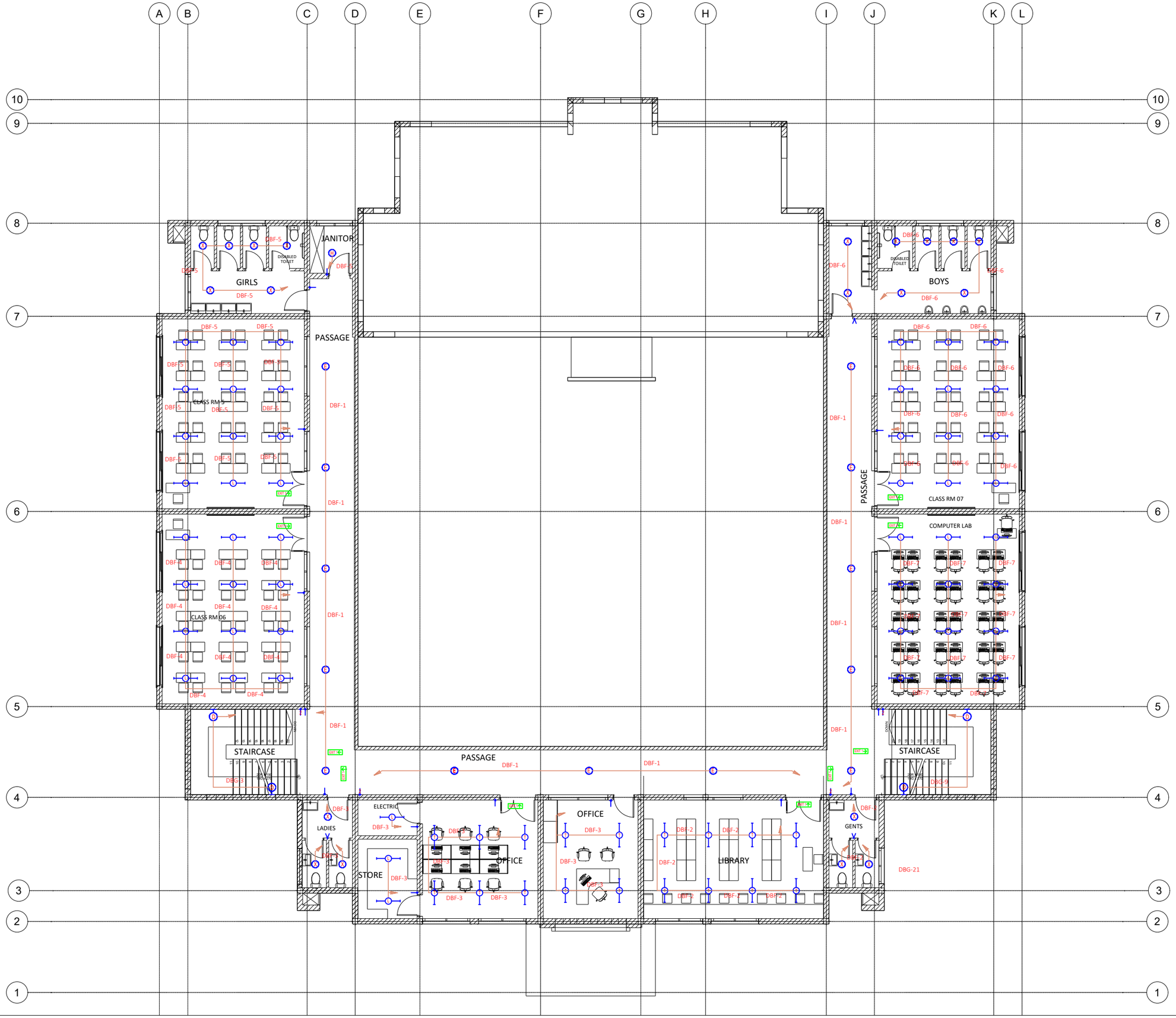
PROPOSED LIGHTING LAYOUT
CLASSROOMS - GROUND FLOOR

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date: MAR 2025	Date: MAR 2025	Date: MAR 2025	Date: MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-EL-109

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

	DENOTES 10AMP 1 GANG 1 WAY LIGHT SWITCH
	DENOTES 10AMP 2 GANG 1 WAY LIGHT SWITCH
	DENOTES 10AMP 1 GANG 2 WAY LIGHT SWITCH
	DENOTES 10AMP 2 GANG 2 WAY LIGHT SWITCH
	DENOTES 10AMP 3 GANG 1 WAY LIGHT SWITCH
G	DENOTES WALL MOUNTED LIGHT AS LIGHTING DIRECT NASHVILLE ORDER CODE NNA28/2D/HF COMPLETE WITH LAMPS AND ALL OTHER ACCESSORIES
H	DENOTES NEW RECESSED LED DOWNLIGHT 260mm DIAMETER AS SMART SENSE LIGHTING COMPLETE WITH DIFFUSER AND ALL OTHER ACCESSORIES
E	DENOTES SURFACE DOWNLIGHT AS LIGHTING DIRECT TENESEE ORDER CODE NTN28/2D/HF COMPLETE WITH LAMPS AND ALL OTHER ACCESSORIES
X	DENOTES RECCESSED WATER PROOF DOWNLIGHTS AS EGLO CATALOGUE FUEVA 5 COMPLETE WITH LAMPS AND ALL ACCESORIES
EXIT 1	DENOTES CEILING MOUNTED ONE SIDED EXIT SIGNAGE, WITH 3HRS EMERGENCY BATTERY PACK
T	DENOTES 4FEET LED LINEAR T8 SURFACE MOUNTED LIGHT AS LIGHTING DIRECT WYOMING COMPLETE WITH LAMPS, DIFFUSER AND ALL OTHER ACCESSORIES
L	DENOTES IP22, 4 FT LINEAR FLUORESCENT SURFACE MOUNTED LED LIGHT AS NVC PHOENIX COMPLETE WITH ALL OTHER ACCESSORIES
D	DENOTES SURFACE MOUNTED LED DOWNLIGHT 260mm DIAMETER AS LIGHTING DIRECT POLO COMPLETE WITH DIFFUSER AND ALL OTHER ACCESSORIES
EXIT2	DENOTES TWO SIDED EXIT SIGNAGE, WITH 3HRS EMERGENCY BATTERY PACK

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

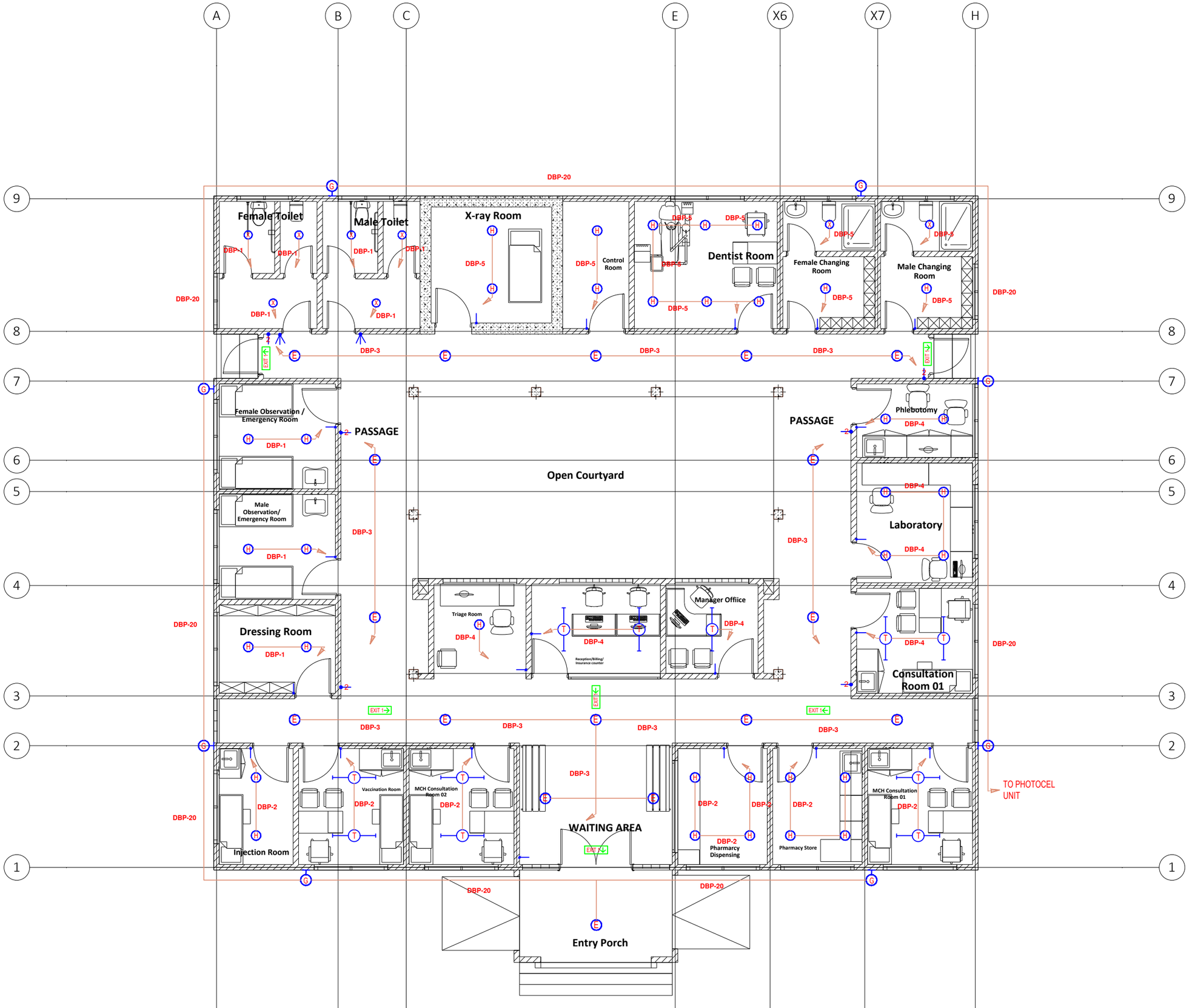
PROPOSED LIGHTING LAYOUT
CLASSROOMS - FIRST FLOOR

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date MAR 2025	Date MAR 2025	Date MAR 2025	Date MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-EL-110

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

	DENOTES 10AMP 1 GANG 1 WAY LIGHT SWITCH
	DENOTES 10AMP 2 GANG 1 WAY LIGHT SWITCH
	DENOTES 10AMP 1 GANG 2 WAY LIGHT SWITCH
	DENOTES 10AMP 2 GANG 2 WAY LIGHT SWITCH
	DENOTES 10AMP 3 GANG 1 WAY LIGHT SWITCH
G	DENOTES WALL MOUNTED LIGHT AS LIGHTING DIRECT NASHVILLE ORDER CODE NNA28/2D/HF COMPLETE WITH LAMPS AND ALL OTHER ACCESSORIES
H	DENOTES NEW RECESSED LED DOWNLIGHT 260mm DIAMETER AS SMART SENSE LIGHTING COMPLETE WITH DIFFUSER AND ALL OTHER ACCESSORIES
E	DENOTES SURFACE DOWNLIGHT AS LIGHTING DIRECT TENESEE ORDER CODE NTN28/2D/HF COMPLETE WITH LAMPS AND ALL OTHER ACCESSORIES
X	DENOTES RECCESSED WATER PROOF DOWNLIGHTS AS EGLO CATALOGUE FUEVA 5 COMPLETE WITH LAMPS AND ALL ACCESORIES
EXIT 1	DENOTES CEILING MOUNTED ONE SIDED EXIT SIGNAGE, WITH 3HRS EMERGENCY BATTERY PACK
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D	DENOTES SURFACE MOUNTED LED DOWNLIGHT 260mm DIAMETER AS LIGHTING DIRECT POLO COMPLETE WITH DIFFUSER AND ALL OTHER ACCESSORIES
EXIT2	DENOTES TWO SIDED EXIT SIGNAGE, WITH 3HRS EMERGENCY BATTERY PACK

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

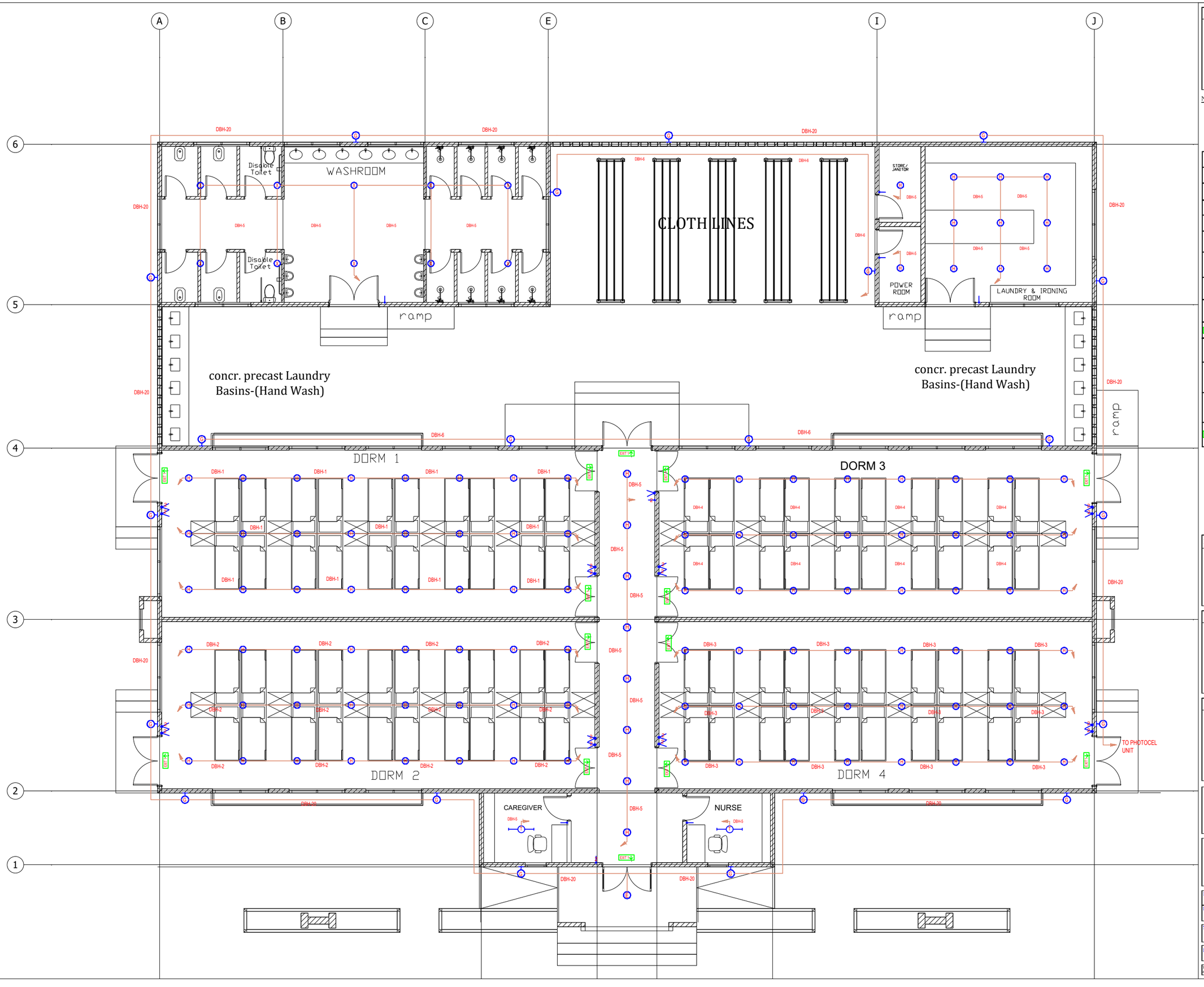
PROPOSED LIGHTING LAYOUT
POLYCLINIC

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date: MAR 2025	Date: MAR 2025	Date: MAR 2025	Date: MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1066-EL-104

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

	DENOTES 10AMP 1 GANG 1 WAY LIGHT SWITCH
	DENOTES 10AMP 2 GANG 1 WAY LIGHT SWITCH
	DENOTES 10AMP 1 GANG 2 WAY LIGHT SWITCH
	DENOTES 10AMP 2 GANG 2 WAY LIGHT SWITCH
	DENOTES 10AMP 3 GANG 1 WAY LIGHT SWITCH
G	DENOTES WALL MOUNTED LIGHT AS LIGHTING DIRECT NASHVILLE ORDER CODE NNA28/2D/HF COMPLETE WITH LAMPS AND ALL OTHER ACCESSORIES
H	DENOTES NEW RECESSED LED DOWNLIGHT 260mm DIAMETER AS SMART SENSE LIGHTING COMPLETE WITH DIFFUSER AND ALL OTHER ACCESSORIES
E	DENOTES SURFACE DOWNLIGHT AS LIGHTING DIRECT TENESEE ORDER CODE NTN28/2D/HF COMPLETE WITH LAMPS AND ALL OTHER ACCESSORIES
X	DENOTES RECCESSED WATER PROOF DOWNLIGHTS AS EGLO CATALOGUE FUEVA 5 COMPLETE WITH LAMPS AND ALL ACCESORIES
EXIT	DENOTES CEILING MOUNTED ONE SIDED EXIT SIGNAGE, WITH 3HRS EMERGENCY BATTERY PACK
T	DENOTES 4FEET LED LINEAR T8 SURFACE MOUNTED LIGHT AS LIGHTING DIRECT WYOMING COMPLETE WITH LAMPS, DIFFUSER AND ALL OTHER ACCESSORIES
L	DENOTES IP22, 4 FT LINEAR FLUORESCENT SURFACE MOUNTED LED LIGHT AS NVC PHOENIX COMPLETE WITH ALL OTHER ACCESSORIES
D	DENOTES SURFACE MOUNTED LED DOWNLIGHT 260mm DIAMETER AS LIGHTING DIRECT POLO COMPLETE WITH DIFFUSER AND ALL OTHER ACCESSORIES
EXIT2	DENOTES TWO SIDED EXIT SIGNAGE, WITH 3HRS EMERGENCY BATTERY PACK

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

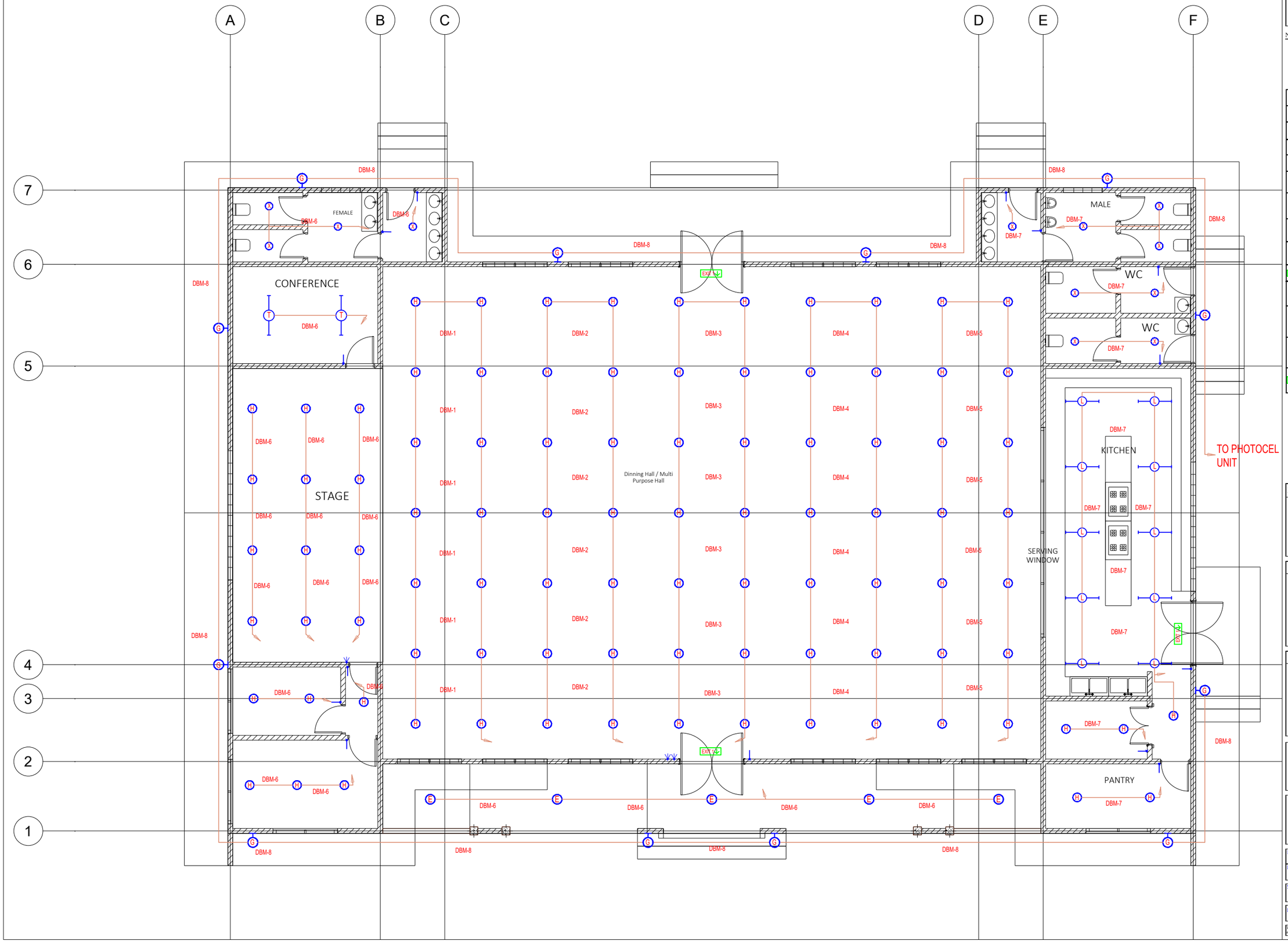
PROPOSED LIGHTING LAYOUT
HOSTEL

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date	Date	Date	Date
MAR 2025	MAR 2025	MAR 2025	MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-EL-106

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

	DENOTES 10AMP 1 GANG 1 WAY LIGHT SWITCH
	DENOTES 10AMP 2 GANG 1 WAY LIGHT SWITCH
	DENOTES 10AMP 1 GANG 2 WAY LIGHT SWITCH
	DENOTES 10AMP 2 GANG 2 WAY LIGHT SWITCH
	DENOTES 10AMP 3 GANG 1 WAY LIGHT SWITCH
G	DENOTES WALL MOUNTED LIGHT AS LIGHTING DIRECT NASHVILLE ORDER CODE NNA28/2D/HF COMPLETE WITH LAMPS AND ALL OTHER ACCESSORIES
H	DENOTES NEW RECESSED LED DOWNLIGHT 260mm DIAMETER AS SMART SENSE LIGHTING COMPLETE WITH DIFFUSER AND ALL OTHER ACCESSORIES
E	DENOTES SURFACE MOUNTED LED DOWNLIGHT AS LIGHTING DIRECT TENESEE ORDER CODE NTN28/2D/HF COMPLETE WITH LAMPS AND ALL OTHER ACCESSORIES
X	DENOTES RECCESSED WATER PROOF DOWNLIGHTS AS EGLO CATALOGUE FUEVA 5 COMPLETE WITH LAMPS AND ALL ACCESORIES
EXIT	DENOTES CEILING MOUNTED ONE SIDED EXIT SIGNAGE, WITH 3HRS EMERGENCY BATTERY PACK
T	DENOTES 4FEET LED LINEAR T8 SURFACE MOUNTED LIGHT AS LIGHTING DIRECT WYOMING COMPLETE WITH LAMPS, DIFFUSER AND ALL OTHER ACCESSORIES
L	DENOTES IP22, 4 FT LINEAR FLUORESCENT SURFACE MOUNTED LED LIGHT AS NVC PHOENIX COMPLETE WITH ALL OTHER ACCESSORIES
D	DENOTES SURFACE MOUNTED LED DOWNLIGHT 260mm DIAMETER AS LIGHTING DIRECT POLO COMPLETE WITH DIFFUSER AND ALL OTHER ACCESSORIES
EXIT2	DENOTES TWO SIDED EXIT SIGNAGE, WITH 3HRS EMERGENCY BATTERY PACK

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

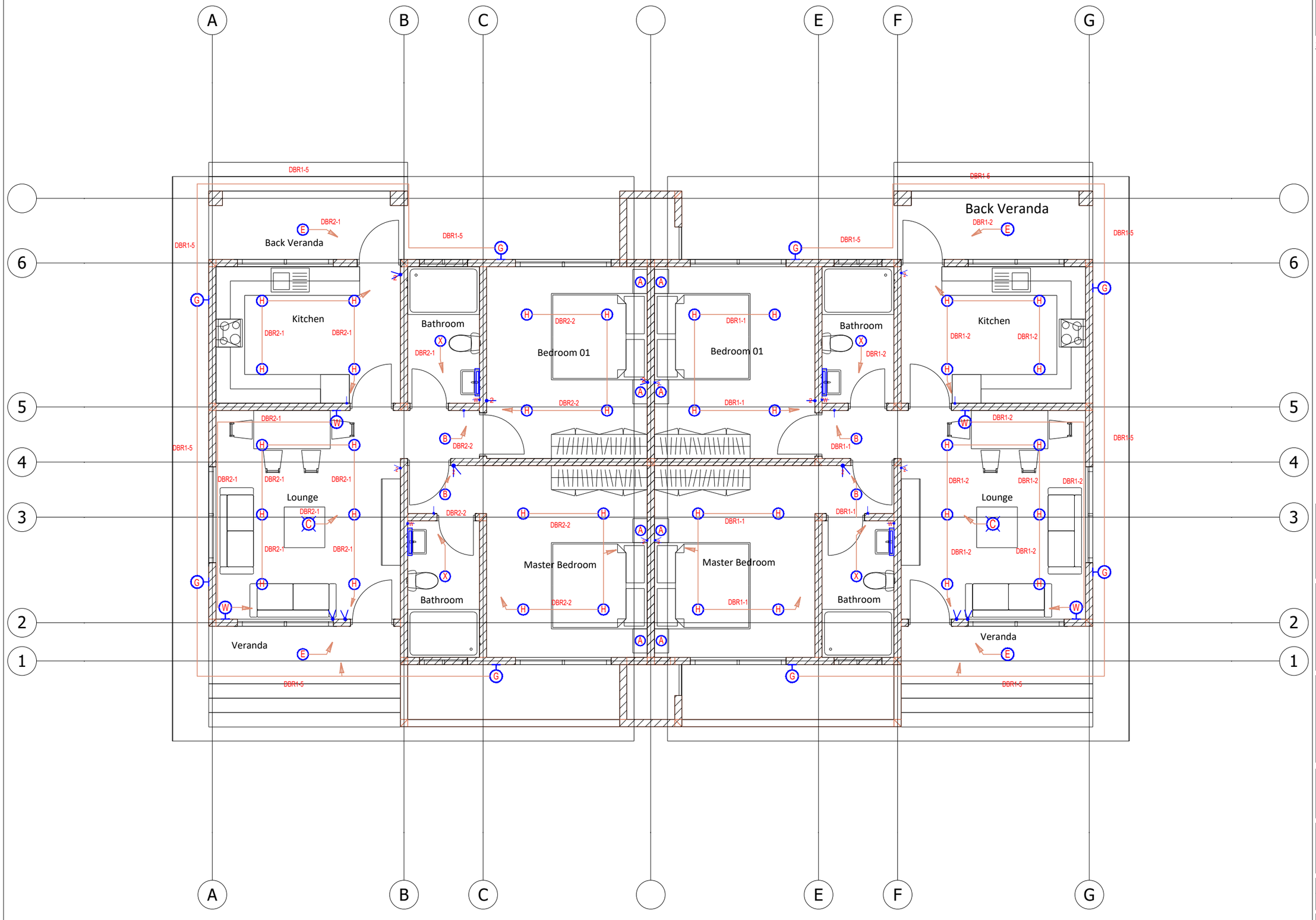
Drawing title

PROPOSED LIGHTING LAYOUT
MULTIFUNCTIONAL

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date MAR 2025	Date MAR 2025	Date MAR 2025	Date MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-EL-107 | Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

	DENOTES 10AMP 1 GANG 1 WAY LIGHT SWITCH
	DENOTES 10AMP 2 GANG 1 WAY LIGHT SWITCH
W	DENOTES 10AMP WATER PROOF LIGHT SWITCH
	DENOTES 10AMP 1 GANG 2 WAY LIGHT SWITCH
	DENOTES 10AMP 2 GANG 2 WAY LIGHT SWITCH
	DENOTES 10AMP 3 GANG 1 WAY LIGHT SWITCH
A	DENOTES BED SIDE TABLE LIGHT AS EGLO CATALOGUE VISERBELLA 97646 COMPLETE WITH LED LAMPS AND ALL OTHER ACCESSORIES
G	DENOTES WALL MOUNTED LIGHT AS LIGHTING DIRECT NASHVILLE ORDER CODE NNA28/2D/HF COMPLETE WITH LAMPS AND ALL OTHER ACCESSORIES
H	DENOTES NEW RECESSED LED DOWNLIGHT 260mm DIAMETER AS SMART SENSE LIGHTING COMPLETE WITH DIFFUSER AND ALL OTHER ACCESSORIES
E	DENOTES SURFACE DOWNLIGHT AS LIGHTING DIRECT TENESEE ORDER CODE NTN28/2D/HF COMPLETE WITH LAMPS AND ALL OTHER ACCESSORIES
L	DENOTES 2FEET LED LINEAR SURFACE MOUNTED LIGHT AS LIGHTING DIRECT PHOENIX COMPLETE WITH LAMPS AND ALL OTHER ACCESSORIES
D	DENOTES SURFACE LED DOWNLIGHT AS LIGHTING DIRECT POLO CODE NPO28/2D/HF/WH/O COMPLETE WITH ALL ACCESSORIES
C	DENOTES CEILING MOUNTED INTERNAL CHANDERLIER LIGHT ERSEKA 99096 AS PER EGLO CATALOGUE
W	DENOTES WALL MOUNTED INDOOR LIGHTS AS EGLO CATALOGUE IMPERIAL 82744 OR EQUAL APROVED WITH ALL ACCESSORIES
H	DENOTES NEW RECESSED LED DOWNLIGHT 90mm DIAMETER AS SMART SENSE LIGHTING COMPLETE WITH DIFFUSER AND ALL OTHER ACCESSORIES
L	DENOTES 4FEET LED LINEAR SURFACE MOUNTED LIGHT AS LIGHTING DIRECT PHOENIX COMPLETE WITH LAMPS AND ALL OTHER ACCESSORIES
X	DENOTES RECCESSED WATER PROOF DOWNLIGHTS AS LIGHTING DIRECT RIGA COMPLETE WITH ENERGY SEVER LAMPS AND ALL ACCESORIES
	DENOTES LED SURFACE MOUNTED WHB MIRROR LIGHT HAKANA 91364 S AS PER EGLO CATALOGUE COMPLETE WITH ALL OTHER ACCESSORIES/OR EQUAL APPROVED
P	DENOTES DECORATIVE PENDANT LIGHT AS PER EGLO CATALOGUE COMPLETE WITH ALL OTHER ACCESSORIES

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

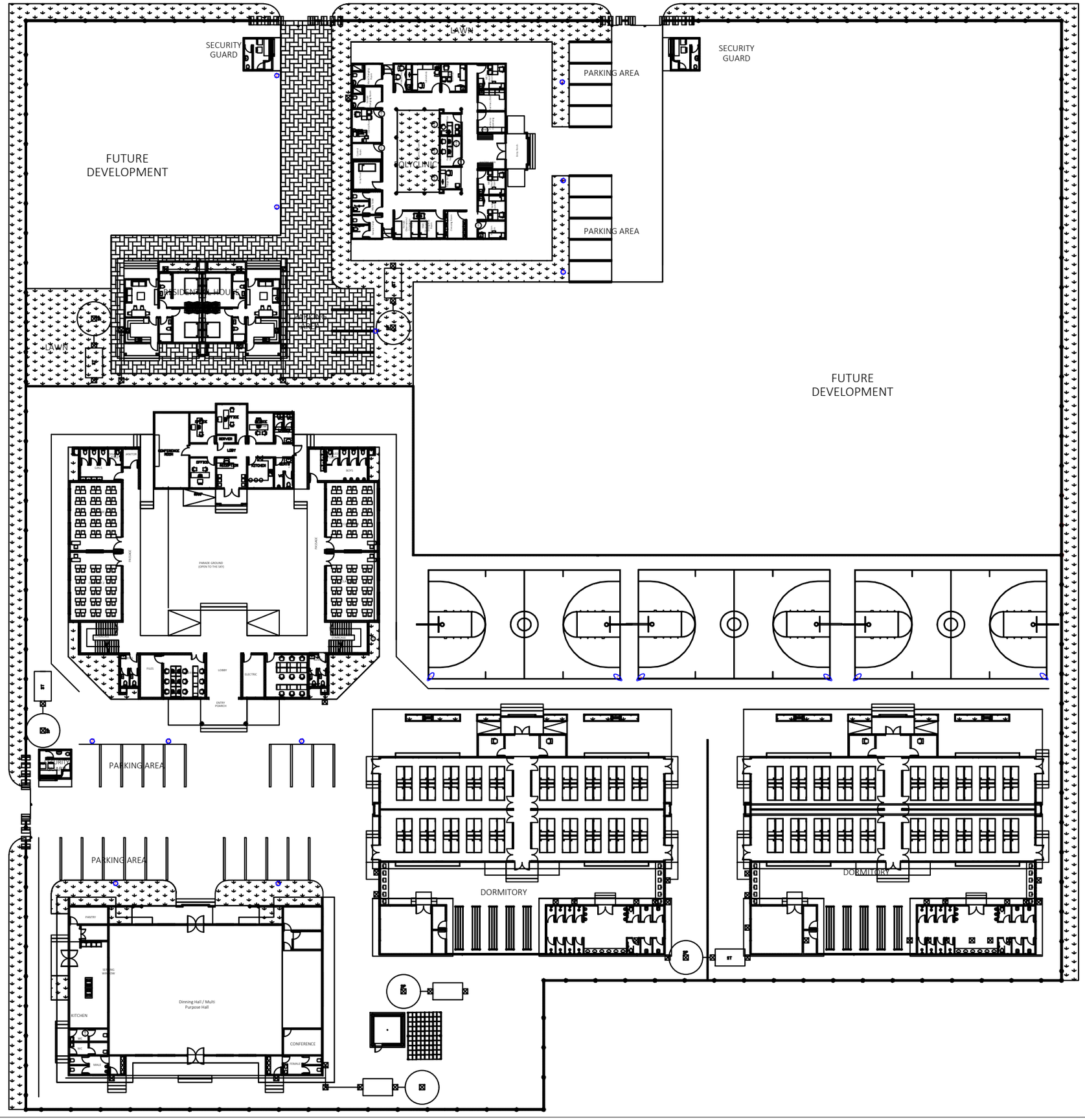
PROPOSED LIGHTING LAYOUT
RESIDENTIAL

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date: MAR 2025	Date: MAR 2025	Date: MAR 2025	Date: MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-EL-108

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

Z	DENOTES IP65 DECORATIVE EXTERNAL STREET LIGHT AS NVC FREMONT, C/W 5M STEEL POLE & ALL ASSOCIATED ACCESSORIES
Z	DENOTES IP65 BOLARD GARDEN LIGHT AS NVC RENO, 1M HEIGHT, WITH ALL ACCESSORIES
Y	DENOTES OUTDOOR IP65 LED FLOOD LIGHT AS NVC DENVER, MOUNTED ON 10 METER STEEL POLE, COMPLETE WITH MOUNTING BRACKETS ALL OTHER ACCESSORIES

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

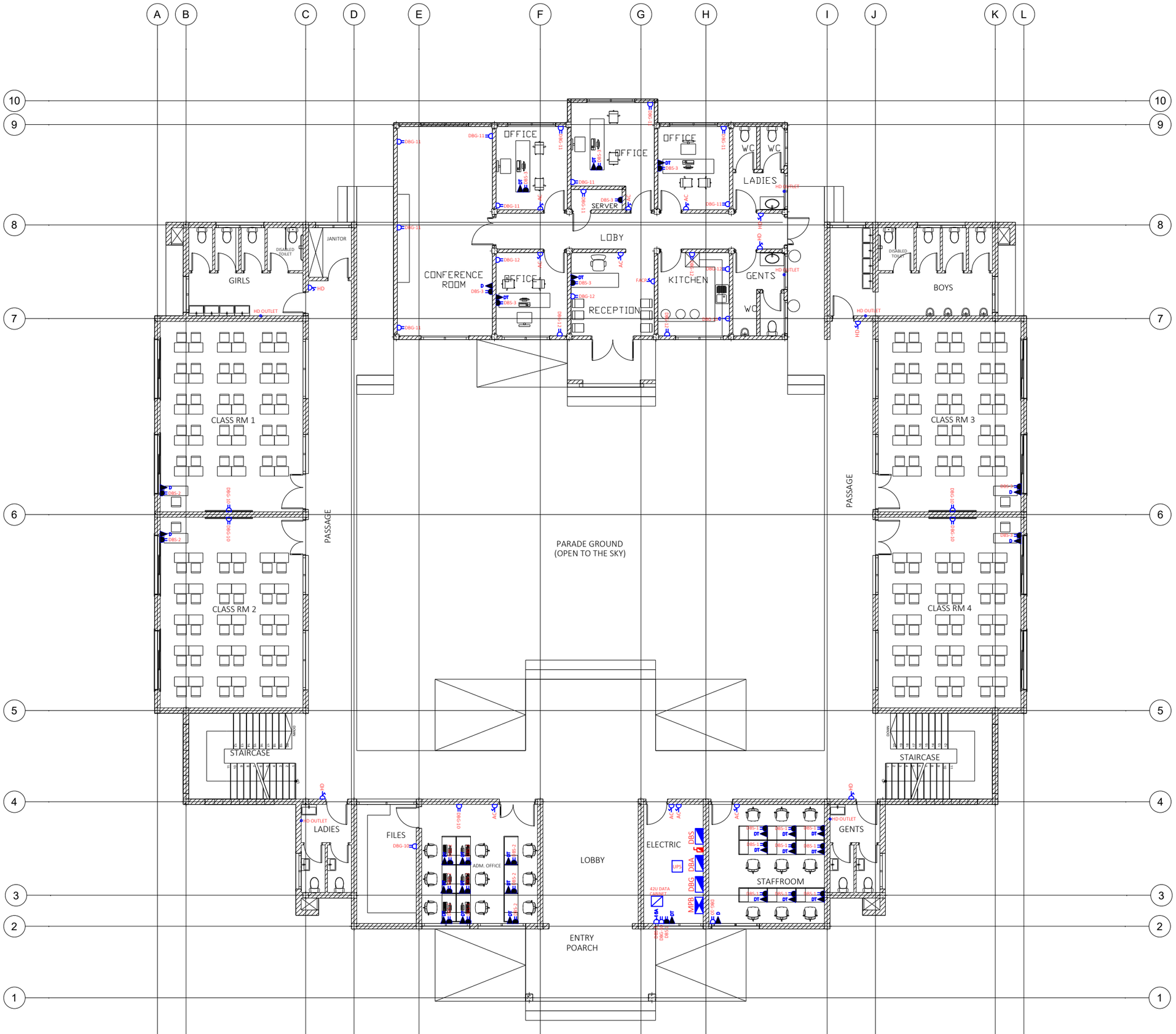
PROPOSED EXTERNAL LIGHTING SITEPLAN

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date MAR 2025	Date MAR 2025	Date MAR 2025	Date MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-EL-121

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

1. THE INSTALLATIONS SHALL BE DONE IN ACCORDANCE WITH THE CURRENT IEE WIRING REGULATIONS.
2. EACH CONSUMER UNIT SHALL BE OF RCD INTEGRAL TYPE. THE SENSITIVITY OF RCD's SHALL BE AS SHOWN.
3. ALL BOXES FOR SWITCHES, SWITCH SOCKETS etc. SHALL BE OF STEEL CONSTRUCTION. PVC BOXES WILL NOT BE ACCEPTED.
4. LIGHT SWITCHES SHALL BE MOUNTED AT 1200mm AFFL MEASURED FROM THE CENTER OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING.
5. PVC HEAVY GAUGE CONDUITS SHOULD BE USED ALL OVER THE INSTALLATIONS AND THEY SHALL BE CONCEALED INTO STRUCTURES.
6. TWISTING OF CONDUCTORS SHALL BE AVOIDED. PROPER MEANS OF CABLE TERMINATIONS WILL BE HIGHLY OBSERVED.
7. 25mm PVC CONDUITS SHALL BE USED TO MAKE A LINK BETWEEN TRUNKING SYSTEM IN THE CEILING VOID AND SKIRTING TRUNKING, LUMINAIRES, ACCESSORIES ETC
8. ALL CONSUMER UNITS SHALL BE MOUNTED AT 1800mm AFFL MEASURED FROM BOARD BOTTOMS.
9. WALL MOUNTED LIGHT HEIGHT TO BE AGREED ON SITE APPROVED BY ARCHITECT
10. OUTLETS WITH NO SKIRTING TRUNK, 2Nos. OF 25mm DIAMETER CONDUITS TO BE USED FOR DATA AND POWER CABLES
11. ALL SOCKET OUTLETS TO BE MOUNTED AT 300mm AFFL MEASURED FROM THE BOTTOM OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING
12. SKIRTING TRUNKING TO BE MOUNTED ON TOP OF SKIRTING TIMBER, AT 300mm AFFL MEASURED FROM THE CENTER OF THE TRUNK.

TV	DENOTES OUTLET FOR TV/DECODER CABLE
DTV	DENOTES OUTLET FOR DECODER TO TV CABLE
	DENOTES TWIN 13A SWITCHED SOCKET OUTLET WHITE IN COLOUR FOR NORMAL POWER SUPPLY
	DENOTES 20 AMP DOUBLE POLE SWITCH
C	DENOTES 45AMP COOKER CONTROL OUTLET
	DENOTES TPN/SPN DISTRIBUTION BOARD
S	DENOTES SHAVER UNIT SOCKET OUTLET
DT	DENOTES TWIN CAT 6 RJ45 OUTLET FOR DATA & TELEPHONE
DD	DENOTES TWIN CAT 6 RJ45 OUTLET FOR DATA
D	DENOTES SINGLE CAT 6 RJ45 OUTLET FOR DATA
T	DENOTES SINGLE CAT 6 RJ45 OUTLET FOR TELEPHONE
	DENOTES TPN/SPN ISOLATOR

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

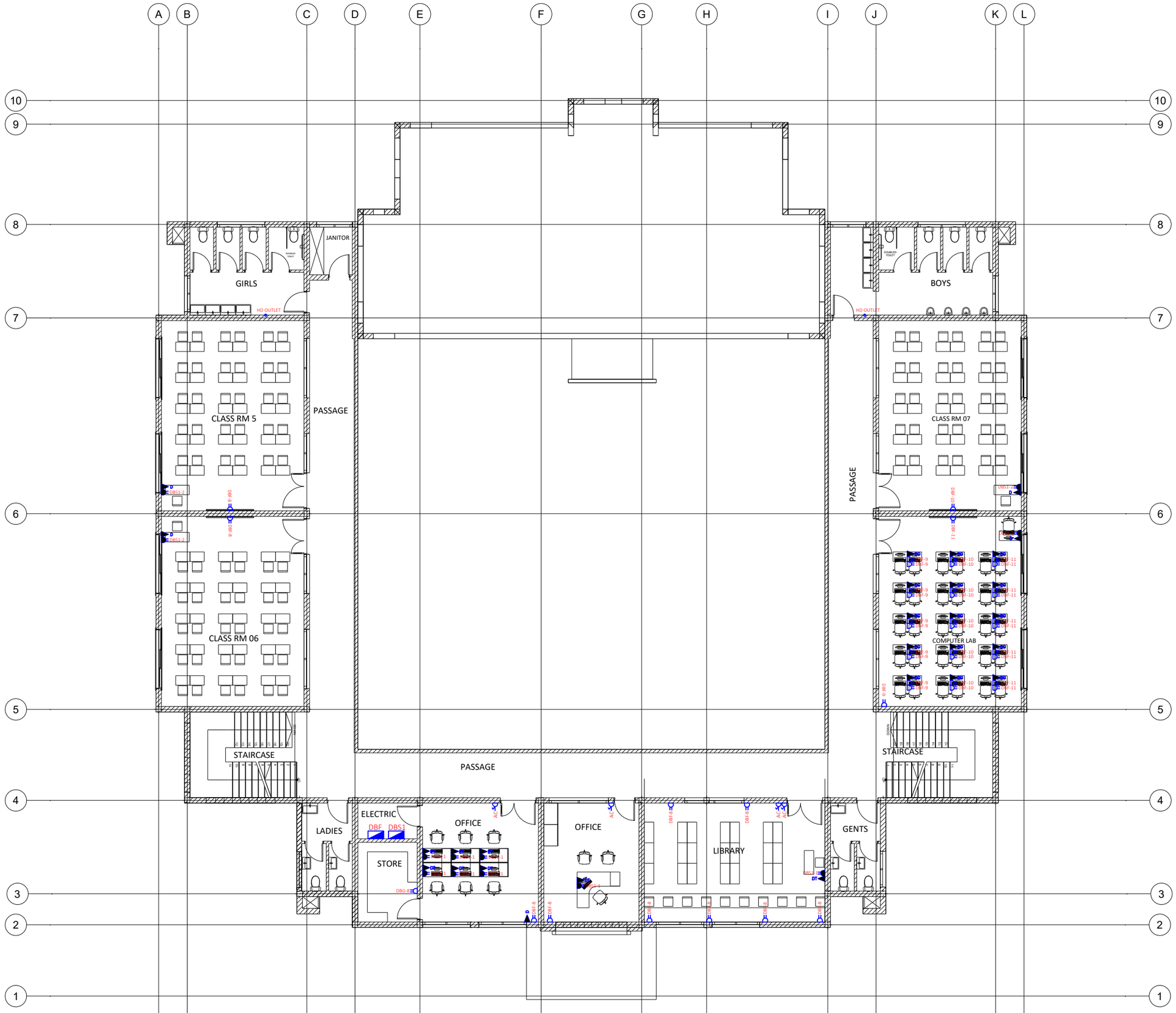
PROPOSED POWER & ICT LAYOUT
CLASSROOMS BLOCK - GROUND FLOOR

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date MAR 2025	Date MAR 2025	Date MAR 2025	Date MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-EL-111

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

1. THE INSTALLATIONS SHALL BE DONE IN ACCORDANCE WITH THE CURRENT IEE WIRING REGULATIONS.

2. EACH CONSUMER UNIT SHALL BE OF RCD INTEGRAL TYPE. THE SENSITIVITY OF RCD's SHALL BE AS SHOWN.

3. ALL BOXES FOR SWITCHES, SWITCH SOCKETS etc. SHALL BE OF STEEL CONSTRUCTION. PVC BOXES WILL NOT BE ACCEPTED.

4. LIGHT SWITCHES SHALL BE MOUNTED AT 1200mm AFFL MEASURED FROM THE CENTER OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING.

5. PVC HEAVY GAUGE CONDUITS SHOULD BE USED ALL OVER THE INSTALLATIONS AND THEY SHALL BE CONCEALED INTO STRUCTURES.

6. TWISTING OF CONDUCTORS SHALL BE AVOIDED. PROPER MEANS OF CABLE TERMINATIONS WILL BE HIGHLY OBSERVED.

7. 25mm PVC CONDUITS SHALL BE USED TO MAKE A LINK BETWEEN TRUNKING SYSTEM IN THE CEILING VOID AND SKIRTING TRUNKING, LUMINAIRES, ACCESSORIES ETC

8. ALL CONSUMER UNITS SHALL BE MOUNTED AT 1800mm AFFL MEASURED FROM BOARD BOTTOMS.

9. WALL MOUNTED LIGHT HEIGHT TO BE AGREED ON SITE APPROVED BY ARCHITECT

10. OUTLETS WITH NO SKIRTING TRUNK, 2Nos. OF 25mm DIAMETER CONDUITS TO BE USED FOR DATA AND POWER CABLES

11. ALL SOCKET OUTLETS TO BE MOUNTED AT 300mm AFFL MEASURED FROM THE BOTTOM OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING

12. SKIRTING TRUNKING TO BE MOUNTED ON TOP OF SKIRTING TIMBER, AT 300mm AFFL MEASURED FROM THE CENTER OF THE TRUNK.

TV	DENOTES OUTLET FOR TV/DECODER CABLE
DTV	DENOTES OUTLET FOR DECODER TO TV CABLE
	DENOTES TWIN 13A SWITCHED SOCKET OUTLET WHITE IN COLOUR FOR NORMAL POWER SUPPLY
	DENOTES 20 AMP DOUBLE POLE SWITCH
C	DENOTES 45AMP COOKER CONTROL OUTLET
	DENOTES TPN/SPN DISTRIBUTION BOARD
S	DENOTES SHAVER UNIT SOCKET OUTLET
DT	DENOTES TWIN CAT 6 RJ45 OUTLET FOR DATA & TELEPHONE
DD	DENOTES TWIN CAT 6 RJ45 OUTLET FOR DATA
D	DENOTES SINGLE CAT 6 RJ45 OUTLET FOR DATA
T	DENOTES SINGLE CAT 6 RJ45 OUTLET FOR TELEPHONE
	DENOTES TPN/SPN ISOLATOR

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

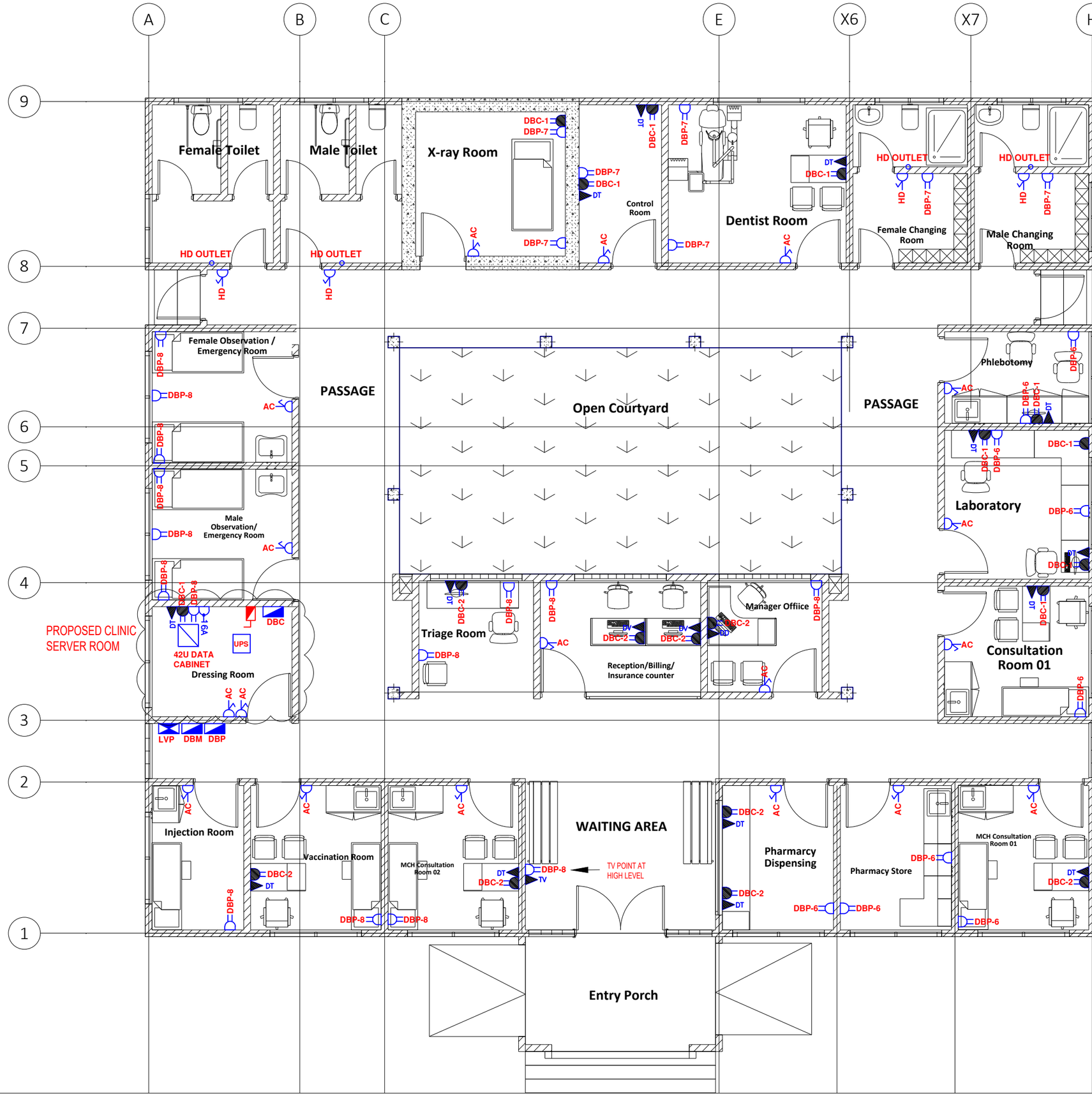
PROPOSED POWER & ICT LAYOUT
CLASSROOMS BLOCK - FIRST FLOOR

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date	Date	Date	Date
MAR 2025	MAR 2025	MAR 2025	MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-EL-112

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

1. THE INSTALLATIONS SHALL BE DONE IN ACCORDANCE WITH THE CURRENT IEE WIRING REGULATIONS.
2. EACH CONSUMER UNIT SHALL BE OF RCD INTEGRAL TYPE. THE SENSITIVITY OF RCD's SHALL BE AS SHOWN.
3. ALL BOXES FOR SWITCHES, SWITCH SOCKETS etc. SHALL BE OF STEEL CONSTRUCTION. PVC BOXES WILL NOT BE ACCEPTED.
4. LIGHT SWITCHES SHALL BE MOUNTED AT 1200mm AFFL MEASURED FROM THE CENTER OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING.
5. PVC HEAVY GAUGE CONDUITS SHOULD BE USED ALL OVER THE INSTALLATIONS AND THEY SHALL BE CONCEALED INTO STRUCTURES.
6. TWISTING OF CONDUCTORS SHALL BE AVOIDED. PROPER MEANS OF CABLE TERMINATIONS WILL BE HIGHLY OBSERVED.
7. 25mm PVC CONDUITS SHALL BE USED TO MAKE A LINK BETWEEN TRUNKING SYSTEM IN THE CEILING VOID AND SKIRTING TRUNKING, LUMINAIRES, ACCESSORIES ETC
8. ALL CONSUMER UNITS SHALL BE MOUNTED AT 1800mm AFFL MEASURED FROM BOARD BOTTOMS.
9. WALL MOUNTED LIGHT HEIGHT TO BE AGREED ON SITE APPROVED BY ARCHITECT
10. OUTLETS WITH NO SKIRTING TRUNK, 2Nos. OF 25mm DIAMETER CONDUITS TO BE USED FOR DATA AND POWER CABLES
11. ALL SOCKET OUTLETS TO BE MOUNTED AT 300mm AFFL MEASURED FROM THE BOTTOM OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING
12. SKIRTING TRUNKING TO BE MOUNTED ON TOP OF SKIRTING TIMBER, AT 300mm AFFL MEASURED FROM THE CENTER OF THE TRUNK.

	DENOTES TWIN 13A SOCKET OUTLET RED IN COLOUR, UPS POWERED
	DENOTES TWIN 13A SWITCHED SOCKET OUTLET WHITE IN COLOUR FOR NORMAL POWER SUPPLY
	DENOTES 20 AMP DOUBLE POLE SWITCH
C	DENOTES 45AMP COOKER CONTROL OUTLET
	DENOTES TPN/SPN DISTRIBUTION BOARD
	DENOTES TPN/SPN ISOLATOR
	DENOTES LOW VOLTAGE PANEL
DT	DENOTES TWIN CAT 6 RJ45 OUTLET FOR DATA & TELEPHONE
DD	DENOTES TWIN CAT 6 RJ45 OUTLET FOR DATA
D	DENOTES SINGLE CAT 6 RJ45 OUTLET FOR DATA
T	DENOTES SINGLE CAT 6 RJ45 OUTLET FOR TELEPHONE

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

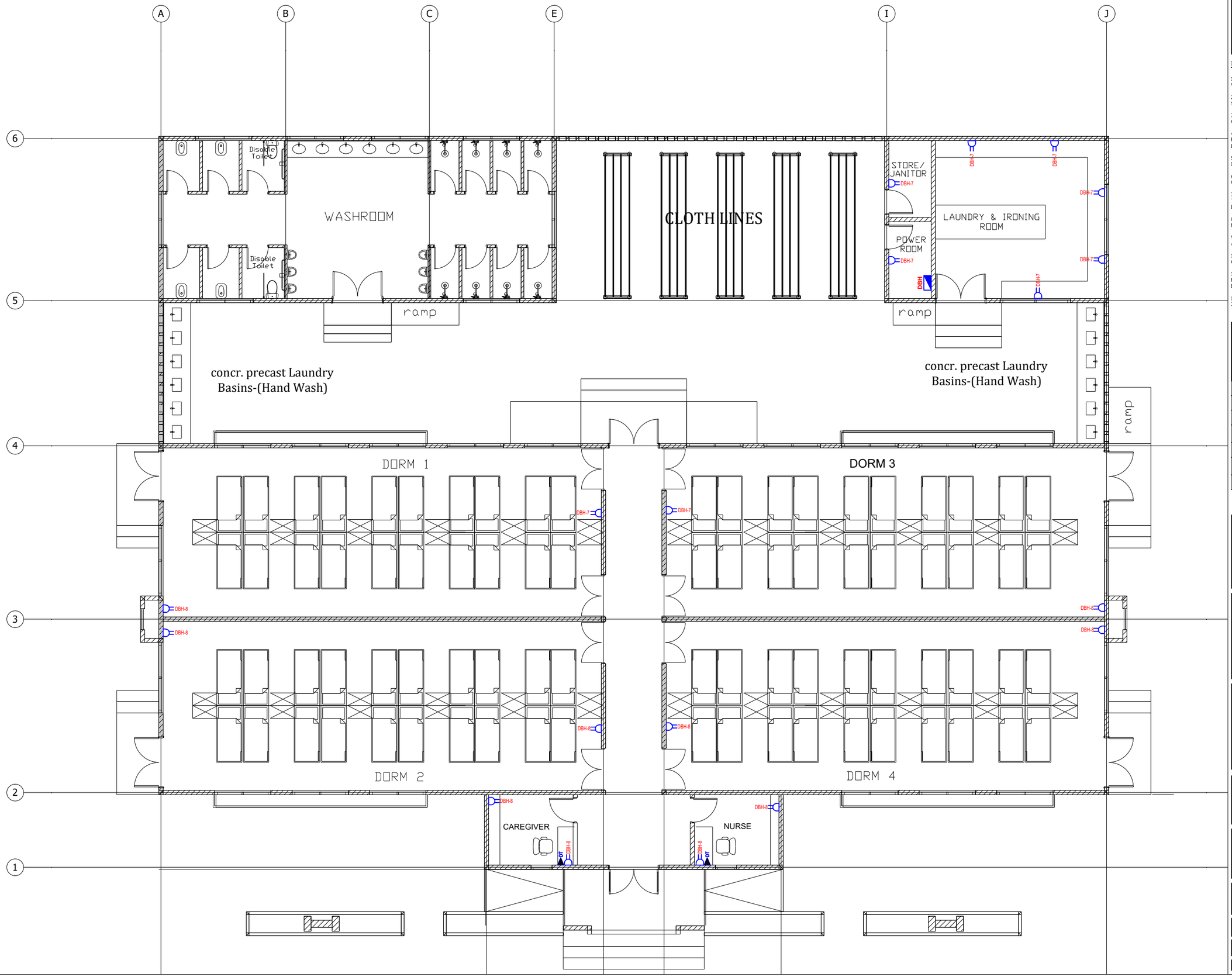
Drawing title

PROPOSED POWER & ICT LAYOUT POLYCLINIC

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date MAR 2025	Date MAR 2025	Date MAR 2025	Date MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-EL-103 | Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

1. THE INSTALLATIONS SHALL BE DONE IN ACCORDANCE WITH THE CURRENT IEE WIRING REGULATIONS.
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5. PVC HEAVY GAUGE CONDUITS SHOULD BE USED ALL OVER THE INSTALLATIONS AND THEY SHALL BE CONCEALED INTO STRUCTURES.
6. TWISTING OF CONDUCTORS SHALL BE AVOIDED. PROPER MEANS OF CABLE TERMINATIONS WILL BE HIGHLY OBSERVED.
7. 25mm PVC CONDUITS SHALL BE USED TO MAKE A LINK BETWEEN TRUNKING SYSTEM IN THE CEILING VOID AND SKIRTING TRUNKING, LUMINAIRES, ACCESSORIES ETC
8. ALL CONSUMER UNITS SHALL BE MOUNTED AT 1800mm AFFL MEASURED FROM BOARD BOTTOMS.
9. WALL MOUNTED LIGHT HEIGHT TO BE AGREED ON SITE APPROVED BY ARCHITECT
10. OUTLETS WITH NO SKIRTING TRUNK, 2Nos. OF 25mm DIAMETER CONDUITS TO BE USED FOR DATA AND POWER CABLES
11. ALL SOCKET OUTLETS TO BE MOUNTED AT 300mm AFFL MEASURED FROM THE BOTTOM OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING
12. SKIRTING TRUNKING TO BE MOUNTED ON TOP OF SKIRTING TIMBER, AT 300mm AFFL MEASURED FROM THE CENTER OF THE TRUNK.

TV	DENOTES OUTLET FOR TV/DECODER CABLE
DTV	DENOTES OUTLET FOR DECODER TO TV CABLE
	DENOTES TWIN 13A SWITCHED SOCKET OUTLET WHITE IN COLOUR FOR NORMAL POWER SUPPLY
	DENOTES 20 AMP DOUBLE POLE SWITCH
C	DENOTES 45AMP COOKER CONTROL OUTLET
	DENOTES TPN/SPN DISTRIBUTION BOARD
S	DENOTES SHAVER UNIT SOCKET OUTLET
DT	DENOTES TWIN CAT 6 RJ45 OUTLET FOR DATA & TELEPHONE
DD	DENOTES TWIN CAT 6 RJ45 OUTLET FOR DATA
D	DENOTES SINGLE CAT 6 RJ45 OUTLET FOR DATA
T	DENOTES SINGLE CAT 6 RJ45 OUTLET FOR TELEPHONE

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

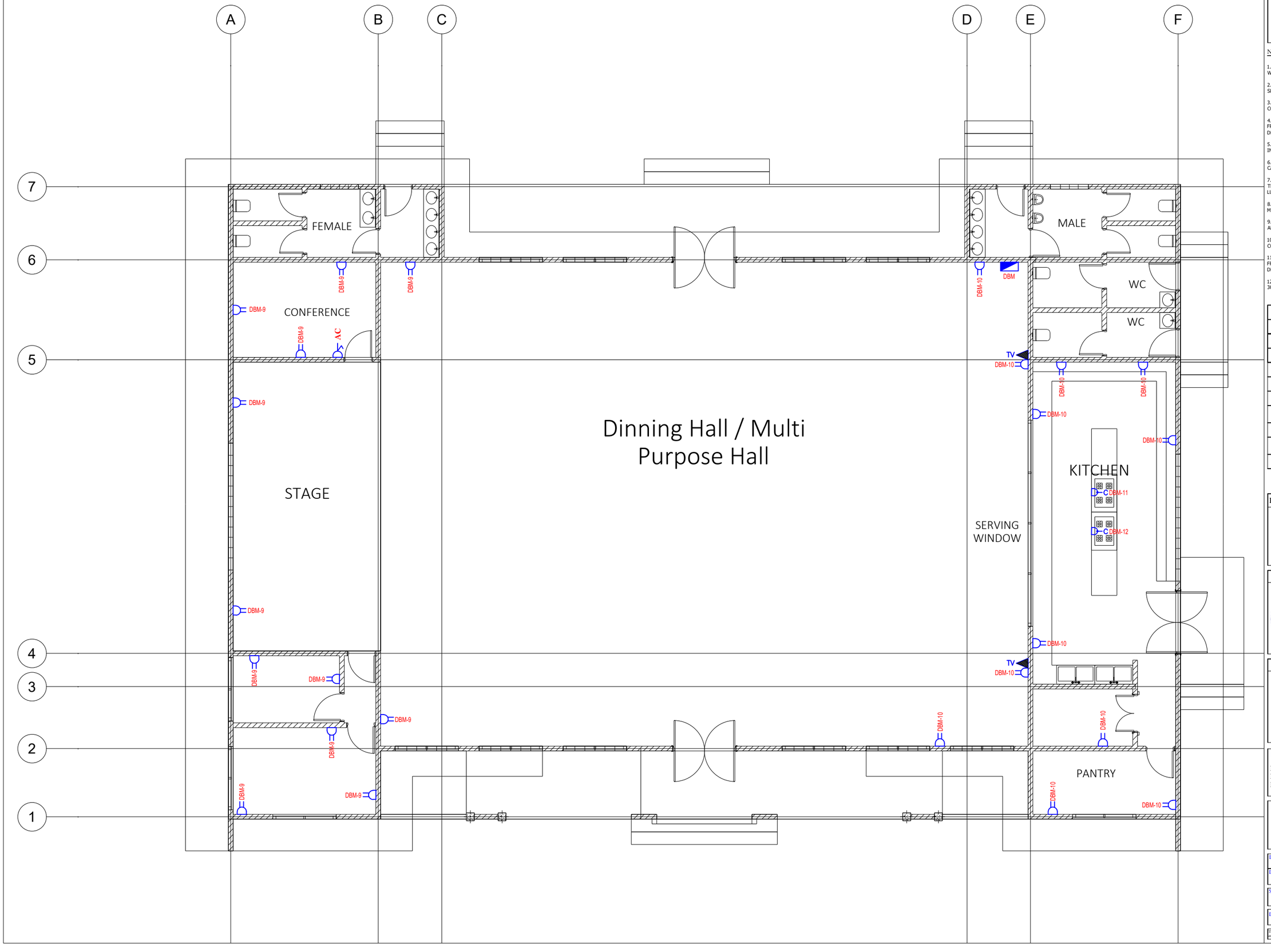
PROPOSED POWER & ICT LAYOUT
HOSTEL

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date MAR 2025	Date MAR 2025	Date MAR 2025	Date MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-EL-104

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

1. THE INSTALLATIONS SHALL BE DONE IN ACCORDANCE WITH THE CURRENT IEE WIRING REGULATIONS.

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4. LIGHT SWITCHES SHALL BE MOUNTED AT 1200mm AFFL MEASURED FROM THE CENTER OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING.

5. PVC HEAVY GAUGE CONDUITS SHOULD BE USED ALL OVER THE INSTALLATIONS AND THEY SHALL BE CONCEALED INTO STRUCTURES.

6. TWISTING OF CONDUCTORS SHALL BE AVOIDED. PROPER MEANS OF CABLE TERMINATIONS WILL BE HIGHLY OBSERVED.

7. 25mm PVC CONDUITS SHALL BE USED TO MAKE A LINK BETWEEN TRUNKING SYSTEM IN THE CEILING VOID AND SKIRTING TRUNKING, LUMINAIRES, ACCESSORIES ETC

8. ALL CONSUMER UNITS SHALL BE MOUNTED AT 1800mm AFFL MEASURED FROM BOARD BOTTOMS.

9. WALL MOUNTED LIGHT HEIGHT TO BE AGREED ON SITE APPROVED BY ARCHITECT

10. OUTLETS WITH NO SKIRTING TRUNK, 2Nos. OF 25mm DIAMETER CONDUITS TO BE USED FOR DATA AND POWER CABLES

11. ALL SOCKET OUTLETS TO BE MOUNTED AT 300mm AFFL MEASURED FROM THE BOTTOM OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING

12. SKIRTING TRUNKING TO BE MOUNTED ON TOP OF SKIRTING TIMBER, AT 300mm AFFL MEASURED FROM THE CENTER OF THE TRUNK.

TV	DENOTES OUTLET FOR TV/DECODER CABLE
DTV	DENOTES OUTLET FOR DECODER TO TV CABLE
	DENOTES TWIN 13A SWITCHED SOCKET OUTLET WHITE IN COLOUR FOR NORMAL POWER SUPPLY
	DENOTES 20 AMP DOUBLE POLE SWITCH
C	DENOTES 45AMP COOKER CONTROL OUTLET
	DENOTES TPN/SPN DISTRIBUTION BOARD
S	DENOTES SHAVER UNIT SOCKET OUTLET
DT	DENOTES TWIN CAT 6 RJ45 OUTLET FOR DATA & TELEPHONE
DD	DENOTES TWIN CAT 6 RJ45 OUTLET FOR DATA
D	DENOTES SINGLE CAT 6 RJ45 OUTLET FOR DATA
T	DENOTES SINGLE CAT 6 RJ45 OUTLET FOR TELEPHONE

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

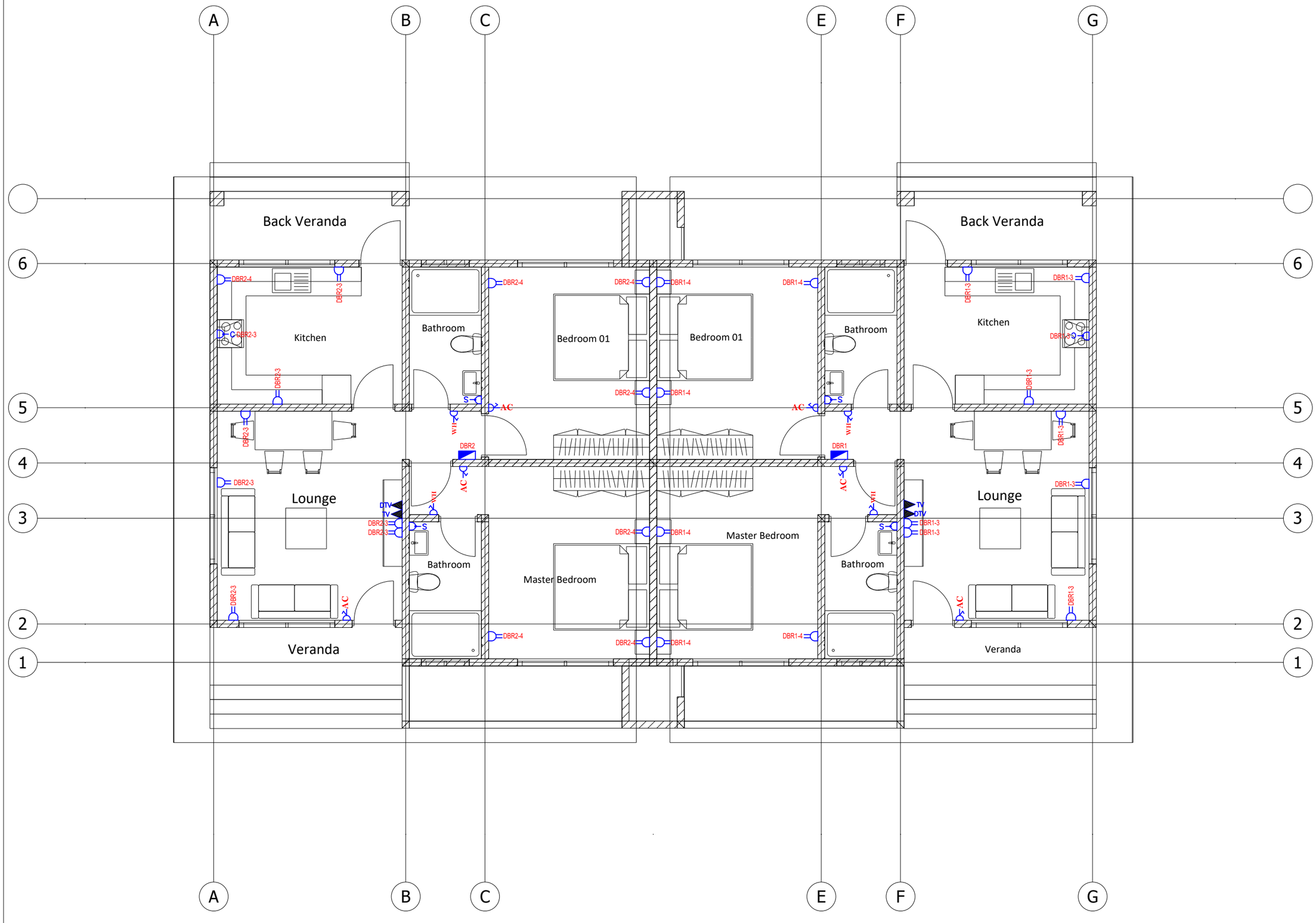
Drawing title

PROPOSED POWER & ICT LAYOUT MULTIFUNCTIONAL

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date: MAR 2025	Date: MAR 2025	Date: MAR 2025	Date: MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-EL-101 Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

1. THE INSTALLATIONS SHALL BE DONE IN ACCORDANCE WITH THE CURRENT IEE WIRING REGULATIONS.
2. EACH CONSUMER UNIT SHALL BE OF RCD INTEGRAL TYPE. THE SENSITIVITY OF RCD's SHALL BE AS SHOWN.
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CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
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Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

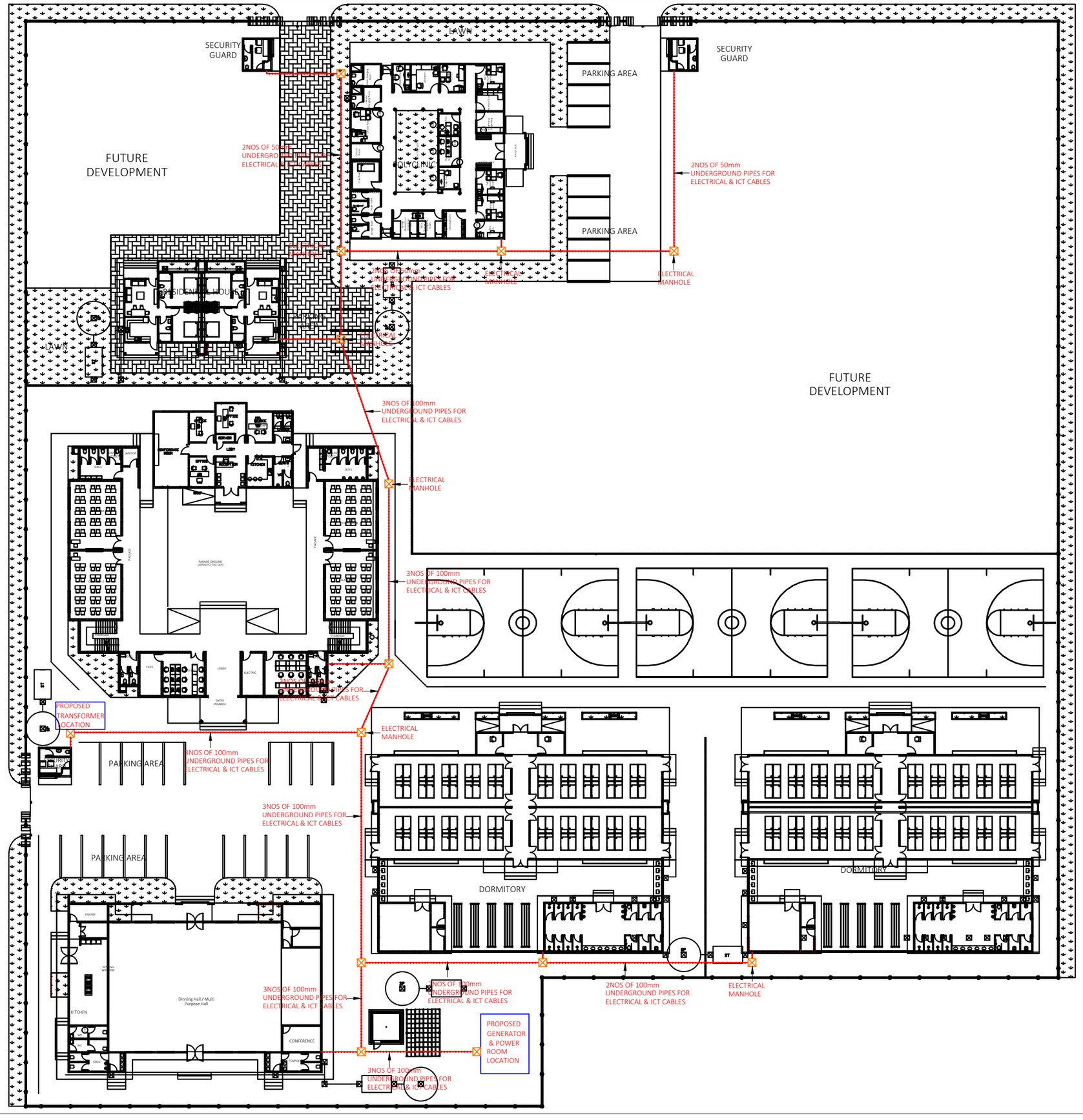
PROPOSED POWER & ICT LAYOUT
RESIDENTIAL

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date MAR 2025	Date MAR 2025	Date MAR 2025	Date MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-EL-102

Revision



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

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DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

PROPOSED EXTERNAL CABLE ROUTES SITEPLAN

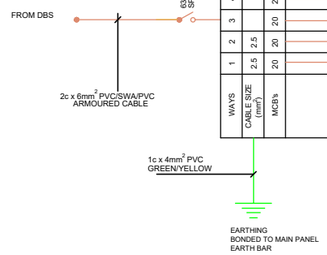
Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date	Date	Date	Date
MAR 2025	MAR 2025	MAR 2025	MAR 2025

Scale	Status
NTS	P

Drawing no.	Revision
2025/TS/1089-EL-105	

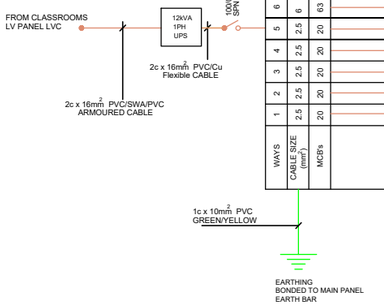
CLEAN POWER DISTRIBUTION BOARD DBS1

6 WAYS 63A SPN DISTRIBUTION BOARD DBS1 C/W 40/0.3A SPN RCD					LOAD (W)	
6		10		SPARE		
5		20		SPARE		
4		20		SPARE		
3		20		SPARE		
2	2.5	20		03NOS. OF SOCKET RING CIRCUIT DBS1 - 2		900
1	2.5	20		08NOS. OF SOCKET RING CIRCUIT DBS1 - 1		2,400
WAYS	CABLE SIZE (mm²)	MCB's			TOTAL LOAD	3,200



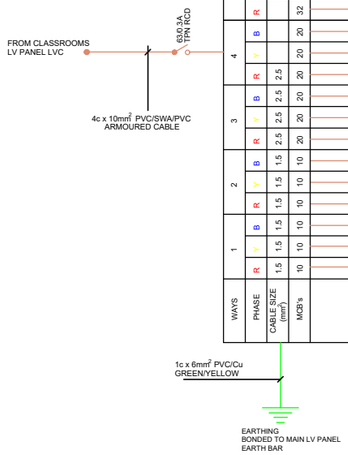
CLEAN POWER DISTRIBUTION BOARD DBC

10 WAYS 100A SPN DISTRIBUTION BOARD DBC C/W 63/0.3A SPN RCD					LOAD (W)
10		20		SPARE	
9		10		SPARE	
8		20		SPARE	
7		20		SPARE	
6	6	63		DISTRIBUTION BOARD DBS1	3,200
5	2.5	20		FIRE ALARM CIRCUIT DBS - 3	800
4	2.5	20		INDUSTRIAL SOCKET CIRCUIT DBS - 3	1,000
3	2.5	20		07NOS. OF SOCKET RING CIRCUIT DBS - 3	2,100
2	2.5	20		11NOS. OF SOCKET RING CIRCUIT DBS - 2	3,300
1	2.5	20		10NOS. OF SOCKET RING CIRCUIT DBS - 1	3,000
WAYS	CABLE SIZE (mm²)	MCB's			TOTAL LOAD	13,400



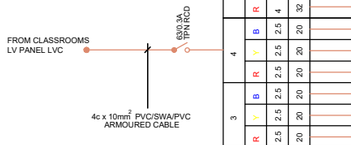
DISTRIBUTION BOARD DBF - FIRST FLOOR NORMAL POWER

8 WAYS 63A TPN DISTRIBUTION BOARD DBF C/W 63/0.3A TPN RCD & 25kA ARRESTOR					LOAD (WATTS) R	Y	B
8	B		20	SPARE			
	Y		20	SPARE			
	R		20	SPARE			
7	B		20	SPARE			
	Y		10	SPARE			
	R		10	SPARE			
6	B		20	SPARE			
	Y	2.5	20	SPLIT AC CIRCUIT DBF - 17		2,000	
	R	2.5	20	SPLIT AC CIRCUIT DBF - 16	2,000		
5	B	2.5	20	SPLIT AC CIRCUIT DBF - 15			2,000
	Y	2.5	20	SPLIT AC CIRCUIT DBF - 14		2,000	
	R		32	SPARE			
4	B		20	SPARE			
	Y		20	SPARE			
	R	2.5	20	6NOS. OF SOCKET RING CIRCUIT DBF - 10	2,400		
3	B	2.5	20	6NOS. OF SOCKET RING CIRCUIT DBF - 9			700
	Y	2.5	20	6NOS. OF SOCKET RING CIRCUIT DBF - 8		950	
	R	2.5	20	10NOS. OF LIGHTING CIRCUIT DBF - 7	500		
2	B	1.5	10	13NOS. OF LIGHTING CIRCUIT DBF - 6			650
	Y	1.5	10	15NOS. OF LIGHTING CIRCUIT DBF - 5		750	
	R	1.5	10	19NOS. OF LIGHTING CIRCUIT DBF - 4	950		
1	B	1.5	10	14NOS. OF LIGHTING CIRCUIT DBF - 3			700
	Y	1.5	10	24NOS. OF LIGHTING CIRCUIT DBF - 2		1,200	
	R	1.5	10	17NOS. OF LIGHTING CIRCUIT DBF - 1	850		
WAYS	PHASE	CABLE SIZE (mm²)	MCB's		TOTAL LOAD	6,700	6,900	4,050
						17,650	



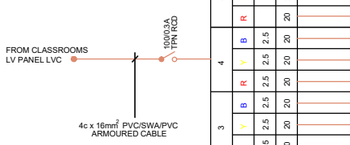
DISTRIBUTION BOARD DBG - GROUND FLOOR NORMAL POWER

8 WAYS 63A TPN DISTRIBUTION BOARD DBG C/W 63/0.3A TPN RCD & 25kA ARRESTOR					LOAD (WATTS) R	Y	B
8	B		20	SPARE			
	Y		20	SPARE			
	R		20	SPARE			
7	B		20	PHOTO CELL CONTACTOR SPARE			
	Y	1.5	10	EXTERNAL LIGHTS & SIGNAGE CIRCUIT DBG - 21		1,000	
	R	1.5	10	EXTERNAL LIGHTS & SIGNAGE CIRCUIT DBG - 20	1,000		
6	B		20	SPARE			
	Y		20	SPARE			
	R		20	SPARE			
5	B		10	SPARE			
	Y		32	SPARE			
	R	4	32	COOKER CONTROL CIRCUIT DBG - 13	3,200		
4	B	2.5	20	08NOS. OF SOCKET RING CIRCUIT DBG - 12			3,200
	Y	2.5	20	11NOS. OF SOCKET RING CIRCUIT DBG - 11		4,400	
	R	2.5	20	6NOS. OF SOCKET RING CIRCUIT DBG - 10	2,400		
3	B	2.5	20	14NOS. OF LIGHTING CIRCUIT DBG - 9			700
	Y	2.5	20	19NOS. OF LIGHTING CIRCUIT DBG - 8		950	
	R	2.5	20	10NOS. OF LIGHTING CIRCUIT DBG - 7	500		
2	B	1.5	10	13NOS. OF LIGHTING CIRCUIT DBG - 6			650
	Y	1.5	10	15NOS. OF LIGHTING CIRCUIT DBG - 5		750	
	R	1.5	10	19NOS. OF LIGHTING CIRCUIT DBG - 4	950		
1	B	1.5	10	14NOS. OF LIGHTING CIRCUIT DBG - 3			700
	Y	1.5	10	24NOS. OF LIGHTING CIRCUIT DBG - 2		1,200	
	R	1.5	10	17NOS. OF LIGHTING CIRCUIT DBG - 1	850		
WAYS	PHASE	CABLE SIZE (mm²)	MCB's		TOTAL LOAD	8,900	8,300	5,250
						22,450	



DISTRIBUTION BOARD DBA - MECHANICAL LOADS

8 WAYS 100A TPN DISTRIBUTION BOARD DBA C/W 100/0.3A TPN RCD & 25kA ARRESTOR					LOAD (WATTS) R	Y	B
8	B		32A 3PH MCB	SPARE			
	Y						
	R						
7	B		32	SPARE			
	Y		20	SPARE			
	R		20	SPARE			
6	B		32	SPARE			
	Y		20	SPARE			
	R		20	SPARE			
5	B		20	SPARE			
	Y		20	SPARE			
	R		20	SPARE			
4	B	2.5	20	SPLIT AC CIRCUIT DBA - 12			2,200
	Y	2.5	20	SPLIT AC CIRCUIT DBA - 11		2,200	
	R	2.5	20	SPLIT AC CIRCUIT DBA - 10	2,200		
3	B	2.5	20	SPLIT AC CIRCUIT DBA - 9			2,200
	Y	2.5	20	SPLIT AC CIRCUIT DBA - 8		1,800	
	R	2.5	20	SPLIT AC CIRCUIT DBA - 7	2,000		
2	B	2.5	20	SPLIT AC CIRCUIT DBA - 6			2,200
	Y	2.5	20	SPLIT AC CIRCUIT DBA - 5		2,200	
	R	2.5	20	SPLIT AC CIRCUIT DBA - 4	2,200		
1	B	2.5	20	SPLIT AC CIRCUIT DBA - 3			2,200
	Y	2.5	20	SPLIT AC CIRCUIT DBA - 2		2,200	
	R	2.5	20	SPLIT AC CIRCUIT DBA - 1	2,000		
WAYS	PHASE	CABLE SIZE (mm²)	MCB's		TOTAL LOAD	8,400	8,400	8,800
						25,600	



Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

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DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

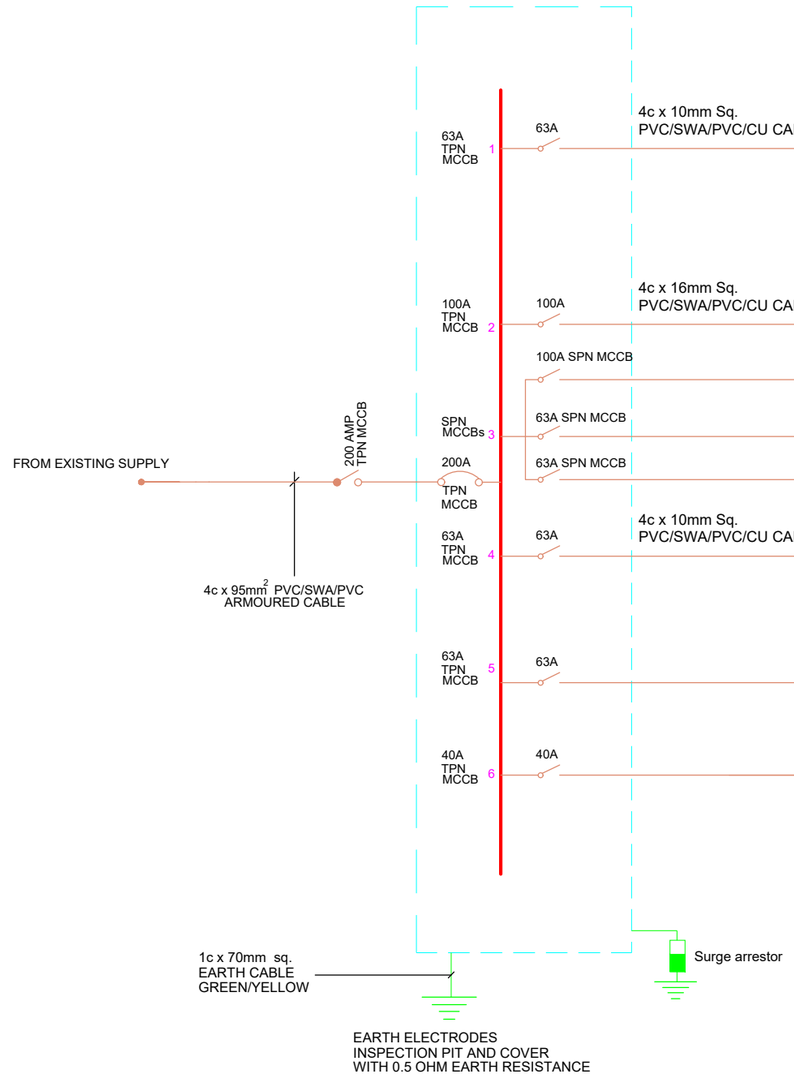
Drawing title

PROPOSED SCHEMATICS LAYOUT
CLASSROOMS DISTRBUTION BOARD

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date MAR 2025	Date MAR 2025	Date MAR 2025	Date MAR 2025

Scale: NTS
Status: P
Drawing no.: 2025/TS/1089-EL-119
Revision:

CLASSROOMS MAIN LV PANEL - LVC
TYPE : 6 WAYS TP&N 200A, 40kA SPD
LOCATION: BACK OFFICE
INCOMING DEVICE:200A MCCB
OUTGOING DEVICE: 3P & 1P MCCBs
STANDARD: IEC 439 - 1, BS 5486
TESTED AND ASSEMBLY



DESCRIPTION	WATTS
DISTRIBUTION BOARD DBG	22,450
DISTRIBUTION BOARD DBA	25,600
DISTRIBUTION BOARD DBS	13,400
SPARE	
SPARE	
DISTRIBUTION BOARD DBF	17,650
SPARE	
SPARE	
TOTAL LOAD (UNDERVISEFIED)	79,100

Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
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Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

PROPOSED SCHEMATICS LAYOUT
CLASSROOMS LOW VOLTAGE PANEL

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date MAR 2025	Date MAR 2025	Date MAR 2025	Date MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-EL-120 | Revision

DISTRIBUTION BOARD FOR ELECTRICAL LOARD DBP

6 WAYS 40A TPN DISTRIBUTION BOARD DBP C/W 40/0.3A TPN RCD & 25kA ARRESTOR					LOAD (WATTS)		
					R	Y	B
6	B		20	SPARE			
	Y		20	SPARE			
	R		20	SPARE			
5	B		20	SPARE			
	Y		20	SPARE			
	R		20	SPARE			
4	B		20				
	Y	2.5	20	EXTERNAL LIGHTS & SIGNAGE CIRCUIT DBP - 20		800	
	R		20	SPARE			
3	B		20	SPARE			
	Y	2.5	20	11NOS. OF SOCKET RING CIRCUIT DBP - 8		4,400	
	R	2.5	20	07NOS. OF SOCKET RING CIRCUIT DBP - 7	2,800		
2	B	2.5	20	13NOS. OF SOCKET RING CIRCUIT DBP - 6			5,200
	Y	1.5	10	14NOS. OF LIGHTING CIRCUIT DBP - 5		700	
	R	1.5	10	12NOS. OF LIGHTING CIRCUIT DBP - 4	600		
1	B	1.5	10	16NOS. OF LIGHTING CIRCUIT DBP - 3			800
	Y	1.5	10	16NOS. OF LIGHTING CIRCUIT DBP - 2		800	
	R	1.5	10	12NOS. OF LIGHTING CIRCUIT DBP - 1	600		
WAYS	PHASE	CABLE SIZE (mm²)	MCB's		TOTAL LOAD		
					4,000	6,700	6,000
					16,700		

FROM LOW VOLTAGE PANEL LVP

63/0.3A TPN RCD

4c x 10mm² PVC/SWA/PVC ARMOURED

1c x 6mm² PVC GREEN/YELLOW

EARTHING BONDED TO LVP EARTH BAR

DISTRIBUTION BOARD FOR MECHANICAL LOARD DBM

8 WAYS 100A TPN DISTRIBUTION BOARD DBP C/W 100/0.3A TPN RCD & 70kA ARRESTOR					LOAD (WATTS)		
					R	Y	B
8	B		20	SPARE			
	Y		20	SPARE			
	R	2.5	20	HAND DRIER CIRCUIT - 22	2,500		
7	B	2.5	20	HAND DRIER CIRCUIT - 21			2,500
	Y	2.5	20	HAND DRIER CIRCUIT - 20		2,500	
	R	2.5	20	HAND DRIER CIRCUIT - 19	2,500		
6	B	2.5	20	AC CIRCUIT DBP - 18			2,500
	Y	2.5	20	AC CIRCUIT DBP - 17		2,500	
	R	2.5	20	AC CIRCUIT DBP - 16	2,500		
5	B	2.5	20	AC CIRCUIT DBP - 15			2,500
	Y	2.5	20	AC CIRCUIT DBP - 14		2,500	
	R	2.5	20	AC CIRCUIT DBP - 13	2,500		
4	B	2.5	20	AC CIRCUIT DBP - 12			2,500
	Y	2.5	20	AC CIRCUIT DBP - 11		2,500	
	R	2.5	20	AC CIRCUIT DBP - 10	2,500		
3	B	2.5	20	AC CIRCUIT DBP - 9			2,500
	Y	2.5	20	AC CIRCUIT DBP - 8		2,500	
	R	2.5	20	AC CIRCUIT DBP - 7	2,500		
2	B	2.5	20	AC CIRCUIT DBP - 6			2,500
	Y	2.5	20	AC CIRCUIT DBP - 5		2,500	
	R	2.5	20	AC CIRCUIT DBP - 4	2,500		
1	B	1.5	10	AC CIRCUIT DBP - 3			2,500
	Y	1.5	10	AC CIRCUIT DBP - 2		2,500	
	R	1.5	10	AC CIRCUIT DBP - 1	2,500		
WAYS	PHASE	CABLE SIZE (mm²)	MCB's		TOTAL LOAD		
					20,000	17,500	17,500
					55,000		

FROM LOW VOLTAGE PANNEL LVP

100/0.3A TPN RCD

4c x 25mm² PVC/SWA/PVC ARMOURED

1c x 16mm² PVC GREEN/YELLOW

EARTHING BONDED TO LVP EARTH BAR

CLEAN POWER DISTRIBUTION BOARD DBC

8 WAYS 63A SPN DISTRIBUTION BOARD DBC C/W 63/0.3A SPN RCD, 25kA SPD				LOAD (W)
8		20	SPARE	
7		20	SPARE	
6		20	SPARE	
5		20	SPARE	
4	2.5	20	FIRE ALARM PANNEL CIRCUIT DBC - 4	800
3	2.5	10	INDUSTRIAL SOCKET CIRCUIT DBC - 3	1,000
2	2.5	20	09NOS. OF SOCKET RING CIRCUIT DBC - 2	2,700
1	2.5	20	10NOS. OF SOCKET RING CIRCUIT DBC - 1	3,000
WAYS	CABLE SIZE (mm²)	MCB's		TOTAL LOAD 7,500

FROM MAIN LV PANEL LVP

8kVA 1PH UPS

630/ 3A SPN RCD

2c x 10mm² PVC/Cu Flexible CABLE

2c x 10mm² PVC/SWA/PVC ARMOURED CABLE

1c x 6mm² PVC GREEN/YELLOW

EARTHING BONDED TO LVP EARTH BAR

Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

1. THE INSTALLATIONS SHALL BE DONE IN ACCORDANCE WITH THE CURRENT IEE WIRING REGULATIONS.
2. EACH CONSUMER UNIT SHALL BE OF RCD INTEGRAL TYPE. THE SENSITIVITY OF RCD's SHALL BE AS SHOWN.
3. ALL BOXES FOR SWITCHES, SWITCH SOCKETS etc. SHALL BE OF STEEL CONSTRUCTION. PVC BOXES WILL NOT BE ACCEPTED.
4. LIGHT SWITCHES SHALL BE MOUNTED AT 1200mm AFFL MEASURED FROM THE CENTER OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING.
5. PVC HEAVY GAUGE CONDUITS SHOULD BE USED ALL OVER THE INSTALLATIONS AND THEY SHALL BE CONCEALED INTO STRUCTURES.
6. TWISTING OF CONDUCTORS SHALL BE AVOIDED. PROPER MEANS OF CABLE TERMINATIONS WILL BE HIGHLY OBSERVED.
7. 25mm PVC CONDUITS SHALL BE USED TO MAKE A LINK BETWEEN TRUNKING SYSTEM IN THE CEILING VOID AND SKIRTING TRUNKING, LUMINAIRES, ACCESSORIES ETC
8. ALL CONSUMER UNITS SHALL BE MOUNTED AT 1800mm AFFL MEASURED FROM BOARD BOTTOMS.
9. WALL MOUNTED LIGHT HEIGHT TO BE AGREED ON SITE APPROVED BY ARCHITECT
10. OUTLETS WITH NO SKIRTING TRUNK, 2Nos. OF 25mm DIAMETER CONDUITS TO BE USED FOR DATA AND POWER CABLES
11. ALL SOCKET OUTLETS TO BE MOUNTED AT 300mm AFFL MEASURED FROM THE BOTTOM OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING
12. SKIRTING TRUNKING TO BE MOUNTED ON TOP OF SKIRTING TIMBER, AT 300mm AFFL MEASURED FROM THE CENTER OF THE TRUNK.

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

PROPOSED SCHEMATICS LAYOUT
POLYCLINIC

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date MAR 2025	Date MAR 2025	Date MAR 2025	Date MAR 2025

Scale NTS | Status P

Drawing no. 2025/TS/1089-EL-114 | Revision

LOW VOLTAGE PANEL BOARD - LVP

TYPE : 4WAYS TPN 200AMPS

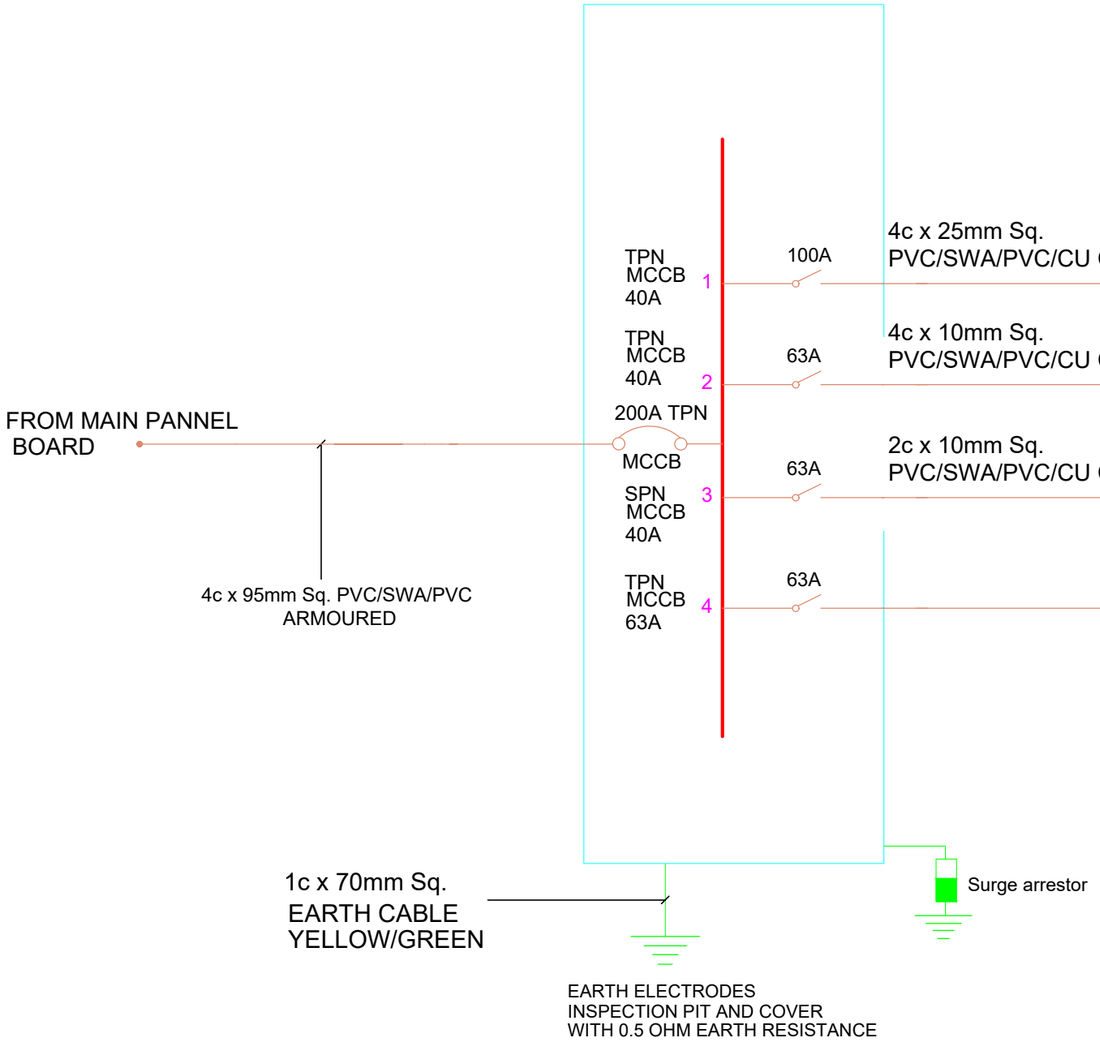
LOCATION: SERVER/POWER ROOM

INCOMING DEVICE: 200 MCCB

OUTGOING DEVICE: 3PH & 1PH MCCBs

STANDARD: IEC 439 - 1, BS 5486

TESTED AND ASSEMBLY



DESCRIPTION	WATTS
DISTRIBUTION BOARD DBM	55,000
DISTRIBUTION BOARD DBP	16,700
DISTRIBUTION BOARD DBC	7,500
SPARE	
TOTAL LOAD (UNDERVISEFIED)	79,200

Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

1. THE INSTALLATIONS SHALL BE DONE IN ACCORDANCE WITH THE CURRENT IEE WIRING REGULATIONS.
2. EACH CONSUMER UNIT SHALL BE OF RCD INTEGRAL TYPE. THE SENSITIVITY OF RCD's SHALL BE AS SHOWN.
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5. PVC HEAVY GAUGE CONDUITS SHOULD BE USED ALL OVER THE INSTALLATIONS AND THEY SHALL BE CONCEALED INTO STRUCTURES.
6. TWISTING OF CONDUCTORS SHALL BE AVOIDED. PROPER MEANS OF CABLE TERMINATIONS WILL BE HIGHLY OBSERVED.
7. 25mm PVC CONDUITS SHALL BE USED TO MAKE A LINK BETWEEN TRUNKING SYSTEM IN THE CEILING VOID AND SKIRTING TRUNKING, LUMINAIRES, ACCESSORIES ETC
8. ALL CONSUMER UNITS SHALL BE MOUNTED AT 1800mm AFFL MEASURED FROM BOARD BOTTOMS.
9. WALL MOUNTED LIGHT HEIGHT TO BE AGREED ON SITE APPROVED BY ARCHITECT
10. OUTLETS WITH NO SKIRTING TRUNK, 2Nos. OF 25mm DIAMETER CONDUITS TO BE USED FOR DATA AND POWER CABLES
11. ALL SOCKET OUTLETS TO BE MOUNTED AT 300mm AFFL MEASURED FROM THE BOTTOM OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING
12. SKIRTING TRUNKING TO BE MOUNTED ON TOP OF SKIRTING TIMBER, AT 300mm AFFL MEASURED FROM THE CENTER OF THE TRUNK.

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

PROPOSED LVP SCHEMATICS LAYOUT
POLYCLINIC

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date: MAR 2025	Date: MAR 2025	Date: MAR 2025	Date: MAR 2025

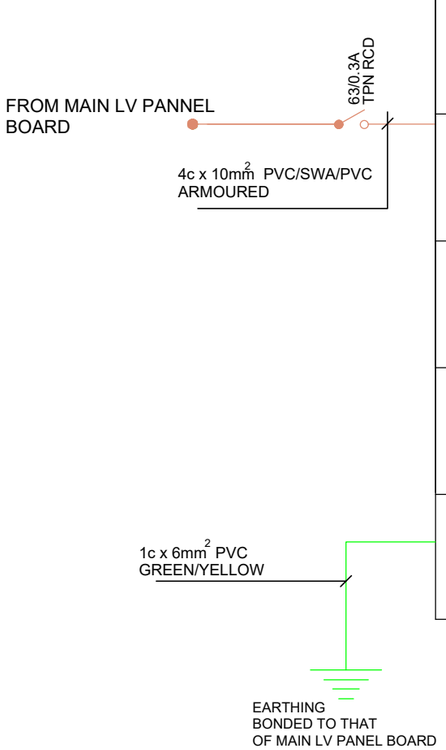
Scale: NTS

Status: P

Drawing no.: 2025/TS/1066-EL-115

Revision:

DISTRIBUTION BOARD DBH



6 WAYS 63A TPN DISTRIBUTION BOARD DBH C/W 63/0.3A TPN RCD & 25kA ARRESTOR					LOAD (WATTS)			
						R	Y	B
6	B		20	PHOTO CELL / CONTACTOR COIL				
	Y	1.5	10	EXTERNAL LIGHTS & SIGNAGE CIRCUIT DBM - 20				1,000
	R		20	SPARE				
5	B		20	SPARE				
	Y		20	SPARE				
	R		20	SPARE				
4	B		10	SPARE				
	Y		10	SPARE				
	R	2.5	20	AC CIRCUIT DBH - 10		2,000		
3	B	2.5	20	AC CIRCUIT DBH - 9				2,000
	Y	2.5	20	10NOS. OF SOCKET RING CIRCUIT DBH - 8			4,000	
	R	2.5	20	10NOS. OF SOCKET RING CIRCUIT DBH - 7		4,000		
2	B	1.5	10	18NOS. OF LIGHTING AND FAN CIRCUIT DBH - 6				900
	Y	1.5	10	18NOS. OF LIGHTING AND FAN CIRCUIT DBH - 5			900	
	R	1.5	10	24NOS. OF LIGHTING AND FAN CIRCUIT DBH - 4		1,200		
1	B	1.5	10	24NOS. OF LIGHTING AND FAN CIRCUIT DBH - 3				1,200
	Y	1.5	10	24NOS. OF LIGHTING AND FAN CIRCUIT DBH- 2			1,200	
	R	1.5	10	24NOS. OF LIGHTING AND FAN CIRCUIT DBH - 1		1,200		
WAYS	PHASE	CABLE SIZE (mm^2)	MCB's		TOTAL LOAD	8,400	6,100	5,100
						19,600		

Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

1. THE INSTALLATIONS SHALL BE DONE IN ACCORDANCE WITH THE CURRENT IEE WIRING REGULATIONS.
2. EACH CONSUMER UNIT SHALL BE OF RCD INTEGRAL TYPE. THE SENSITIVITY OF RCD's SHALL BE AS SHOWN.
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5. PVC HEAVY GAUGE CONDUITS SHOULD BE USED ALL OVER THE INSTALLATIONS AND THEY SHALL BE CONCEALED INTO STRUCTURES.
6. TWISTING OF CONDUCTORS SHALL BE AVOIDED. PROPER MEANS OF CABLE TERMINATIONS WILL BE HIGHLY OBSERVED.
7. 25mm PVC CONDUITS SHALL BE USED TO MAKE A LINK BETWEEN TRUNKING SYSTEM IN THE CEILING VOID AND SKIRTING TRUNKING, LUMINAIRES, ACCESSORIES ETC
8. ALL CONSUMER UNITS SHALL BE MOUNTED AT 1800mm AFFL MEASURED FROM BOARD BOTTOMS.
9. WALL MOUNTED LIGHT HEIGHT TO BE AGREED ON SITE APPROVED BY ARCHITECT
10. OUTLETS WITH NO SKIRTING TRUNK, 2Nos. OF 25mm DIAMETER CONDUITS TO BE USED FOR DATA AND POWER CABLES
11. ALL SOCKET OUTLETS TO BE MOUNTED AT 300mm AFFL MEASURED FROM THE BOTTOM OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING
12. SKIRTING TRUNKING TO BE MOUNTED ON TOP OF SKIRTING TIMBER, AT 300mm AFFL MEASURED FROM THE CENTER OF THE TRUNK.

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

PROPOSED SCHEMATICS LAYOUT
HOSTEL DISTRBUTION BOARD

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date MAR 2025	Date MAR 2025	Date MAR 2025	Date MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-EL-117 | Revision

DISTRIBUTION BOARD DBM

8 WAYS 100A TPN DISTRIBUTION BOARD DBM C/W 100/0.3A TPN RCD & 40kA ARRESTOR					LOAD (WATTS)			
						R	Y	B
8	B		20	SPARE				
	Y		20	SPARE				
	R		20	SPARE				
7	B		20	PHOTO CELL / CONTACTOR COIL				
	Y	1.5	10	EXTERNAL LIGHTS & SIGNAGE CIRCUIT DBM - 20			1,000	
	R		20	SPARE				
6	B		20	SPARE				
	Y		20	SPARE				
	R		20	SPARE				
5	B		20	SPARE				
	Y		20	SPARE				
	R	2.5	20	AC CIRCUIT DBM - 13		2,500		
4	B	4	32	COOKER CONTROL CIRCUIT DBM- 12				3,200
	Y	4	32	COOKER CONTROL CIRCUIT DBM - 11			3,200	
	R	2.5	20	12NOS. OF SOCKET RING CIRCUIT DBM - 10		3,600		
3	B	2.5	20	12NOS. OF SOCKET RING CIRCUIT DBM - 9				3,600
	Y	1.5	10	11NOS. OF LIGHTING CIRCUIT DBM- 8			550	
	R	1.5	10	16NOS. OF LIGHTING CIRCUIT DBM - 7		800		
2	B	1.5	10	11NOS. OF LIGHTING CIRCUIT DBM - 6				550
	Y	1.5	10	14NOS. OF LIGHTING AND FAN CIRCUIT DBM - 5			700	
	R	1.5	10	14NOS. OF LIGHTING AND FAN CIRCUIT DBM - 4		700		
1	B	1.5	10	14NOS. OF LIGHTING AND FAN CIRCUIT DBM - 3				700
	Y	1.5	10	14NOS. OF LIGHTING AND FAN CIRCUIT DBM- 2			700	
	R	1.5	10	14NOS. OF LIGHTING AND FAN CIRCUIT DBM - 1		700		
WAYS	PHASE	CABLE SIZE (mm^2)	MCB's		TOTAL LOAD	8,300	6,150	8,050
						22,500		

FROM MAIN LV PANNEL BOARD

100/0.3A TPN RCD

4c x 16mm^2 PVC/SWA/PVC ARMOURED

1c x 10mm^2 PVC GREEN/YELLOW

EARTHING BONDED TO THAT OF MAIN LV PANEL BOARD

Client

FANDY
P.O. BOX....
DAR ES SALAAM

Notes & Symbol legend

1. THE INSTALLATIONS SHALL BE DONE IN ACCORDANCE WITH THE CURRENT IEE WIRING REGULATIONS.

2. EACH CONSUMER UNIT SHALL BE OF RCD INTEGRAL TYPE. THE SENSITIVITY OF RCD's SHALL BE AS SHOWN.

3. ALL BOXES FOR SWITCHES, SWITCH SOCKETS etc. SHALL BE OF STEEL CONSTRUCTION. PVC BOXES WILL NOT BE ACCEPTED.

4. LIGHT SWITCHES SHALL BE MOUNTED AT 1200mm AFFL MEASURED FROM THE CENTER OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING.

5. PVC HEAVY GAUGE CONDUITS SHOULD BE USED ALL OVER THE INSTALLATIONS AND THEY SHALL BE CONCEALED INTO STRUCTURES.

6. TWISTING OF CONDUCTORS SHALL BE AVOIDED. PROPER MEANS OF CABLE TERMINATIONS WILL BE HIGHLY OBSERVED.

7. 25mm PVC CONDUITS SHALL BE USED TO MAKE A LINK BETWEEN TRUNKING SYSTEM IN THE CEILING VOID AND SKIRTING TRUNKING, LUMINAIRES, ACCESSORIES ETC

8. ALL CONSUMER UNITS SHALL BE MOUNTED AT 1800mm AFFL MEASURED FROM BOARD BOTTOMS.

9. WALL MOUNTED LIGHT HEIGHT TO BE AGREED ON SITE APPROVED BY ARCHITECT

10. OUTLETS WITH NO SKIRTING TRUNK, 2Nos. OF 25mm DIAMETER CONDUITS TO BE USED FOR DATA AND POWER CABLES

11. ALL SOCKET OUTLETS TO BE MOUNTED AT 300mm AFFL MEASURED FROM THE BOTTOM OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING

12. SKIRTING TRUNKING TO BE MOUNTED ON TOP OF SKIRTING TIMBER, AT 300mm AFFL MEASURED FROM THE CENTER OF THE TRUNK.

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

Project title

PROPOSED RESIDENTIAL HOUSE DESIGN TO BE BUILT ON BLOCK.....PLOT NO.....DAR ES SALAAM.

Drawing title

PROPOSED SCHEMATICS LAYOUT MULTIFUNCTIONAL

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date MAR 2025	Date MAR 2025	Date MAR 2025	Date MAR 2025

Scale: NTS

Status: P

Drawing no.: 2025/TS/1066-EL-116

Revision:

DISTRIBUTION BOARD DBR1

FROM MAIN LV PANEL MPB

63/0.3A TPN RCD

4c x 10mm² PVC/SWA/PVC ARMOURED

1c x 6mm² PVC GREEN/YELLOW

EARTHING BONDED MPB EARTH BAR

6 WAYS 63A TPN DISTRIBUTION BOARD DBR1 C/W 63/0.3A TPN RCD & 40kA ARRESTOR						LOAD (WATTS)			
							R	Y	B
6	B		20	SPARE					
	Y		20	SPARE					
	R		20	SPARE					
5	B		20	SPARE					
	Y		20	SPARE					
	R		20	SPARE					
4	B		20	SPARE					
	Y		20	SPARE					
	R	2.5	20	WATER HEATER CIRCUIT DBR1- 10			2,500		
3	B	2.5	20	WATER HEATER CIRCUIT DBR1 - 9					2,500
	Y	2.5	20	AC CIRCUIT DBR1 - 8				2,500	
	R	2.5	20	AC CIRCUIT DBR1 - 7			2,500		
2	B	2.5	20	AC CIRCUIT DBR1 - 6					2,500
	Y	4	32	COOKER CONTROL CIRCUIT DBR1 - 5				3,200	
	R	2.5	20	06NOS. OF SOCKET RING CIRCUIT DBR1 - 4			1,800		
1	B	2.5	20	08NOS. OF SOCKET RING CIRCUIT DBR1 - 3					2,400
	Y	1.5	10	14NOS. OF LIGHTING CIRCUIT DBR1 - 2				700	
	R	1.5	10	13NOS. OF LIGHTING CIRCUIT DBR1 - 1			650		
WAYS	PHASE	CABLE SIZE (mm²)	MCB's		TOTAL LOAD		7,450	6,400	7,400
							21,250		

DISTRIBUTION BOARD DBR2

FROM MAIN LV PANEL MPB

63/0.3A TPN RCD

4c x 10mm² PVC/SWA/PVC ARMOURED

1c x 6mm² PVC GREEN/YELLOW

EARTHING BONDED MPB EARTH BAR

6 WAYS 63A TPN DISTRIBUTION BOARD DBR2 C/W 63/0.3A TPN RCD & 40kA ARRESTOR						LOAD (WATTS)			
							R	Y	B
6	B		20	SPARE					
	Y		20	SPARE					
	R		20	SPARE					
5	B		20	SPARE					
	Y		20	SPARE					
	R		20	SPARE					
4	B		20	SPARE					
	Y		20	SPARE					
	R	2.5	20	WATER HEATER CIRCUIT DBR2- 10			2,500		
3	B	2.5	20	WATER HEATER CIRCUIT DBR2 - 9					2,500
	Y	2.5	20	AC CIRCUIT DBR2 - 8				2,500	
	R	2.5	20	AC CIRCUIT DBR2 - 7			2,500		
2	B	2.5	20	AC CIRCUIT DBR2 - 6					2,500
	Y	4	32	COOKER CONTROL CIRCUIT DBR2 - 5				3,200	
	R	2.5	20	06NOS. OF SOCKET RING CIRCUIT DBR2 - 4			1,800		
1	B	2.5	20	08NOS. OF SOCKET RING CIRCUIT DBR2 - 3					2,400
	Y	1.5	10	14NOS. OF LIGHTING CIRCUIT DBR2 - 2				700	
	R	1.5	10	13NOS. OF LIGHTING CIRCUIT DBR2 - 1			650		
WAYS	PHASE	CABLE SIZE (mm²)	MCB's		TOTAL LOAD		7,450	6,400	7,400
							21,250		

Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

Notes & Symbol legend

1. THE INSTALLATIONS SHALL BE DONE IN ACCORDANCE WITH THE CURRENT IEE WIRING REGULATIONS.
2. EACH CONSUMER UNIT SHALL BE OF RCD INTEGRAL TYPE. THE SENSITIVITY OF RCD's SHALL BE AS SHOWN.
3. ALL BOXES FOR SWITCHES, SWITCH SOCKETS etc. SHALL BE OF STEEL CONSTRUCTION. PVC BOXES WILL NOT BE ACCEPTED.
4. LIGHT SWITCHES SHALL BE MOUNTED AT 1200mm AFFL MEASURED FROM THE CENTER OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING.
5. PVC HEAVY GAUGE CONDUITS SHOULD BE USED ALL OVER THE INSTALLATIONS AND THEY SHALL BE CONCEALED INTO STRUCTURES.
6. TWISTING OF CONDUCTORS SHALL BE AVOIDED. PROPER MEANS OF CABLE TERMINATIONS WILL BE HIGHLY OBSERVED.
7. 25mm PVC CONDUITS SHALL BE USED TO MAKE A LINK BETWEEN TRUNKING SYSTEM IN THE CEILING VOID AND SKIRTING TRUNKING, LUMINAIRES, ACCESSORIES ETC
8. ALL CONSUMER UNITS SHALL BE MOUNTED AT 1800mm AFFL MEASURED FROM BOARD BOTTOMS.
9. WALL MOUNTED LIGHT HEIGHT TO BE AGREED ON SITE APPROVED BY ARCHITECT
10. OUTLETS WITH NO SKIRTING TRUNK, 2Nos. OF 25mm DIAMETER CONDUITS TO BE USED FOR DATA AND POWER CABLES
11. ALL SOCKET OUTLETS TO BE MOUNTED AT 300mm AFFL MEASURED FROM THE BOTTOM OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING
12. SKIRTING TRUNKING TO BE MOUNTED ON TOP OF SKIRTING TIMBER, AT 300mm AFFL MEASURED FROM THE CENTER OF THE TRUNK.

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

Drawing title

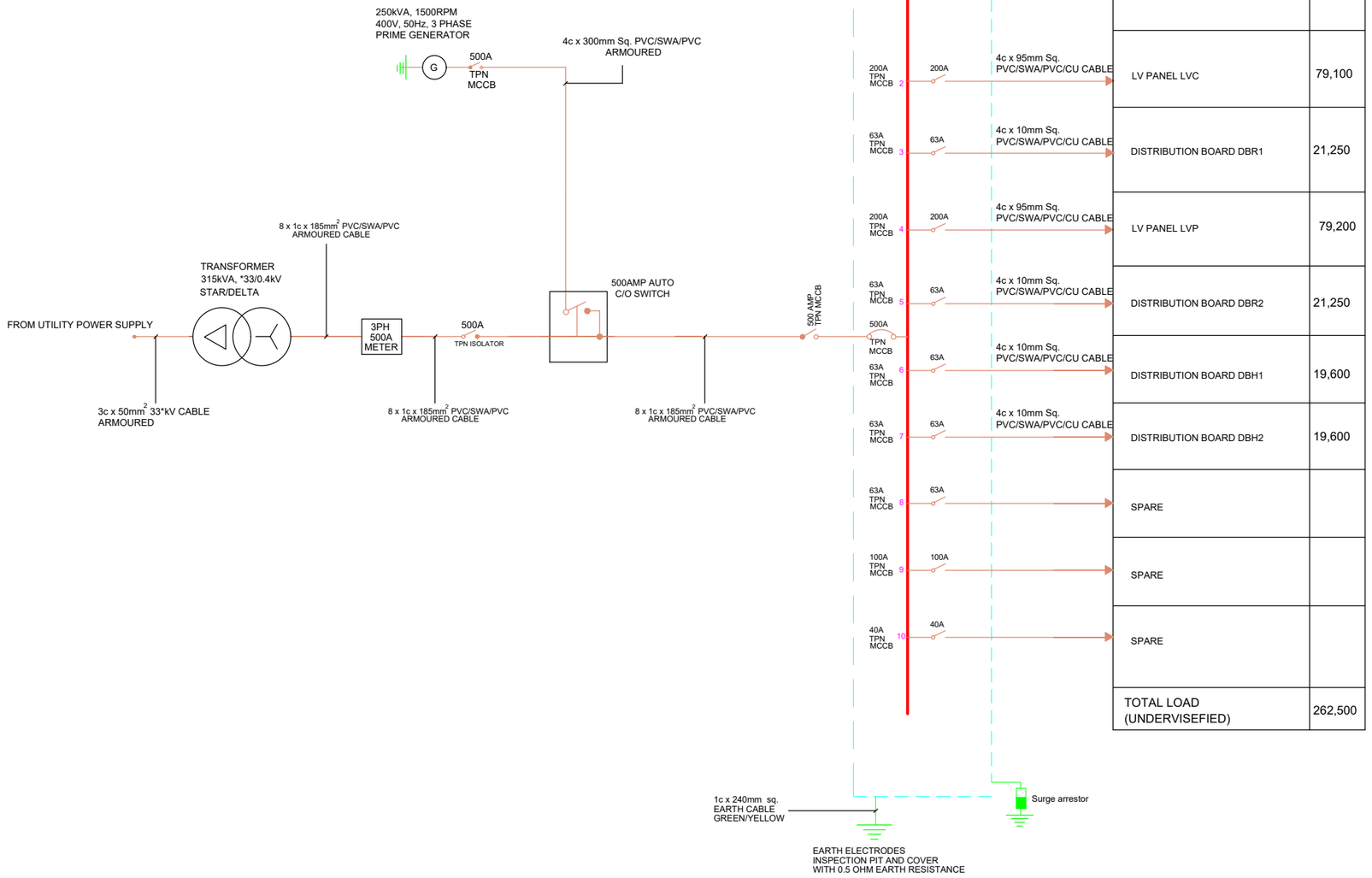
PROPOSED SCHEMATICS LAYOUT
RESIDENTIAL DISTRIBUTION BOARDS

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date MAR 2025	Date MAR 2025	Date MAR 2025	Date MAR 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-EL-118

Revision



DESCRIPTION	WATTS
DISTRIBUTION BOARD DBM	22,500
LV PANEL LVC	79,100
DISTRIBUTION BOARD DBR1	21,250
LV PANEL LVP	79,200
DISTRIBUTION BOARD DBR2	21,250
DISTRIBUTION BOARD DBH1	19,600
DISTRIBUTION BOARD DBH2	19,600
SPARE	
SPARE	
SPARE	
TOTAL LOAD (UNDERVISEFIED)	262,500

Client

QATAR CHARITY TANZANIA
P.O. BOX....
HOUSE NO. 22A&B OSTERBAY
MASASANI

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7. 25mm PVC CONDUITS SHALL BE USED TO MAKE A LINK BETWEEN TRUNKING SYSTEM IN THE CEILING VOID AND SKIRTING TRUNKING, LUMINAIRES, ACCESSORIES ETC

8. ALL CONSUMER UNITS SHALL BE MOUNTED AT 1800mm AFFL MEASURED FROM BOARD BOTTOMS.

9. WALL MOUNTED LIGHT HEIGHT TO BE AGREED ON SITE APPROVED BY ARCHITECT

10. OUTLETS WITH NO SKIRTING TRUNK, 2Nos. OF 25mm DIAMETER CONDUITS TO BE USED FOR DATA AND POWER CABLES

11. ALL SOCKET OUTLETS TO BE MOUNTED AT 300mm AFFL MEASURED FROM THE BOTTOM OF THE BOX, UNLESS STATED OTHERWISE IN THE DRAWING

12. SKIRTING TRUNKING TO BE MOUNTED ON TOP OF SKIRTING TIMBER, AT 300mm AFFL MEASURED FROM THE CENTER OF THE TRUNK.

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTISERVICE PROJECT TO BE BUILT ON BLOCK.....PLOT NO.....KIJITONYAMA DAR ES SALAAM.

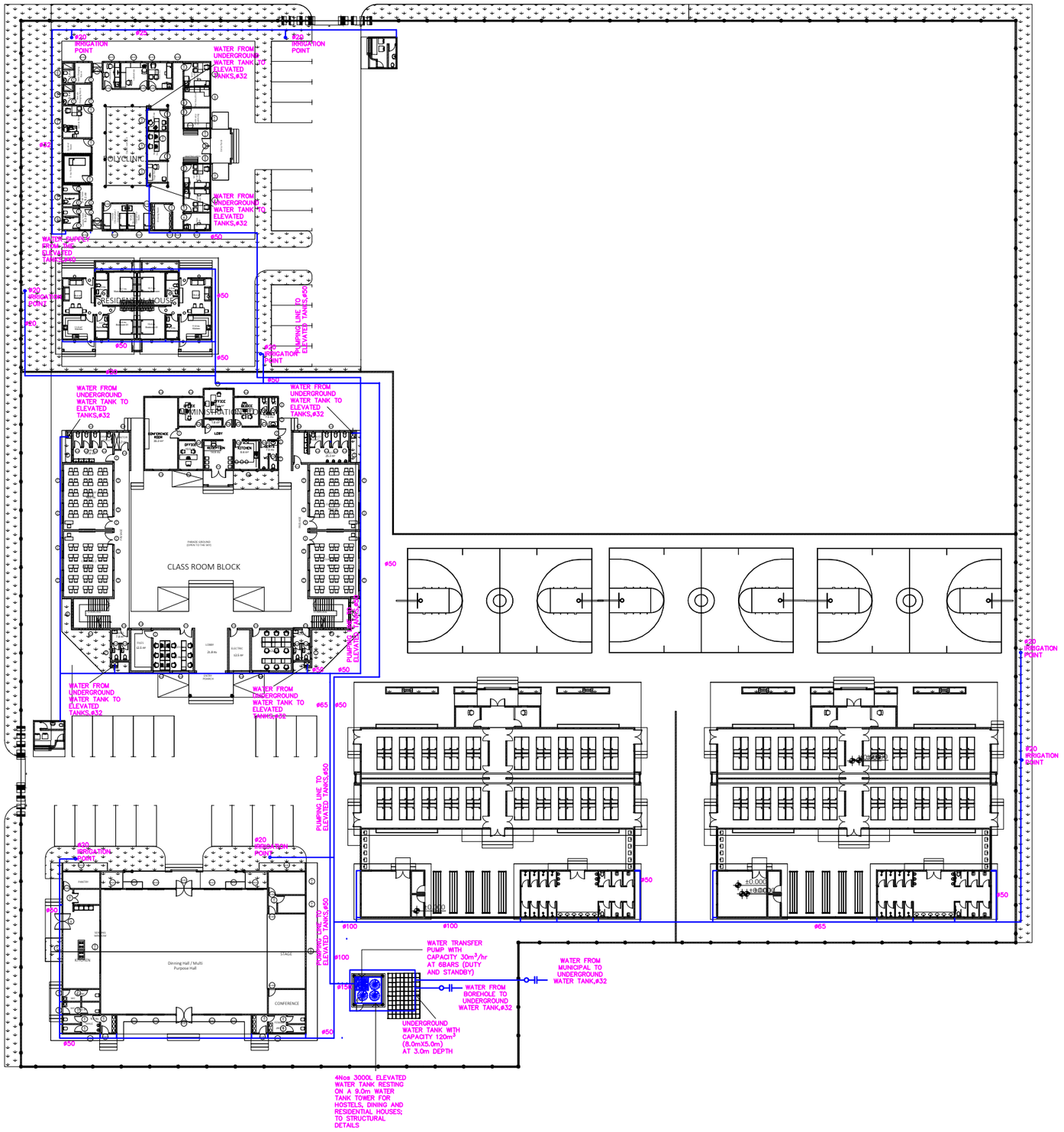
Drawing title

PROPOSED SCHEMATICS LAYOUT
MAIN LOW VOLTAGE PANEL

Designed by	Drawn by	Checked by	Approved by
SI	SI	AD	BB
Date	Date	Date	Date
MAR 2025	MAR 2025	MAR 2025	MAR 2025

Scale	Status
NTS	P

Drawing no.	Revision
2025/TS/1089-EL-121	



Client

THE REGISTERED TRUSTEES OF
MASJID QUBAH AND ISLAMIC CENTRE
P.O. Box 21121
Dar es salaam

Notes & Symbol legend

ALL DIMENSIONS ARE IN mm UNLESS STATED
THE DRAWING SHOULD BE READ IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS AND OTHER SERVICE DRAWINGS.

THE WATER SUPPLY PIPES SHOULD BE PPR/PN-20

THE INTERNAL PIPING TO BE INSIDE THE 300mm WALL, NO PIPE WILL BE EXPOSED.

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THERE MUST BE A STOP VALVE OF THE SAME DIMENSION AS THE PIPE AT EVERY WATER SUPPLY ENTRANCE

THE POSITION OF THE WATER TANK TO BE DETERMINED ON SITE, TOGETHER WITH THE PUMP

- COLD WATER PIPE
- COLD WATER OUTLET
- HOT WATER OUTLET
- DOTCHE SPRAY
- STOP/GATE VALVE
- WH-30 LITERS WALL MOUNT HEATER

REV	DESCRIPTIONS

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P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

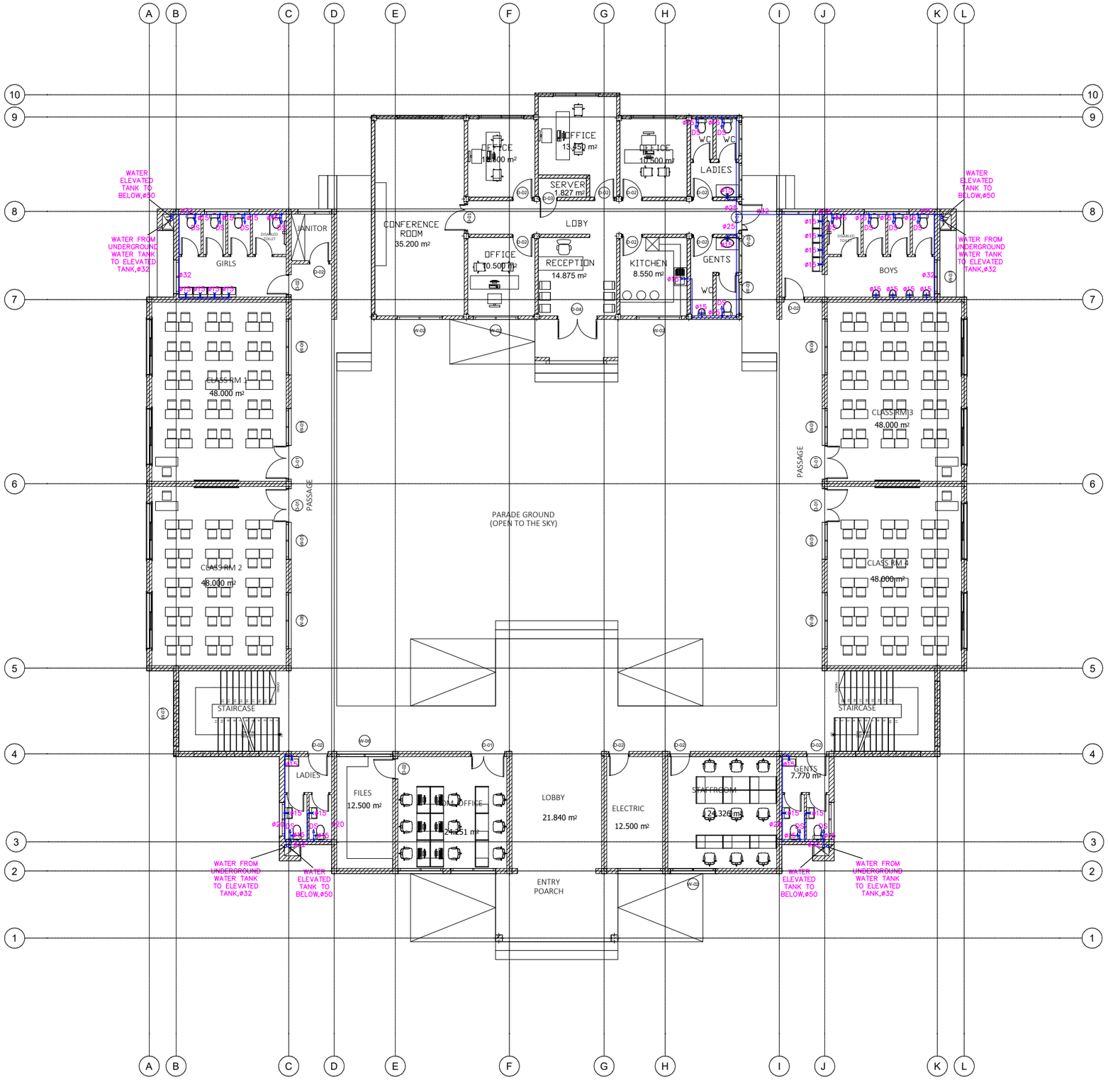
PROPOSED LAYOUT OF WATER SUPPLY INSTALLATION SITE PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MW-100

Revision



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TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

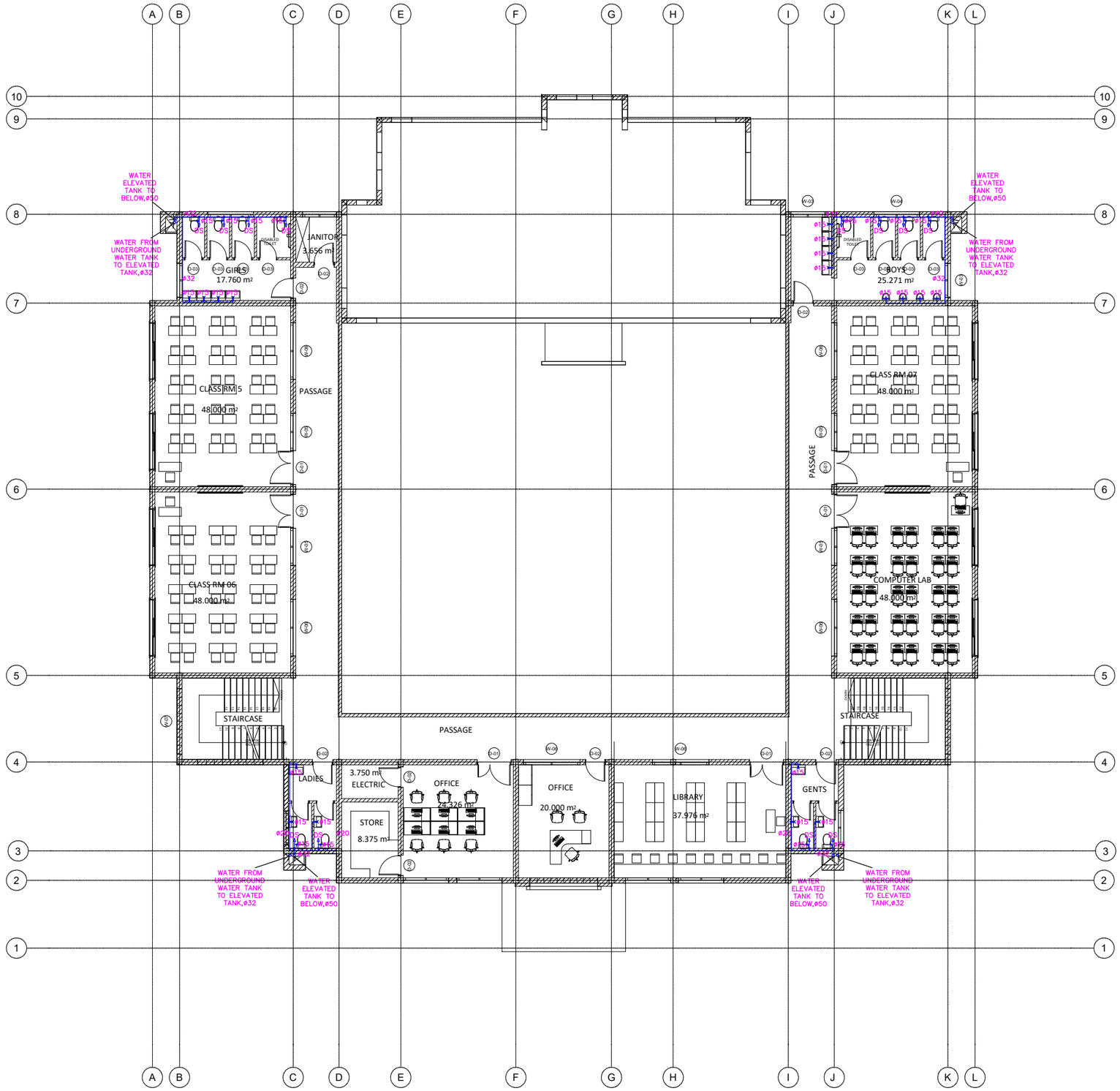
PROPOSED LAYOUT OF WATER SUPPLY INSTALLATION GROUND FLOOR CLASSROOM PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MW-100

Revision



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MASJID QUBAH AND ISLAMIC CENTRE
P.O. Box 21121
Dar es salaam

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Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

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Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

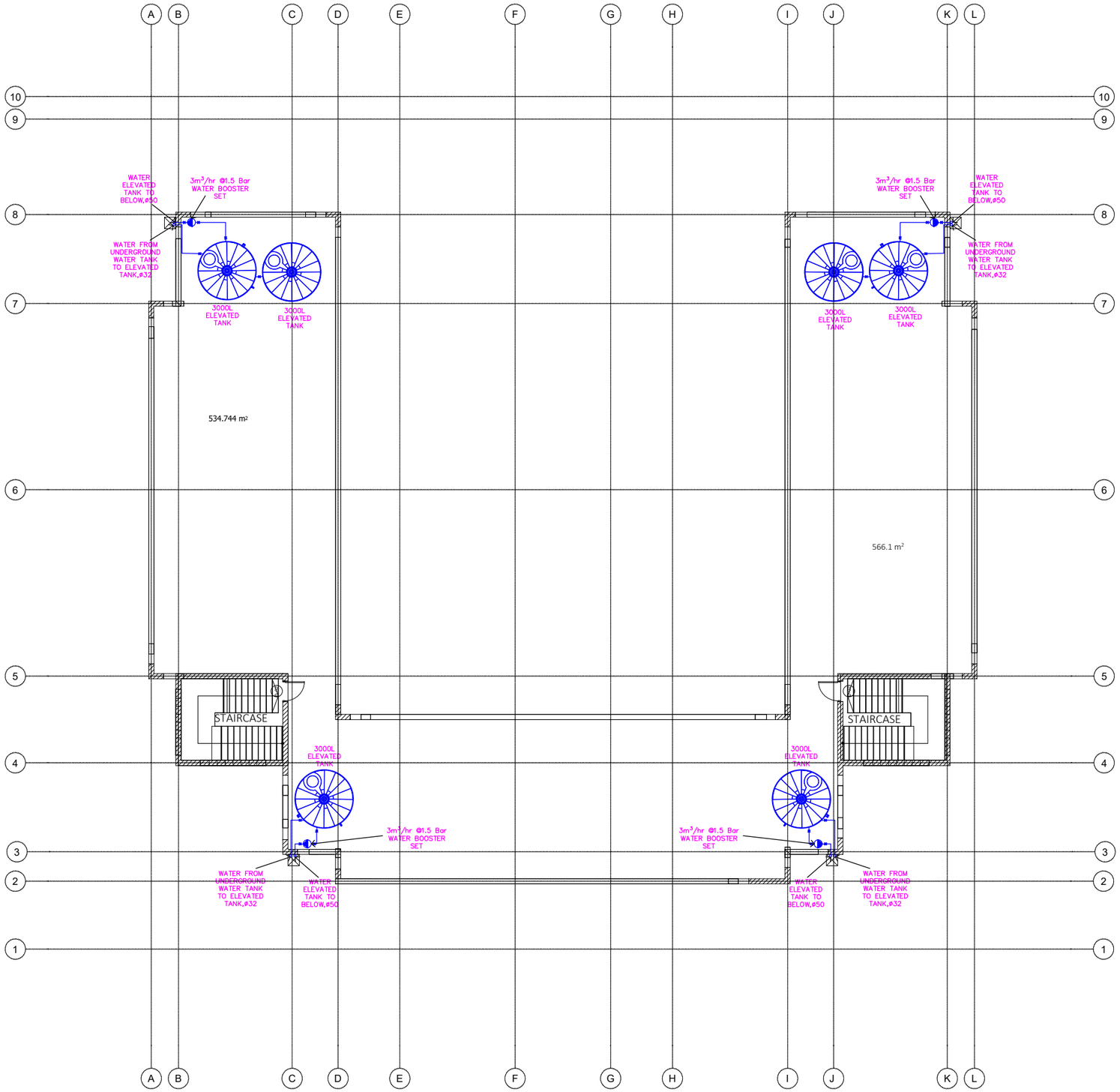
Drawing title

PROPOSED LAYOUT OF WATER SUPPLY INSTALLATION CLASSROOM FIRST FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MW-100 | Revision



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Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF
MULTI SERVICE PROJECT TO BE
BUILT ON PLOT No 777 BLOCK No 47,
AT KIJITONYAMA DAR ES SALAAM

Drawing title

PROPOSED LAYOUT OF WATER
SUPPLY INSTALLATION
CLASSROOM ROOF FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date	Date	Date	Date
MARCH 2025	MARCH 2025	MARCH 2025	MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MW-100

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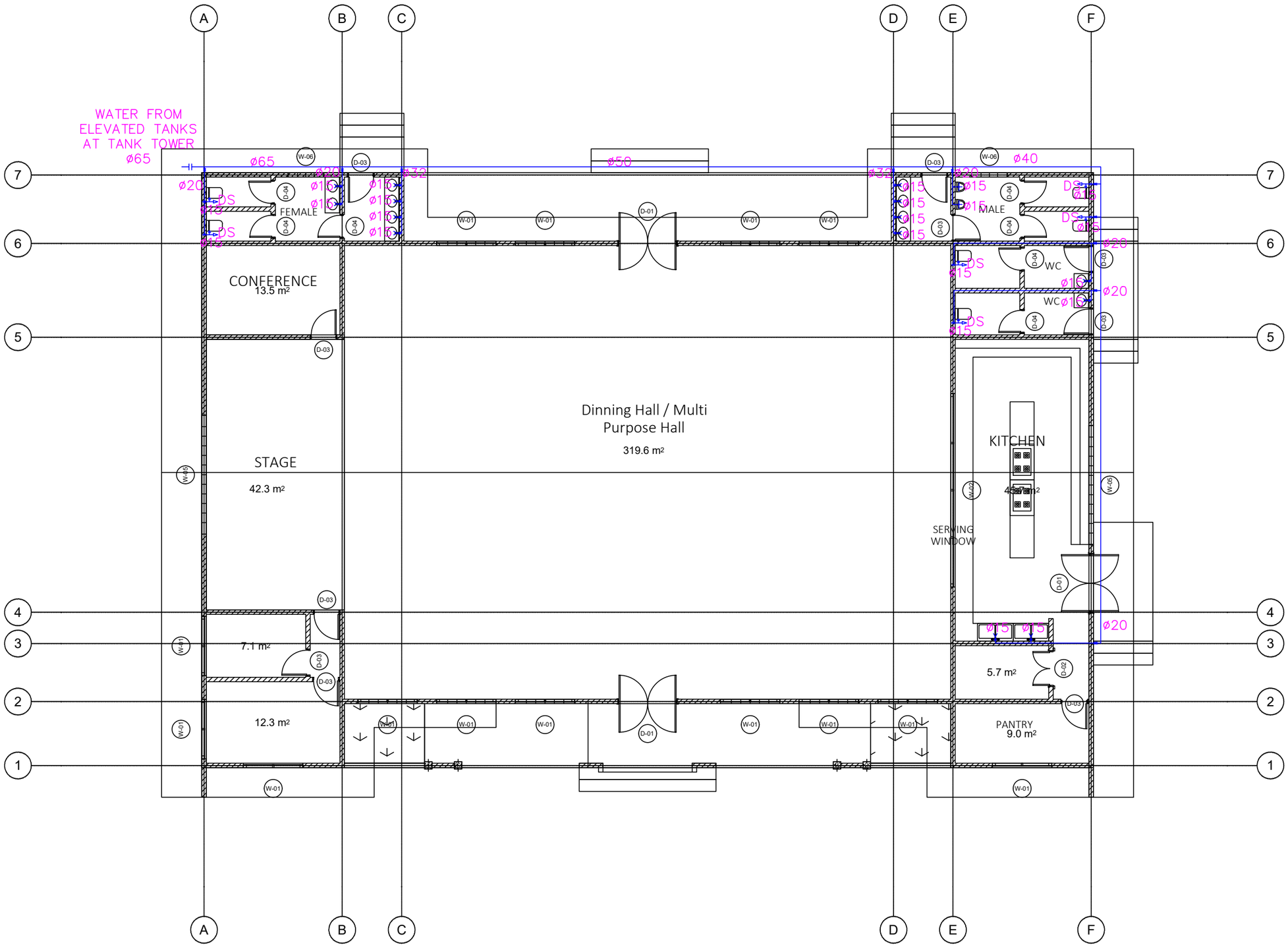

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Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

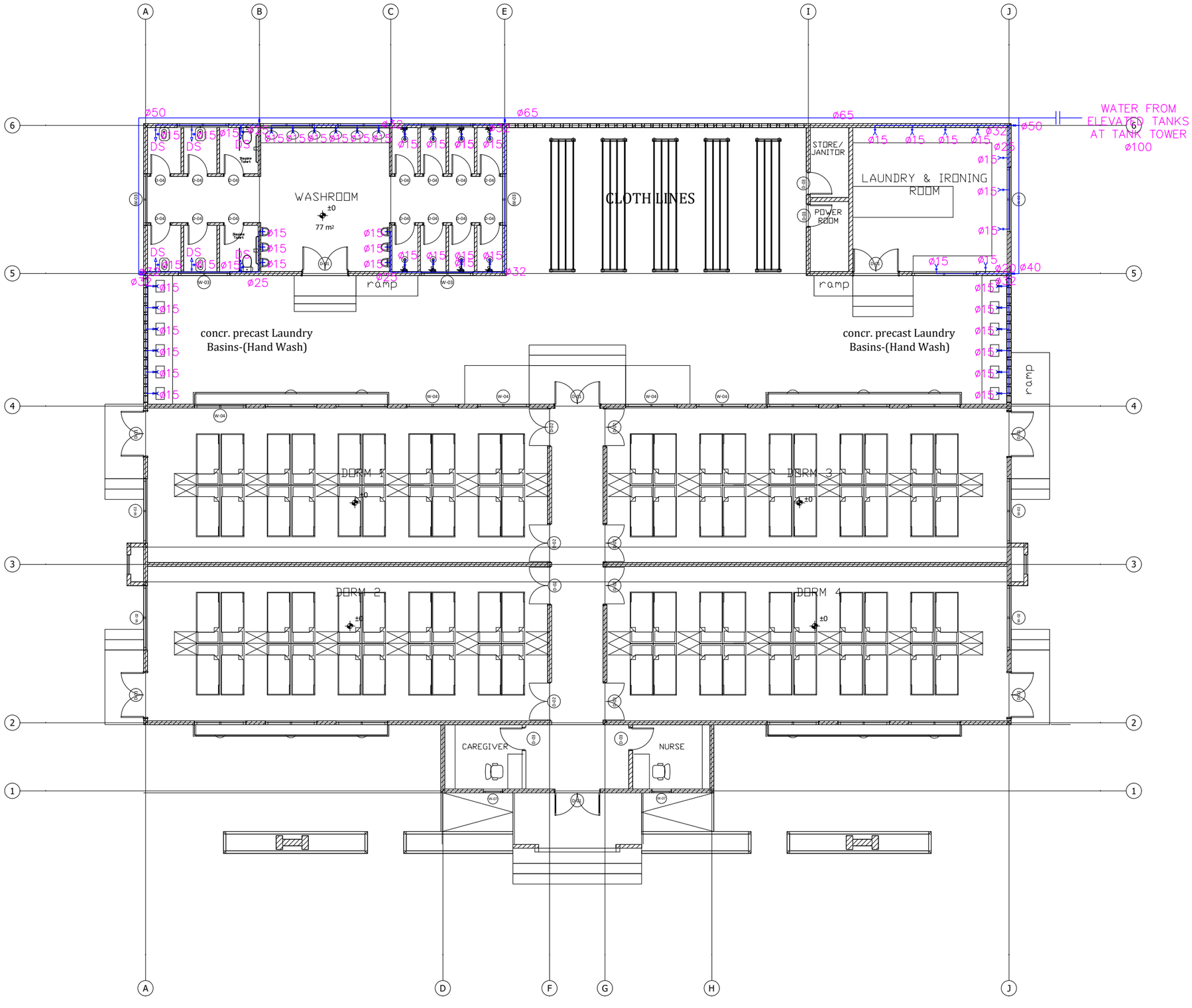
Drawing title

PROPOSED LAYOUT OF WATER SUPPLY INSTALLATION DH GROUND FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MW-100 | Revision



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Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

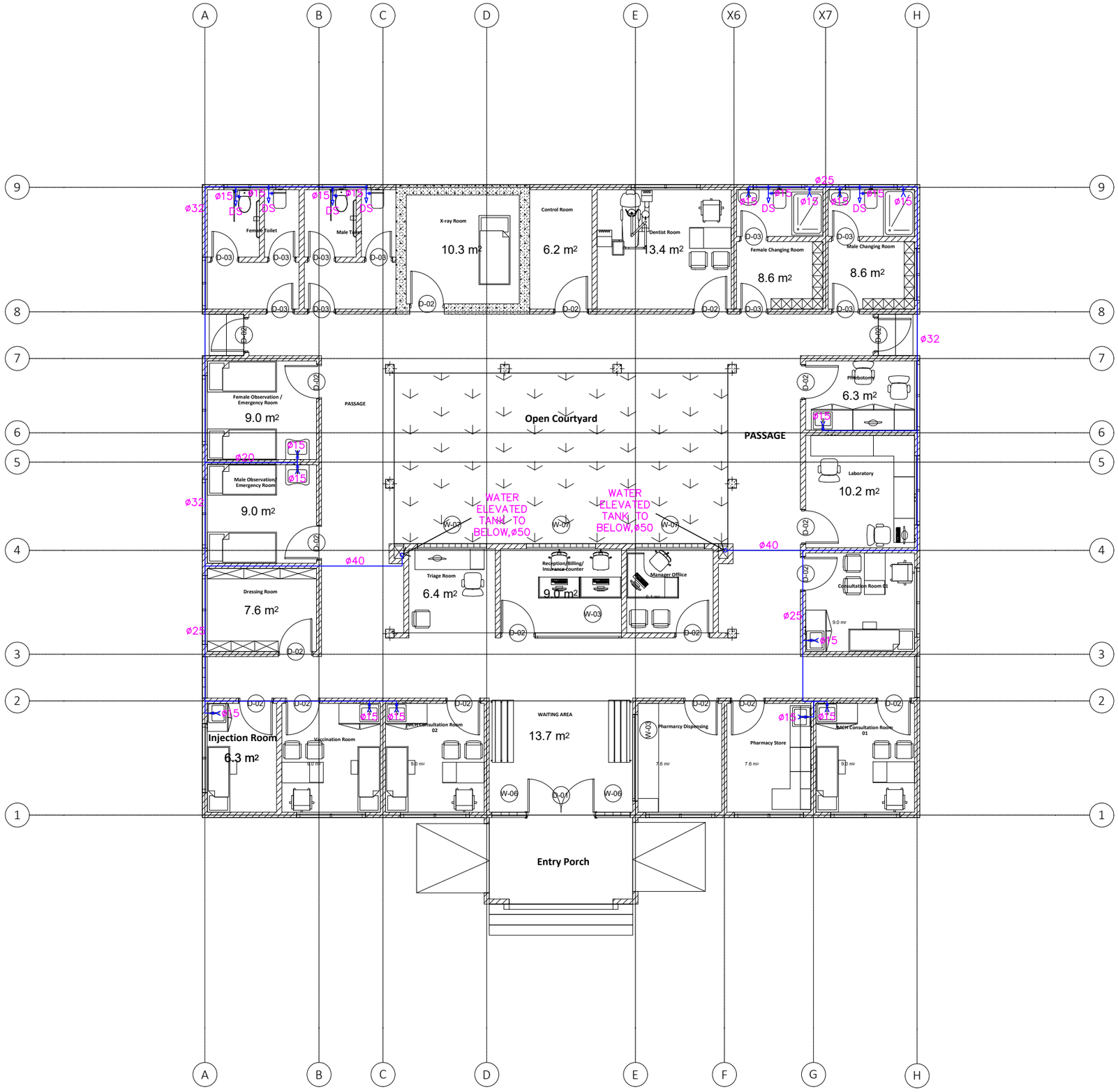
Drawing title

PROPOSED LAYOUT OF WATER SUPPLY INSTALLATION HOSTEL GROUND FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no.	Revision
2025/TS/1089-MW-100	



Client

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Notes & Symbol legend

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REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

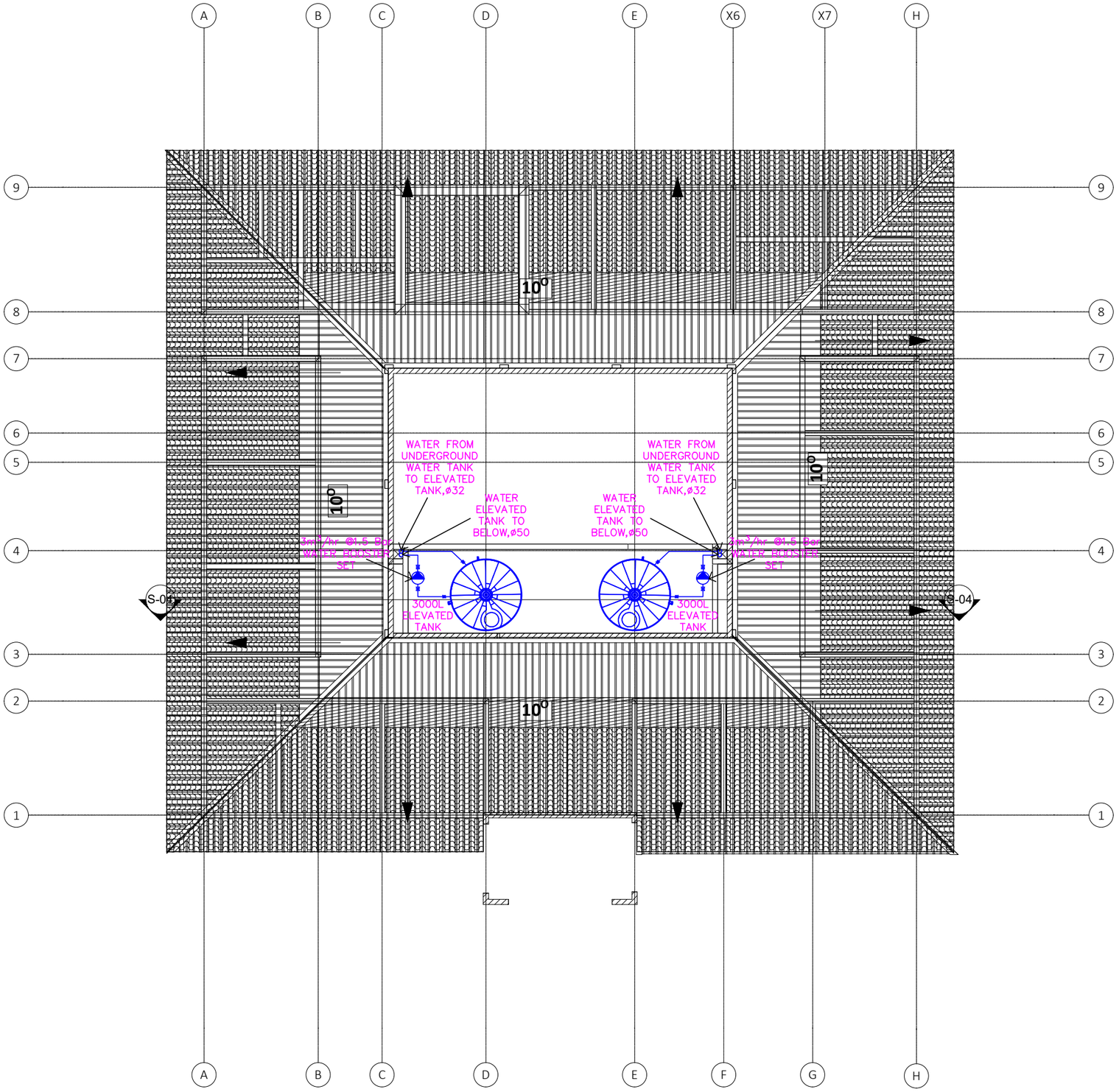
PROPOSED LAYOUT OF WATER SUPPLY INSTALLATION POLYCLINIC GROUND FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MW-100

Revision



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P. O. Box 79769 Dar es Salaam, Tanzania
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DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

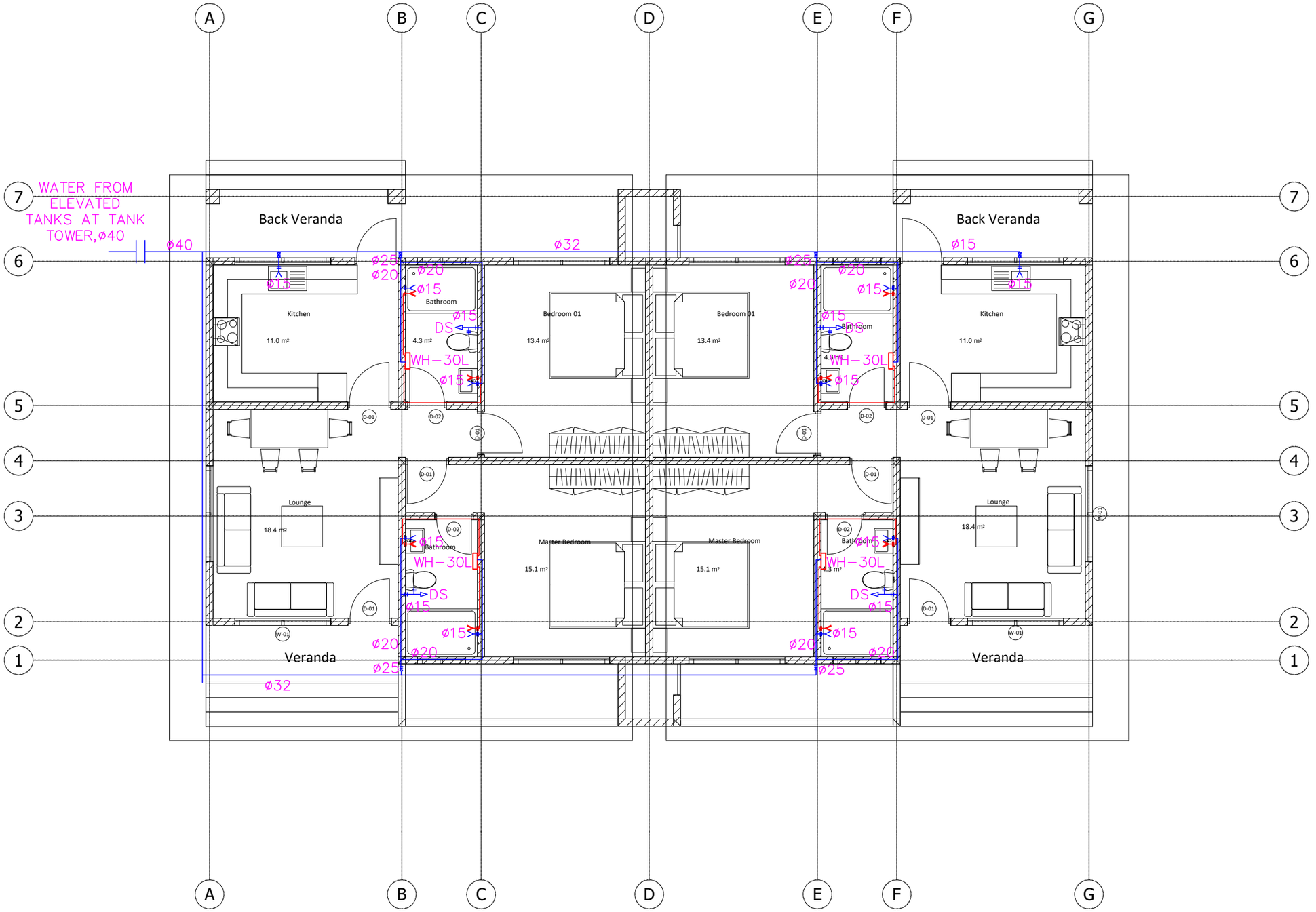
PROPOSED LAYOUT OF WATER SUPPLY INSTALLATION POLYCLINIC ROOF FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MW-100

Revision



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Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

PROPOSED LAYOUT OF WATER SUPPLY INSTALLATION DH GROUND FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date	Date	Date	Date
MARCH 2025	MARCH 2025	MARCH 2025	MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MW-100

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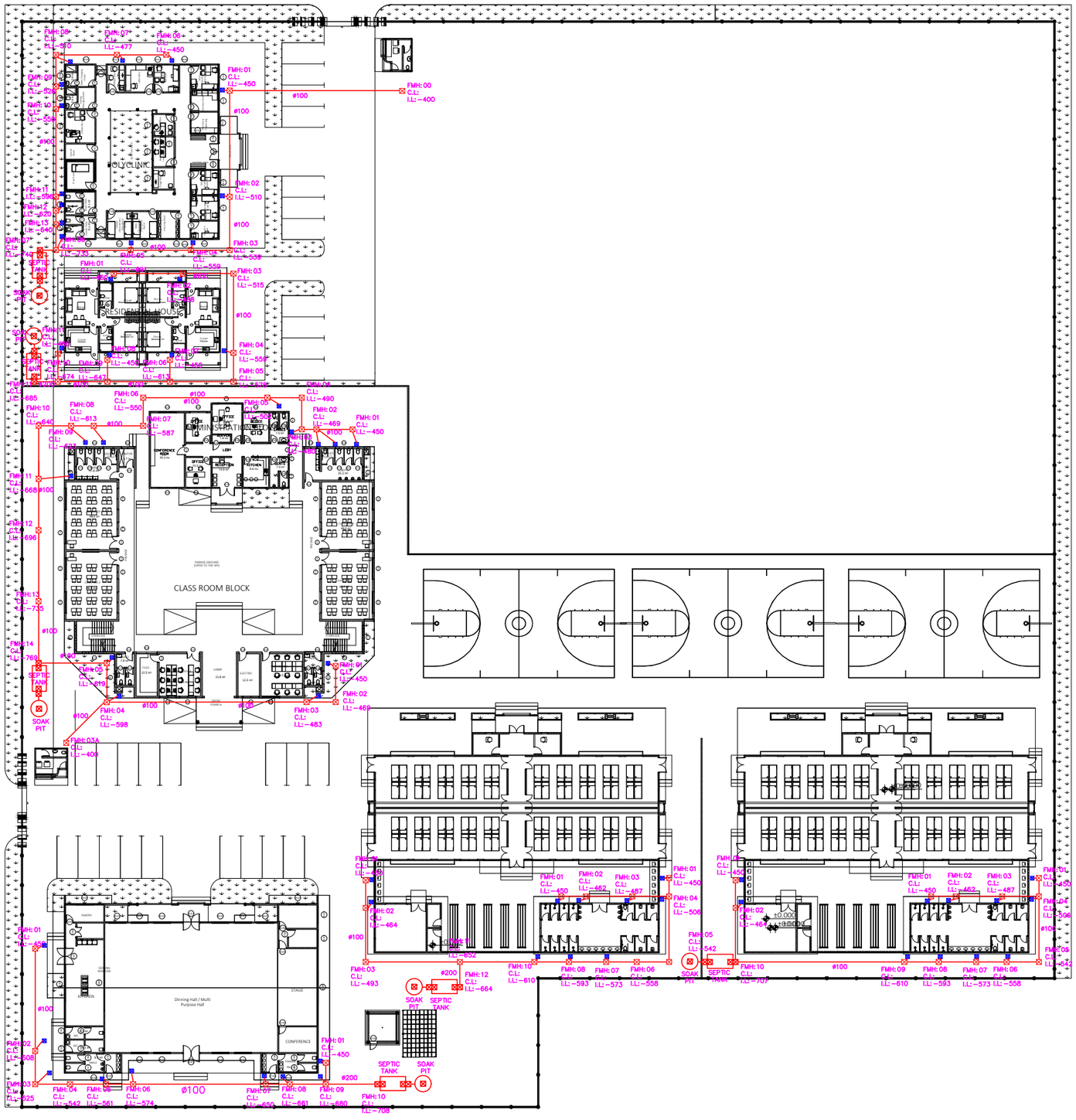

Notes & Symbol legend

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THE DRAINAGE PIPES TO BE uPVC TYPE B INSTALLED AT A DRAINAGE SLOPE OF 0.5%

THE SEPTIC TANK AND SOAK PIT CONNECTIONS AFTER ESTABLISHING THE DRAINAGE LEVELS.

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- Ø50 MULTIPLE INLETS FLOOR DRAIN
- GULLY TRAP
- MANHOLE
- WASTE WATER PIPE
- FOUL WATER PIPE
- INDUSTRIAL WASTE WATER PIPE
- RAINWATER PIPE

GT - GULLY TRAP

FD - FLOOR DRAIN

Client

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Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

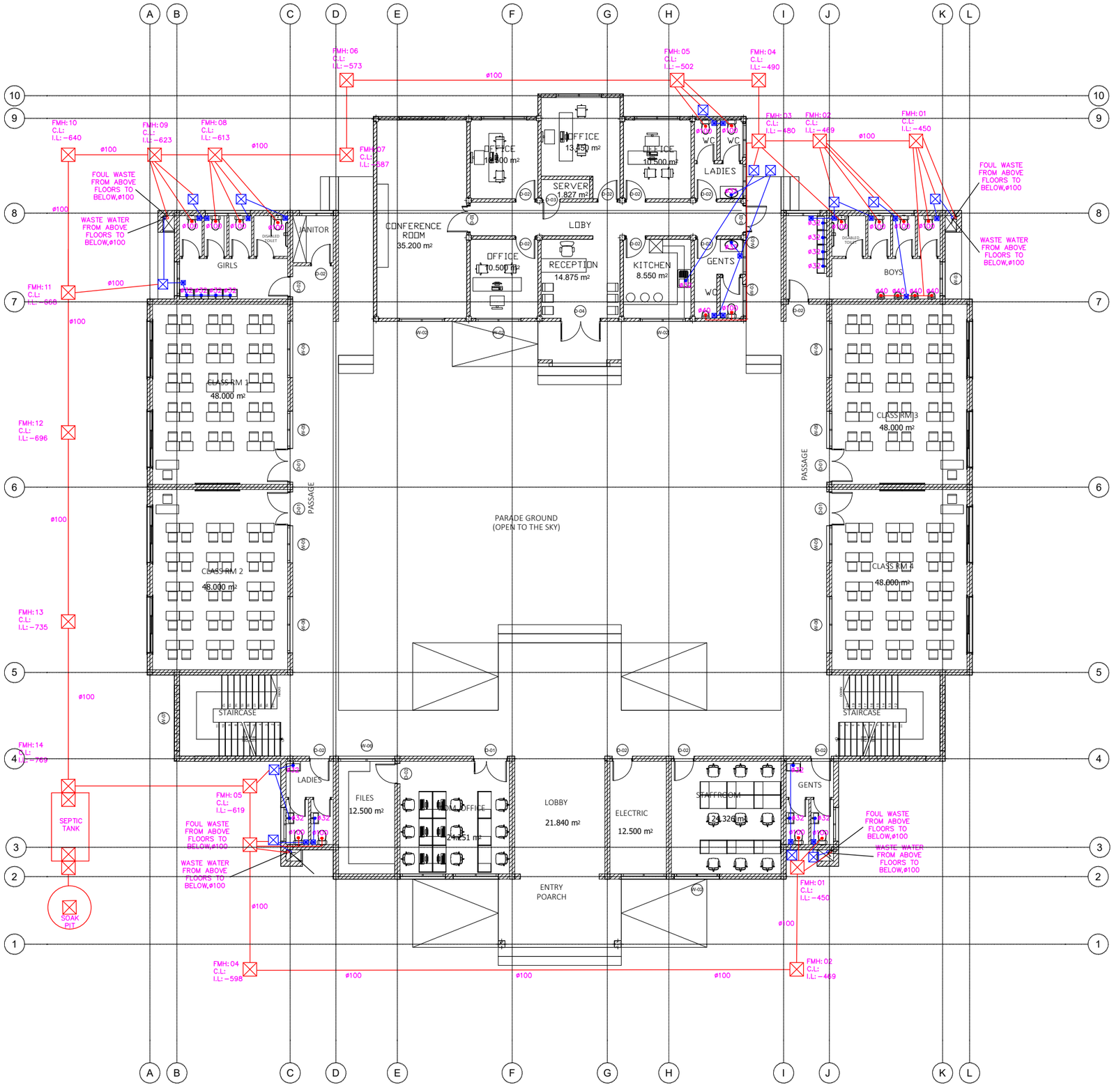
PROPOSED LAYOUT OF DRAINAGE INSTALLATION SITE PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date	Date	Date	Date
MARCH 2025	MARCH 2025	MARCH 2025	MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MD-101

Revision



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GT - GULLY TRAP
FD - FLOOR DRAIN

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

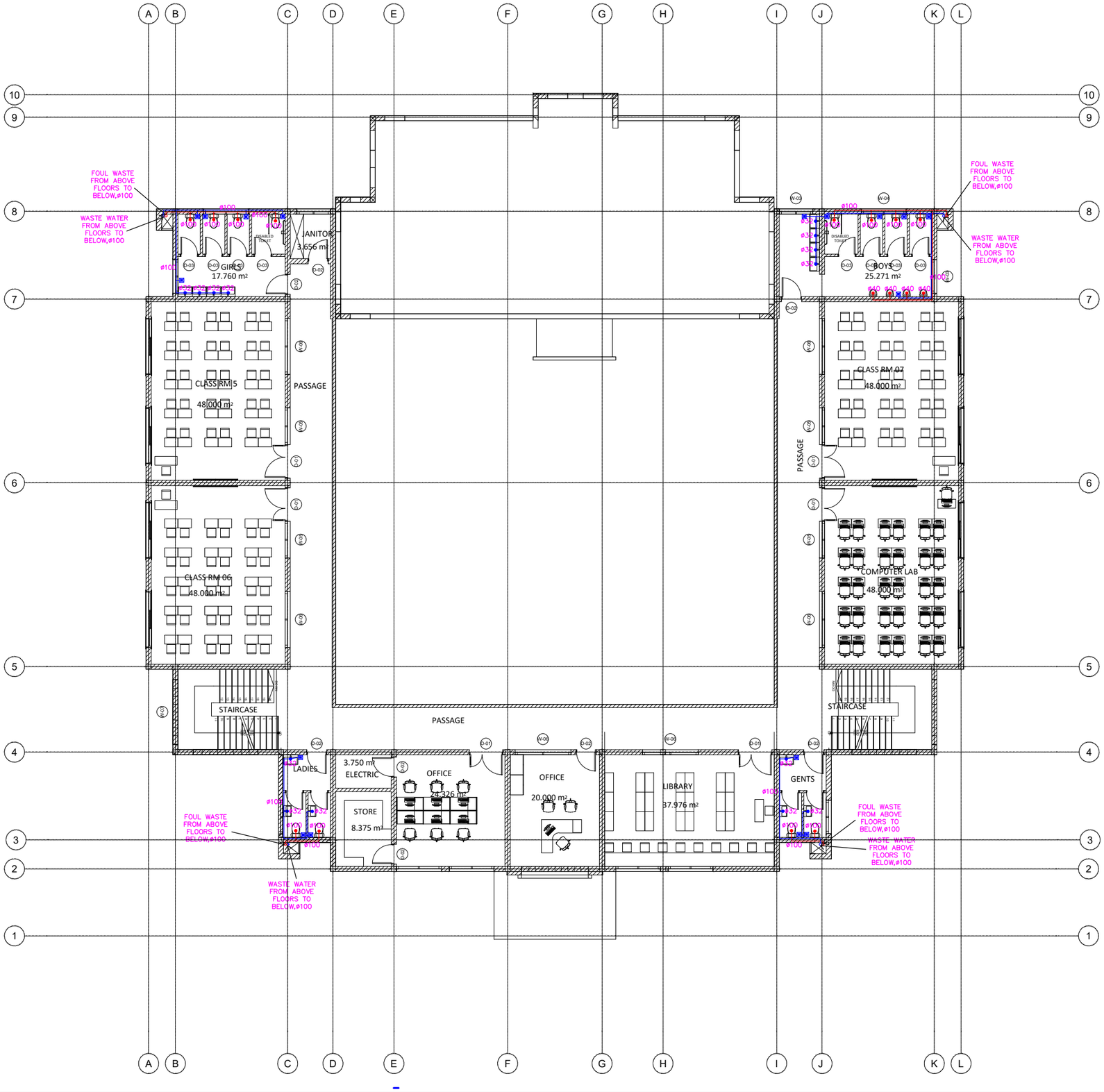
Drawing title

PROPOSED LAYOUT OF DRAINAGE INSTALLATION GROUND FLOOR CLASSROOM PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MD-101 | Revision



Client

THE REGISTERED TRUSTEES OF
MASJID QUBAH AND ISLAMIC CENTRE
P.O. Box 21121
Dar es salaam

Notes & Symbol legend

ALL DIMENSIONS ARE IN mm UNLESS STATED
THE DRAWING SHOULD BE READ IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS AND OTHER SERVICE DRAWINGS.

THE DRAINAGE PIPES TO BE uPVC TYPE B INSTALLED AT A DRAINAGE SLOPE OF 0.5%

THE SEPTIC TANK AND SOAK PIT CONNECTIONS AFTER ESTABLISHING THE DRAINAGE LEVELS.

THE SEPTIC TANK AND SOAK PIT TO BE CONSTRUCTED ABOUT A METER AND A HALF FROM THE EXISTING STRUCTURE.

THE INTERNAL PIPING TO BE INSIDE THE WALL, NO PIPE WILL BE EXPOSED.

ENGINEER SHOULD NOT BR HELD RESPONSIBLE FOR ANY DIM. ERROR IF NOT NOTIFIED AT THE TIME OF COMMENCING WORKS AT SITE.

THE EXACT POSITION OF SEPTIC TANK AND SOAK AWAY PIT WILL BE DETERMINED ON SITE.

- Ø50 MULTIPLE INLETS FLOOR DRAIN
- GULLY TRAP
- MANHOLE
- WASTE WATER PIPE
- FOUL WATER PIPE
- INDUSTRIAL WASTE WATER PIPE
- RAINWATER PIPE

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Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

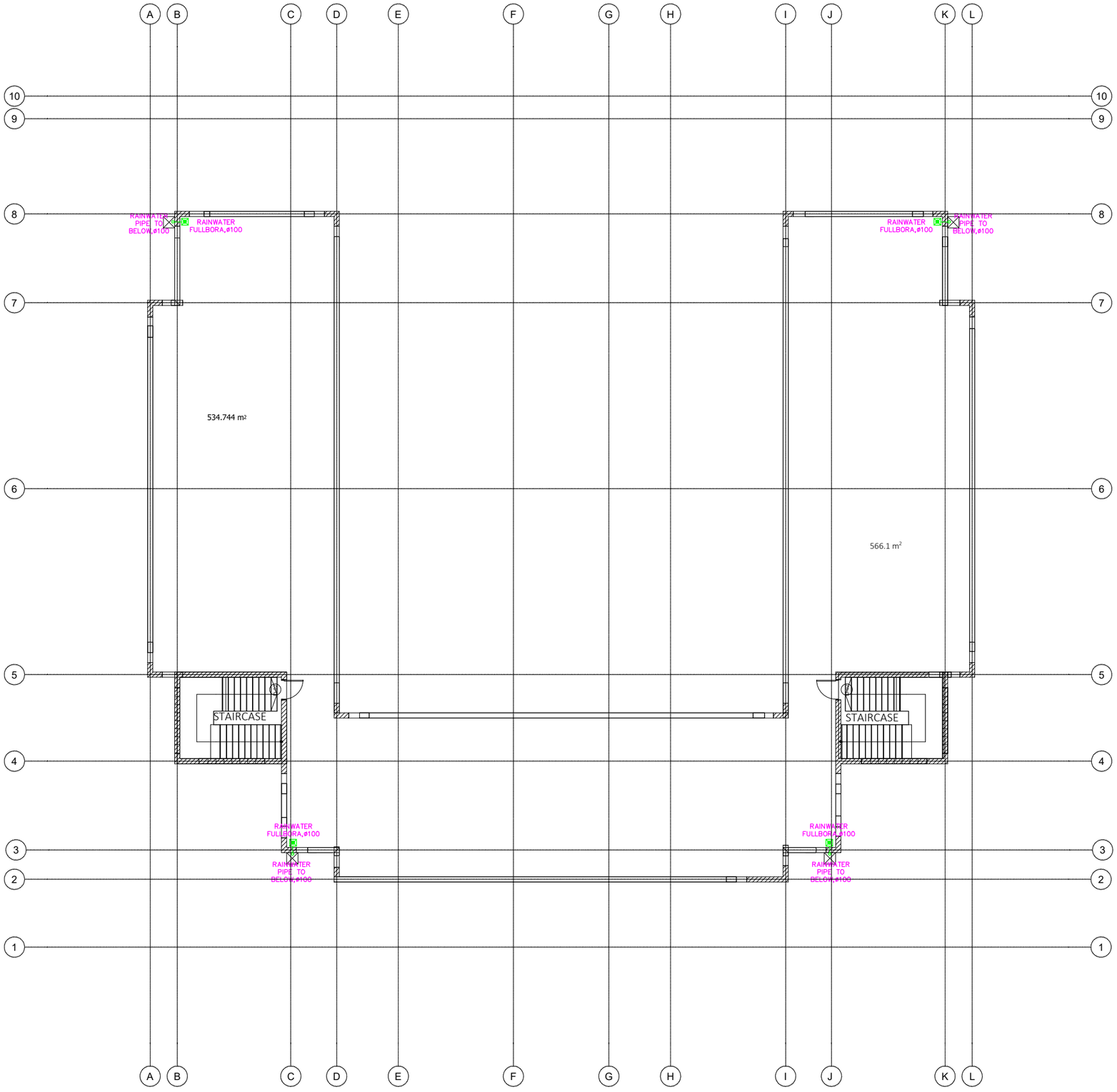
Drawing title

PROPOSED LAYOUT OF DRAINAGE INSTALLATION CLASSROOM FIRST FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MD-101
Revision



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Ø50 MULTIPLE INLETS FLOOR DRAIN

GULLY TRAP

MANHOLE

WASTE WATER PIPE

FOUL WATER PIPE

INDUSTRIAL WASTE WATER PIPE

RAINWATER PIPE

GT - GULLY TRAP

FD - FLOOR DRAIN

REV	DESCRIPTIONS

Service Engineer

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E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF
MULTI SERVICE PROJECT TO BE
BUILT ON PLOT No 777 BLOCK No 47,
AT KIJITONYAMA DAR ES SALAAM

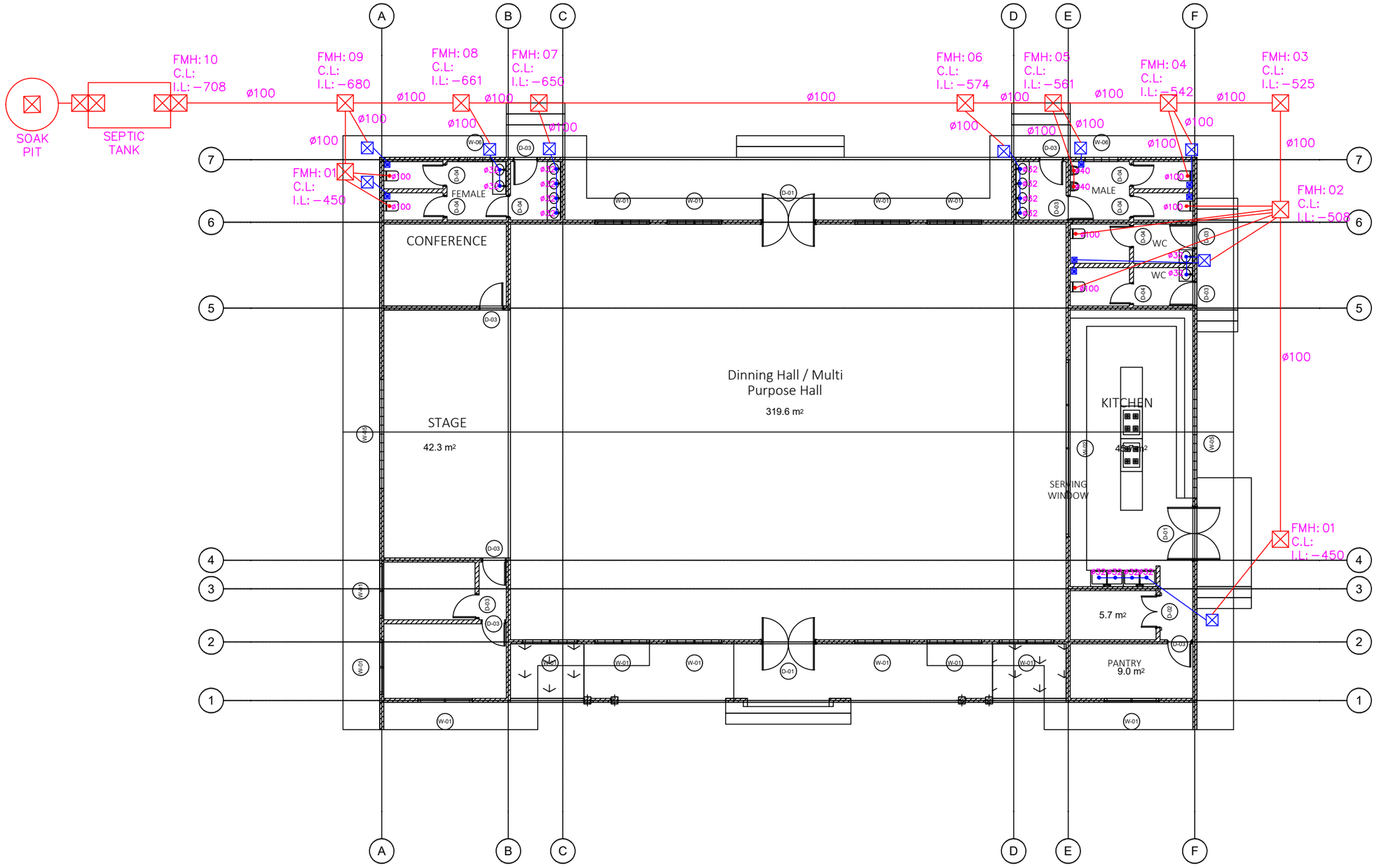
Drawing title

PROPOSED LAYOUT OF
DRAINAGE INSTALLATION
CLASSROOM ROOF FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date	Date	Date	Date
MARCH 2025	MARCH 2025	MARCH 2025	MARCH 2025

Scale	Status
NTS	P

Drawing no.	Revision
2025/TS/1089-MD-101	



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Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

PROPOSED LAYOUT OF DRAINAGE INSTALLATION DH GROUND FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
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Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

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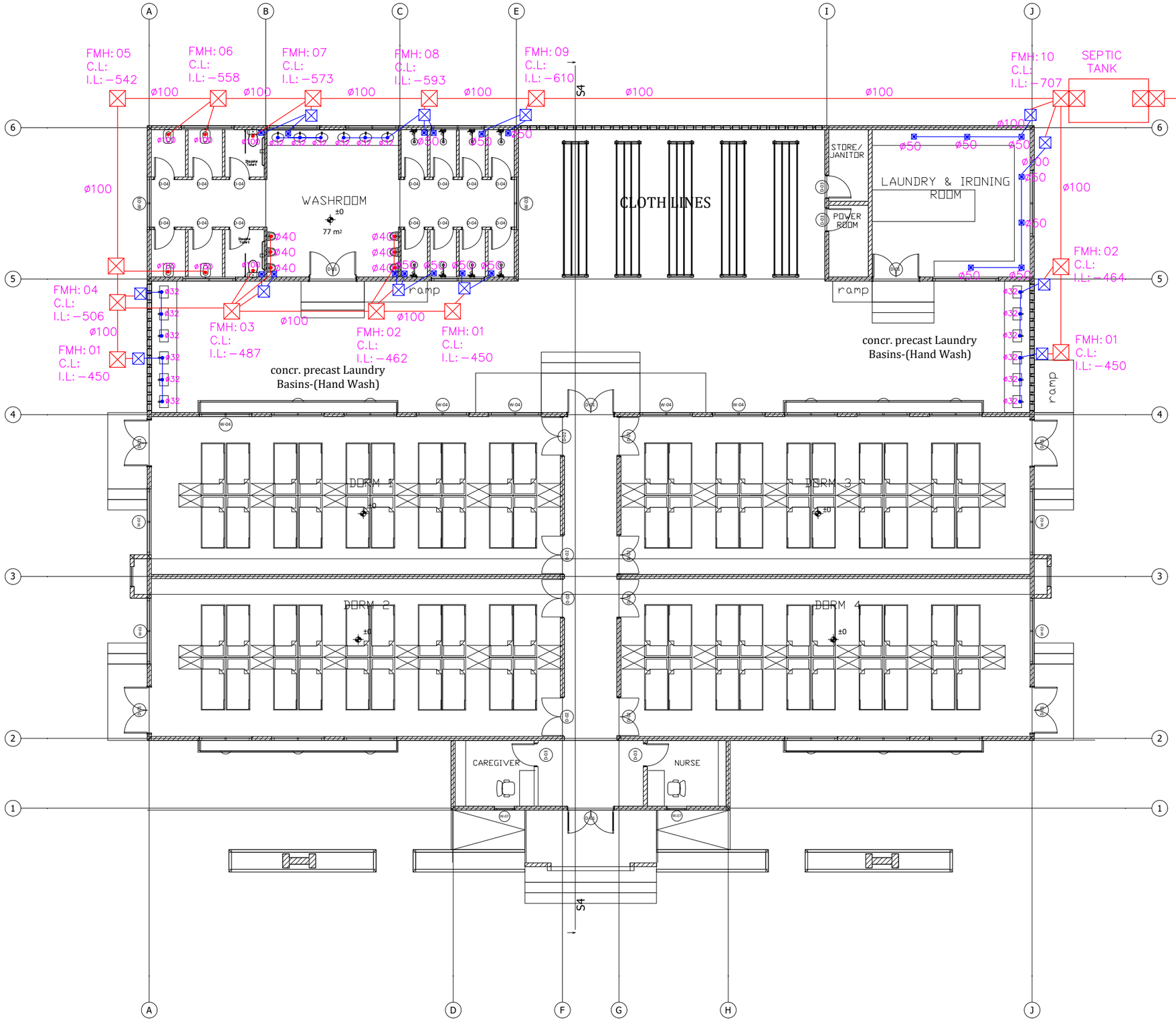

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P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

PROPOSED LAYOUT OF DRAINAGE INSTALLATION HOSTEL GROUND FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

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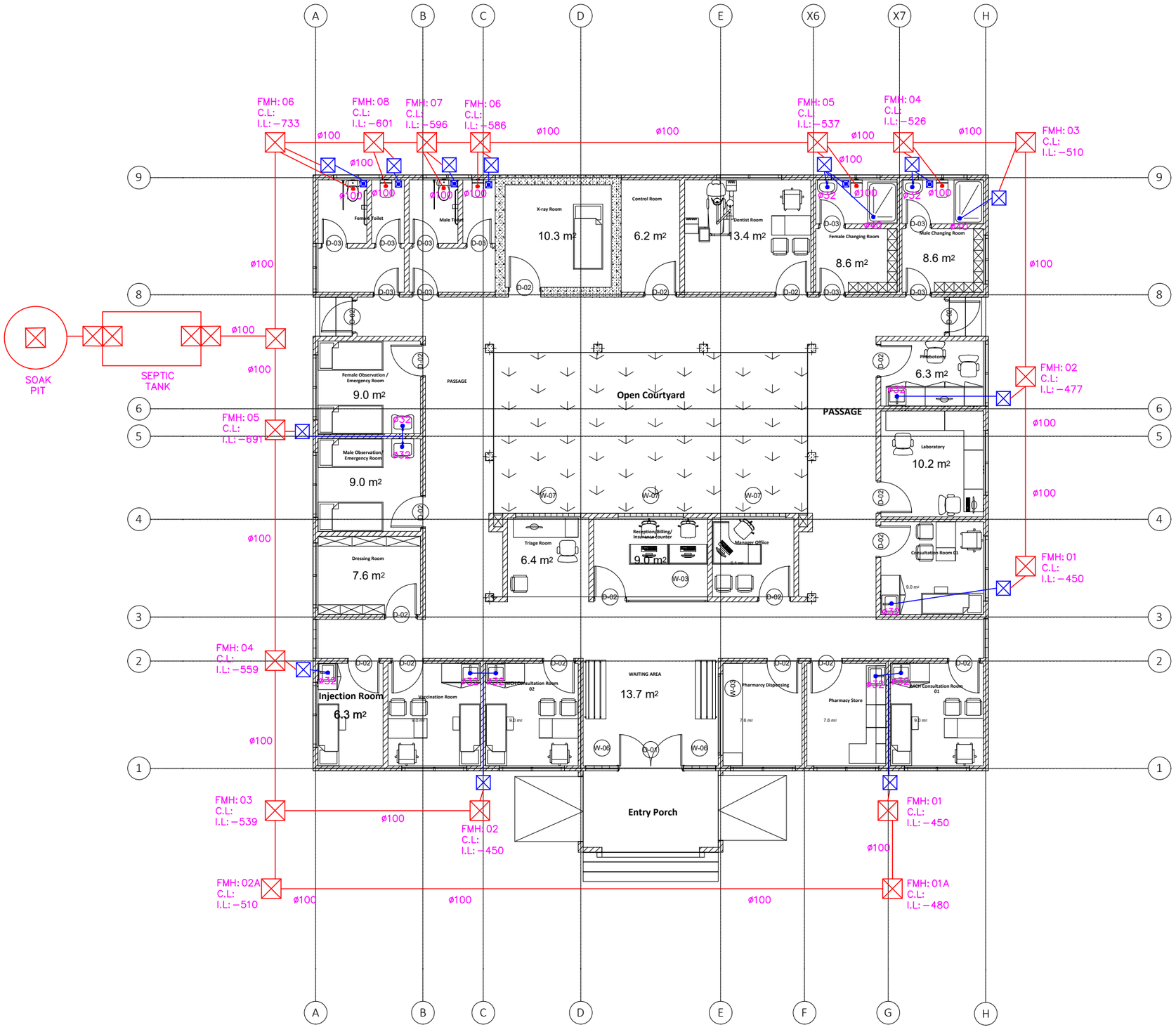

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- RAINWATER PIPE

GT - GULLY TRAP
FD - FLOOR DRAIN

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
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Architect

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Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

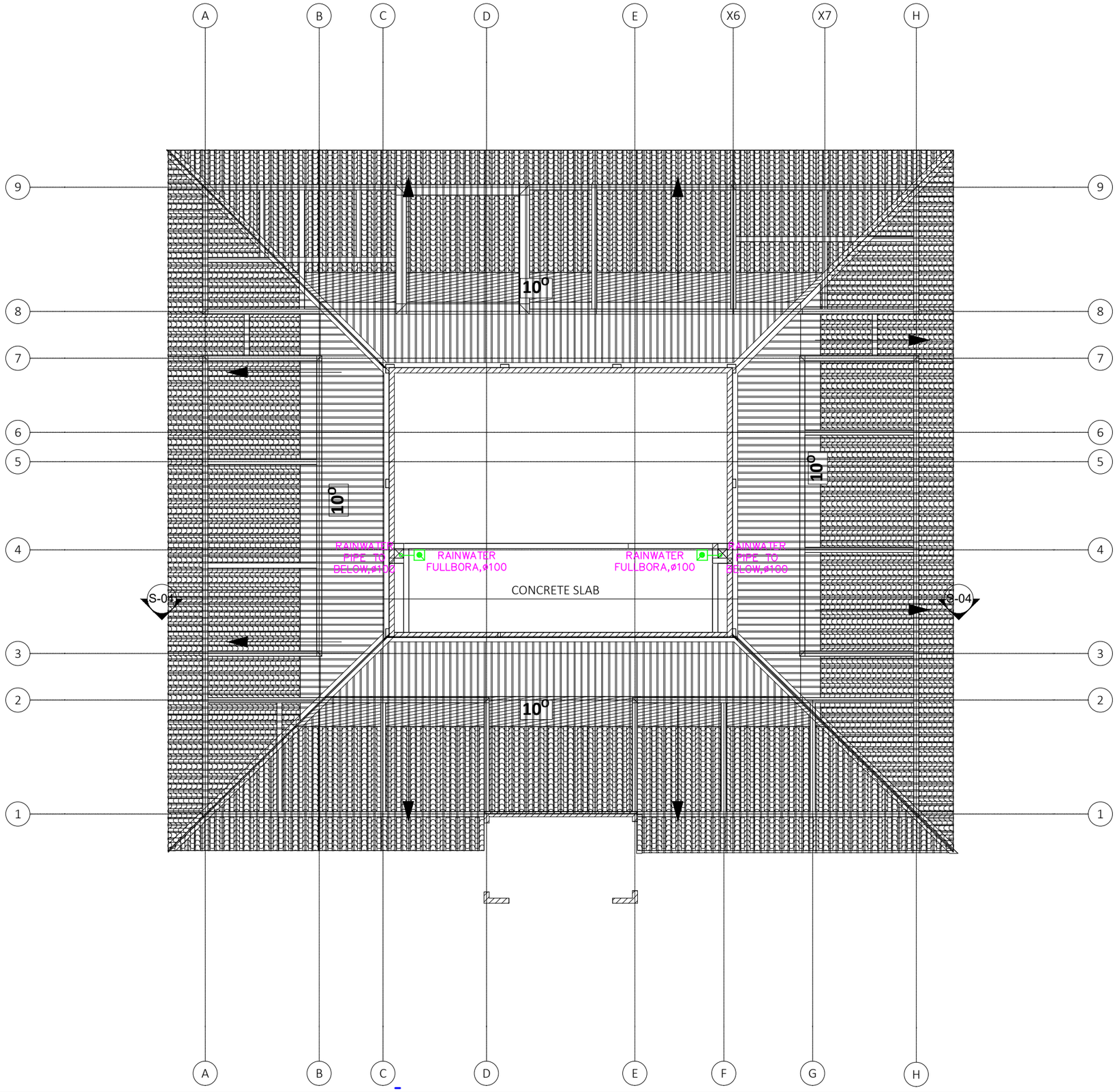
Drawing title

PROPOSED LAYOUT OF DRAINAGE INSTALLATION POLYCLINIC GROUND FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MD-101 | Revision



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- INDUSTRIAL WASTE WATER PIPE
- RAINWATER PIPE

GT - GULLY TRAP
FD - FLOOR DRAIN

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

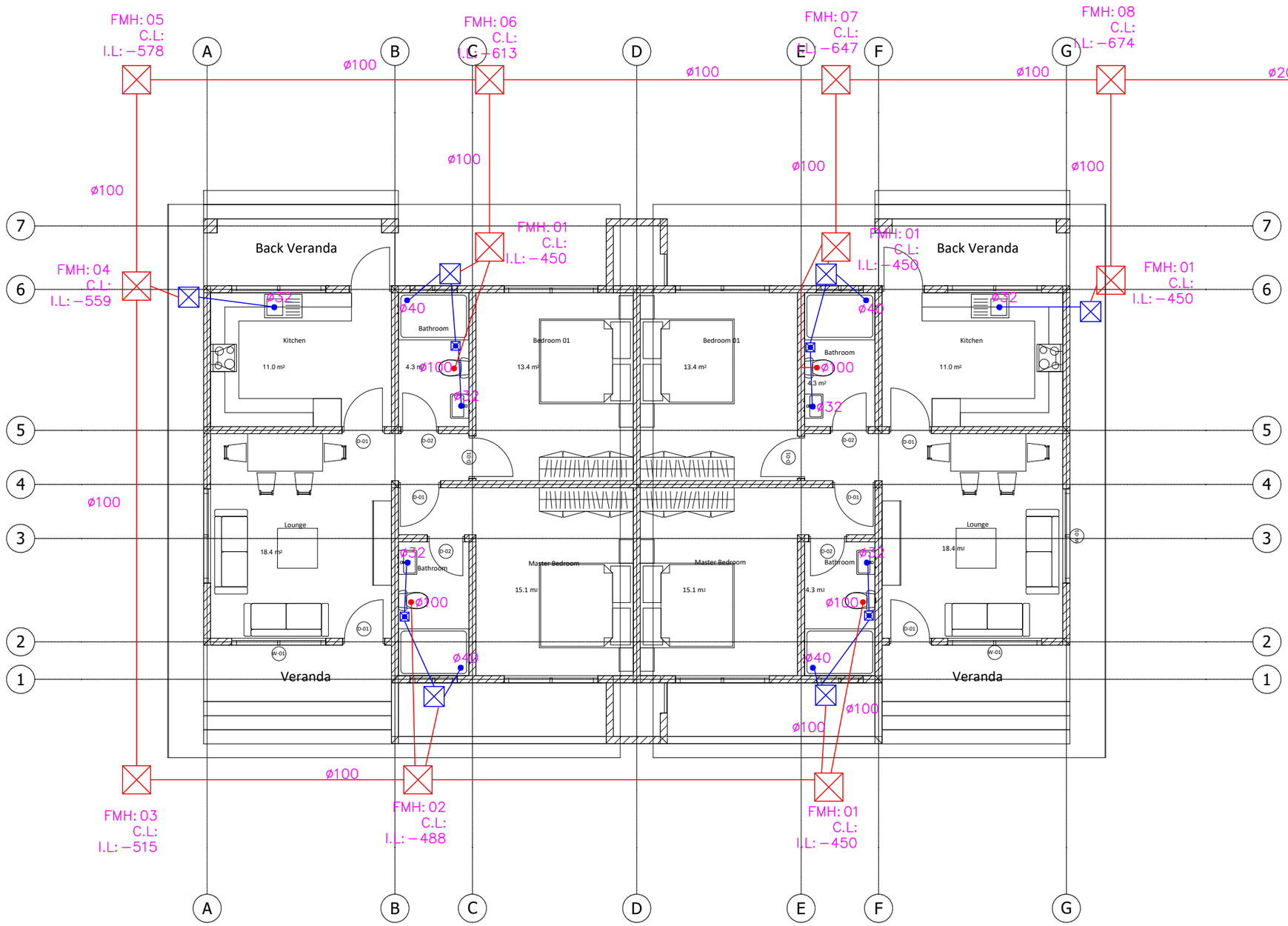
Drawing title

PROPOSED LAYOUT OF DRAINAGE INSTALLATION POLYCLINIC ROOF FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date	Date	Date	Date
MARCH 2025	MARCH 2025	MARCH 2025	MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MD-101
Revision



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Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

PROPOSED LAYOUT OF DRAINAGE INSTALLATION DH GROUND FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

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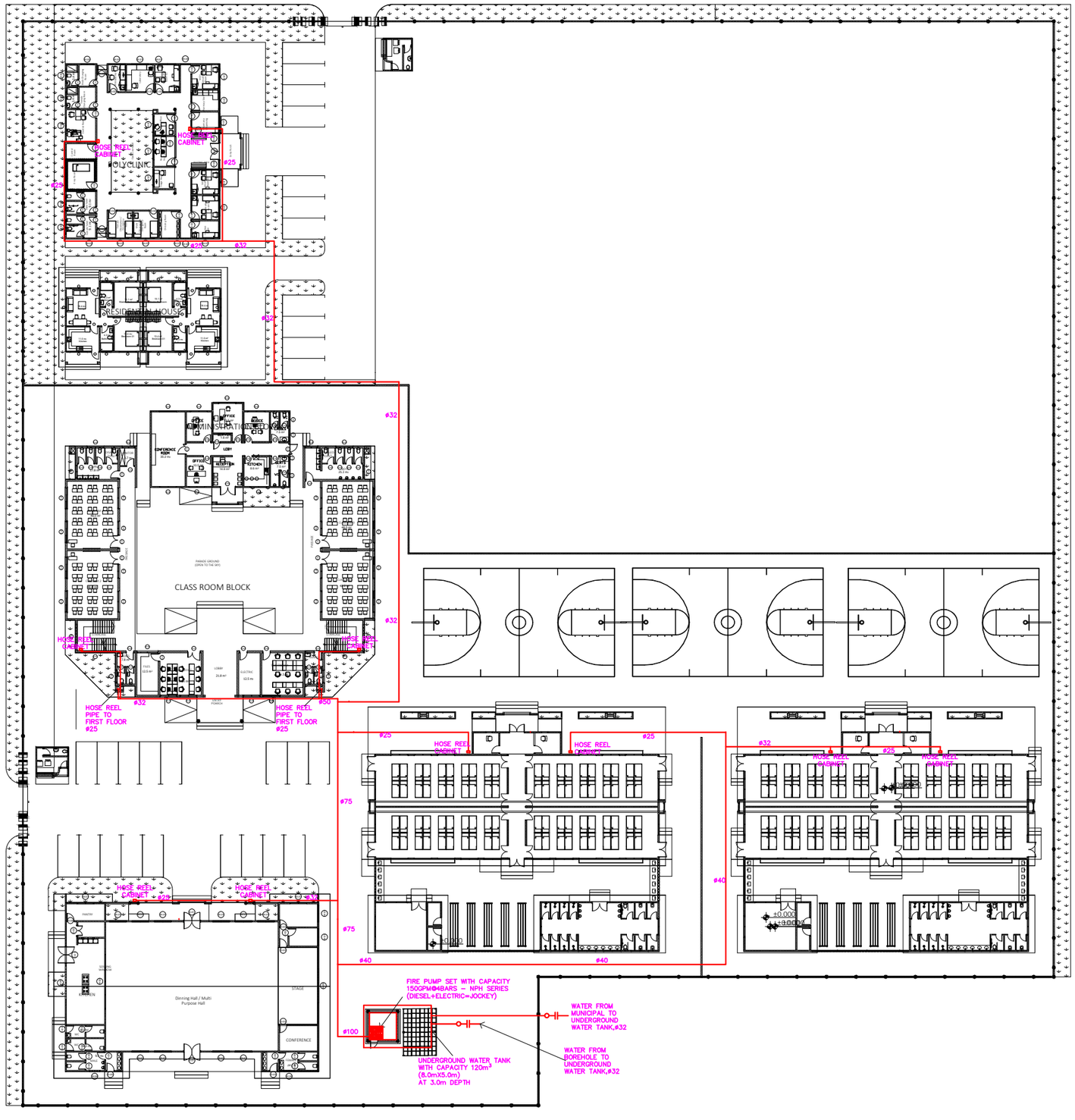

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ALL FIRE EQUIPMENTS ARE AS NAFFCO MANUFACTURER CATALOGUE

THE POSITION OF THE PORTABLE FIRE EXTINGUISHERS TO BE DETERMINED ON SITE.

CO2 - LIQUID CARBONDIOXIDE

DP - DRY POWDER

AFE - AUTOMATIC FIRE EXTINGUISHER

FIRE WATER PIPES

HOSE REEL CABINET

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
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E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

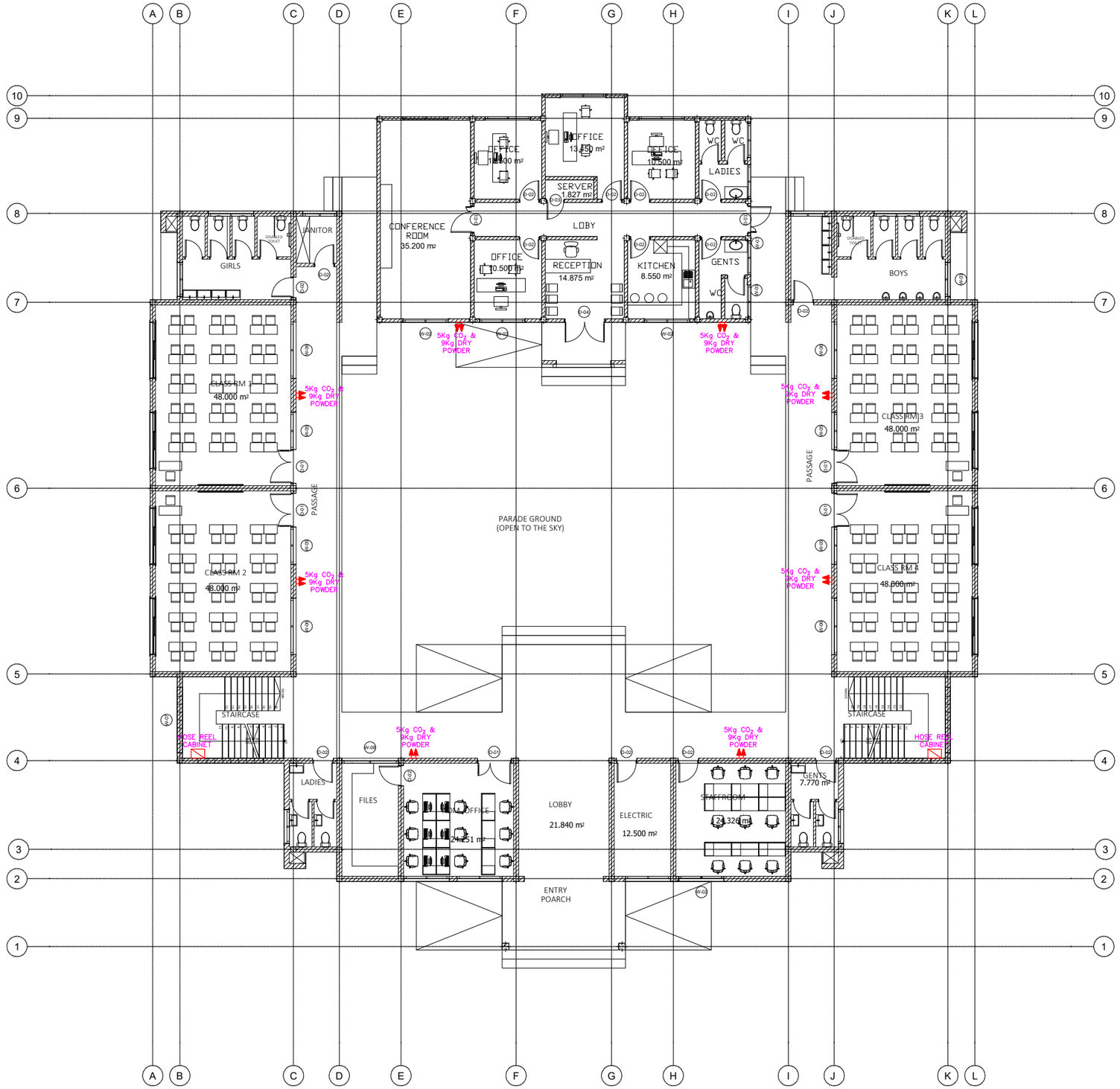
PROPOSED LAYOUT OF FIRE FIGHTING INSTALLATION SITE PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MF-102

Revision



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CO2 - LIQUID CARBONDIOXIDE

DP - DRY POWDER

AFE - AUTOMATIC FIRE EXTINGUISHER

AFE - 6Kg

6Kg CO2
5Kg DP
PORTABLE FIRE EINGUISHERS

REV	DESCRIPTIONS

Service Engineer

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Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

PROPOSED LAYOUT OF FIRE FIGHTING INSTALLATION GROUND FLOOR CLASSROOM PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

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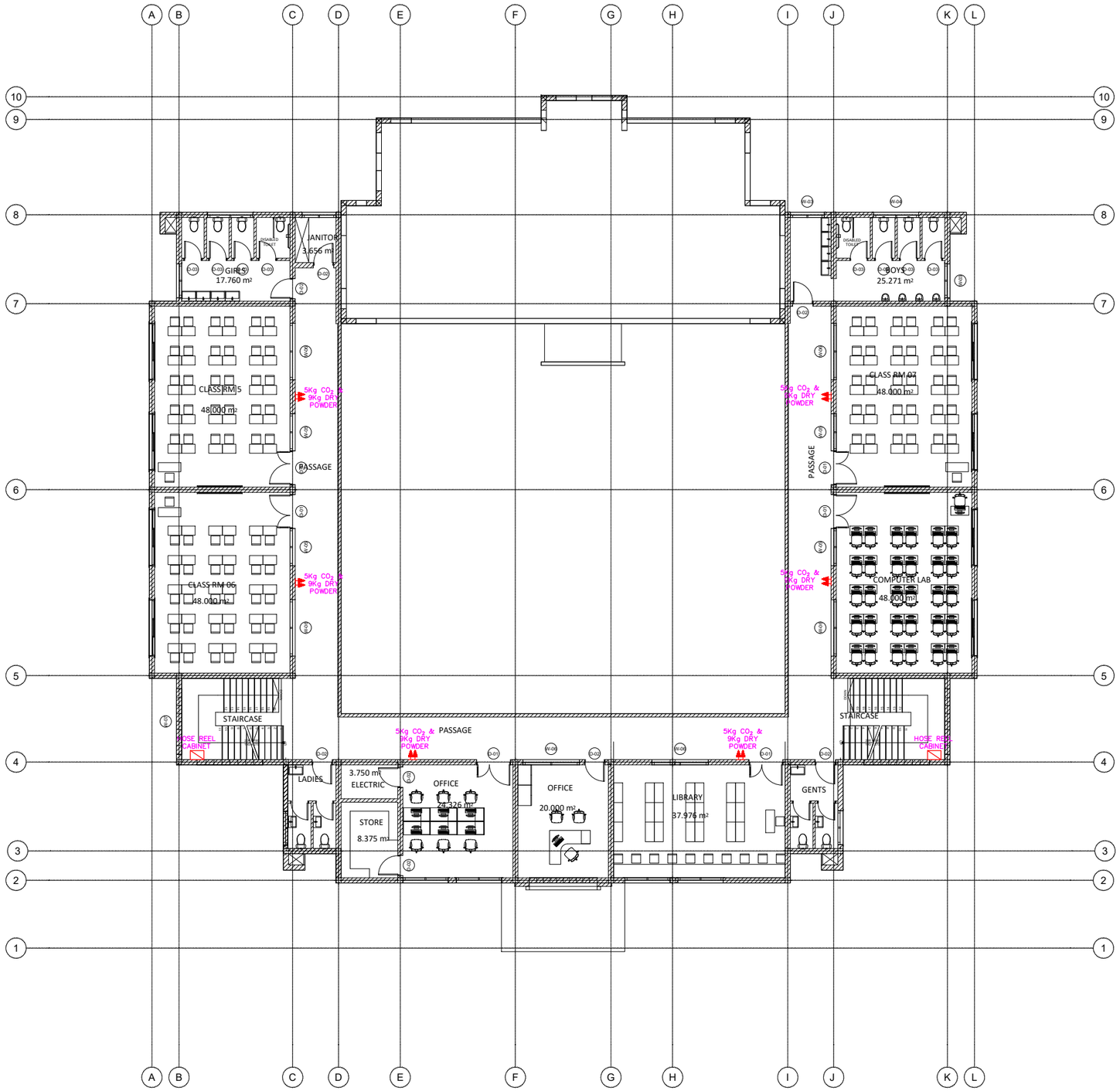

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DP - DRY POWDER

AFE - AUTOMATIC FIRE EXTINGUISHER

AFE - 6Kg

6Kg CO2
5Kg DP
PORTABLE FIRE EINGUISHERS

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Drawing title

PROPOSED LAYOUT OF FIRE FIGHTING INSTALLATION CLASSROOM FIRST FLOOR PLAN

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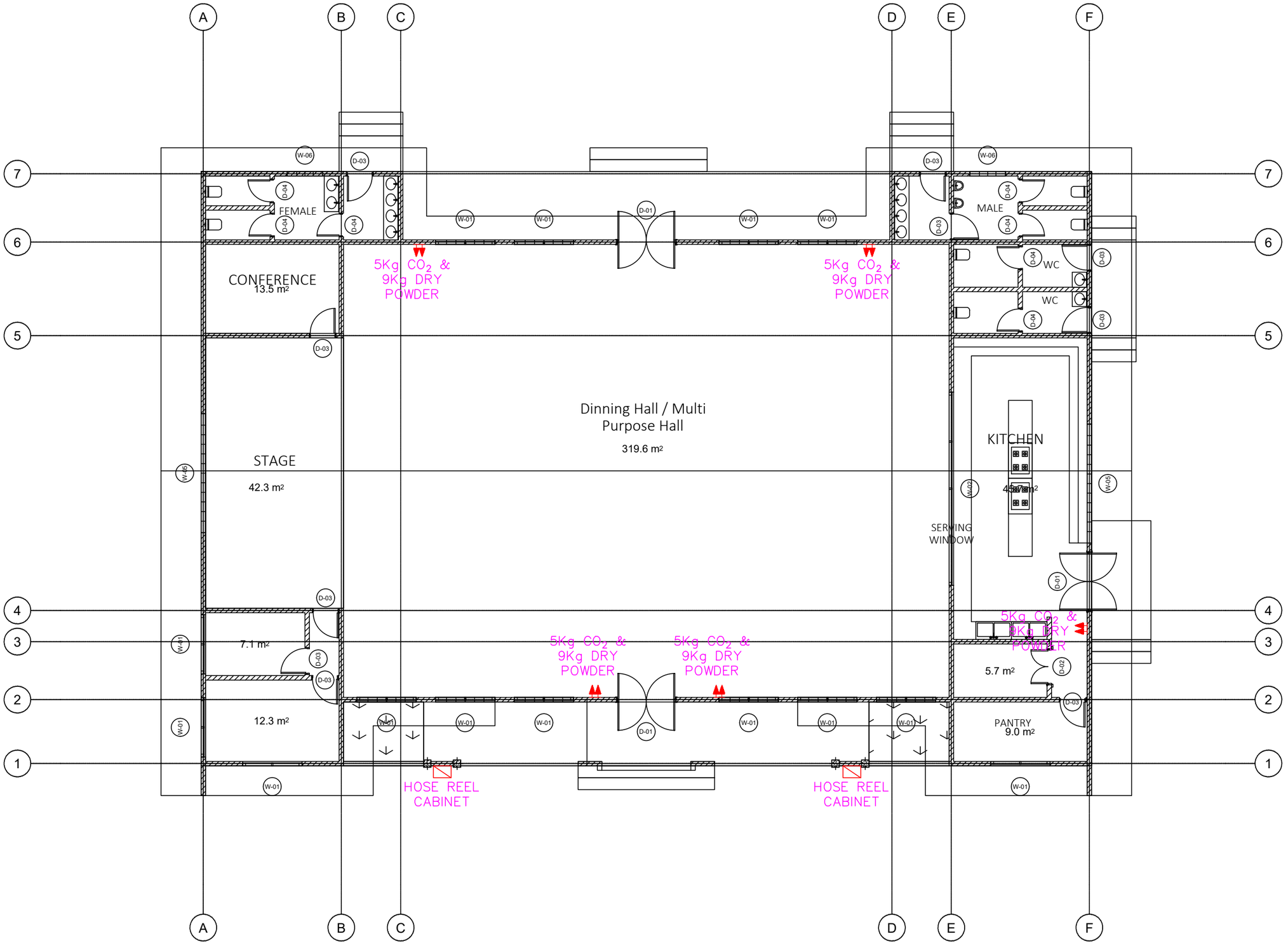

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DP - DRY POWDER

AFE - AUTOMATIC FIRE EXTINGUISHER

AFE - 6Kg

6Kg CO2
5Kg DP
PORTABLE FIRE EINGUISHERS

REV	DESCRIPTIONS

Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

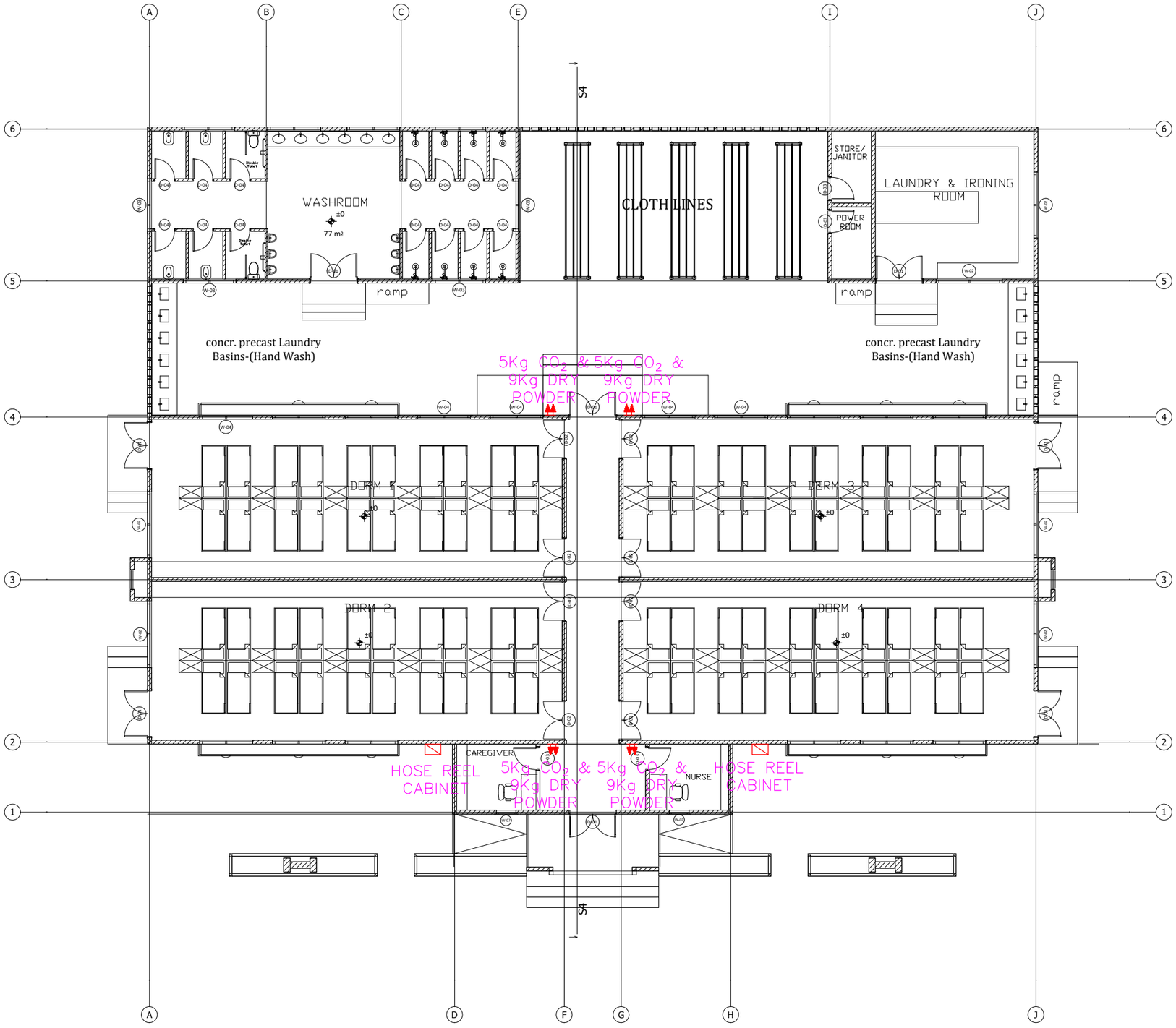
PROPOSED LAYOUT OF FIRE FIGHTING INSTALLATION DH GROUND FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MF-102

Revision



Client

THE REGISTERED TRUSTEES OF
MASJID QUBAH AND ISLAMIC CENTRE
P.O. Box 21121
Dar es salaam

Notes & Symbol legend

THE ENGINEER WILL NOT BE HELD RESPONSIBLE FOR DIMENSIONAL ERRORS IF NOT NOTIFIED AT THE TIME OF COMMENCING WORK ON SITE.

THIS DRAWING IS NOT TO BE SCALED, USE FIGURED DIMENSIONS ONLY

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ALL FIRE DRAWINGS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL DRAWINGS.

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THE POSITION OF THE PORTABLE FIRE EXTINGUISHERS TO BE DETERMINED ON SITE.

CO2 - LIQUID CARBONDIOXIDE

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Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

PROPOSED LAYOUT OF FIRE FIGHTING INSTALLATION HOSTEL GROUND FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
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Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MF-102

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DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

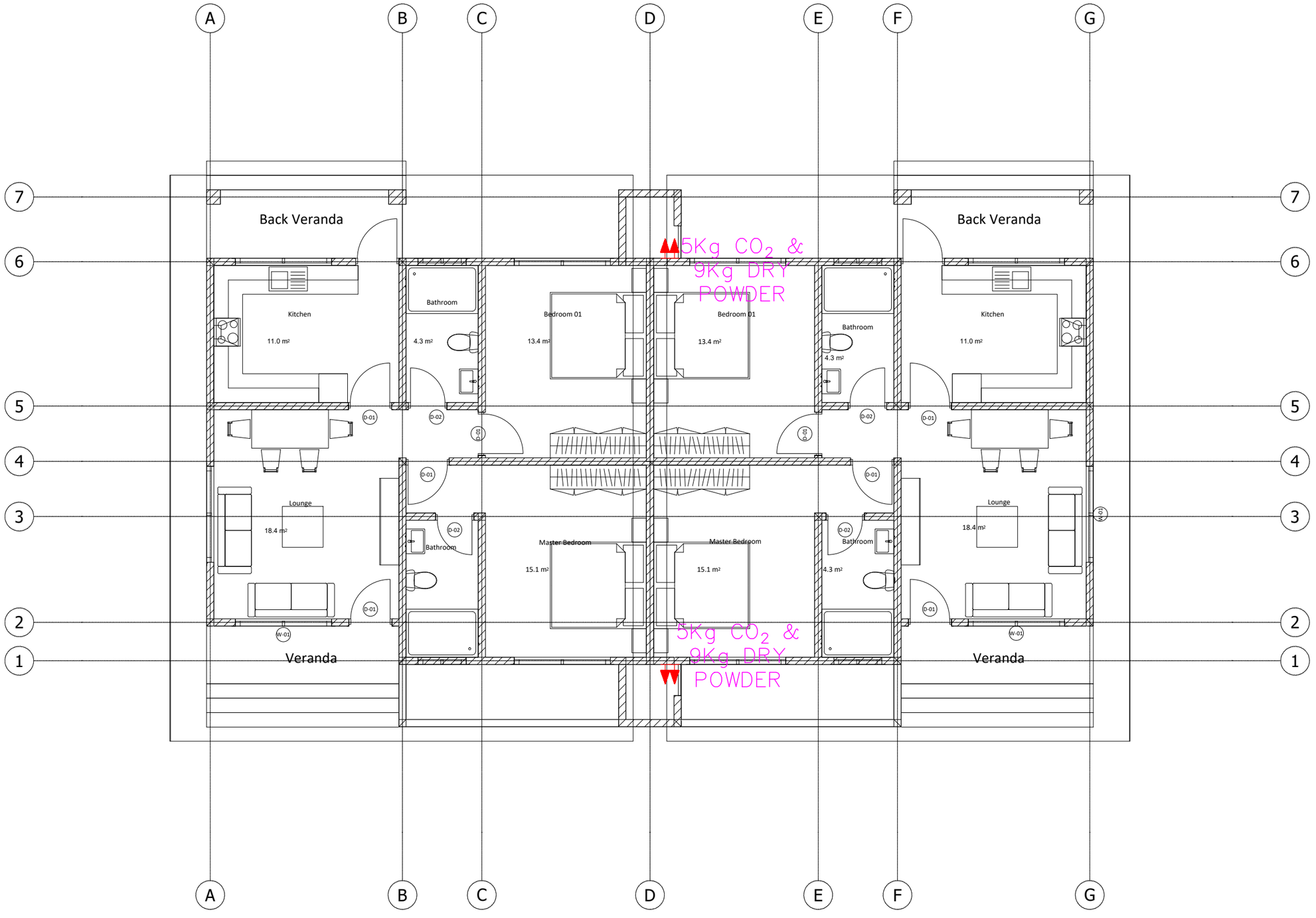
PROPOSED LAYOUT OF FIRE FIGHTING INSTALLATION POLYCLINIC GROUND FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MF-102

Revision



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DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

PROPOSED LAYOUT OF FIRE FIGHTING INSTALLATION DH GROUND FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
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NTS	P

Drawing no. 2025/TS/1089-MF-102

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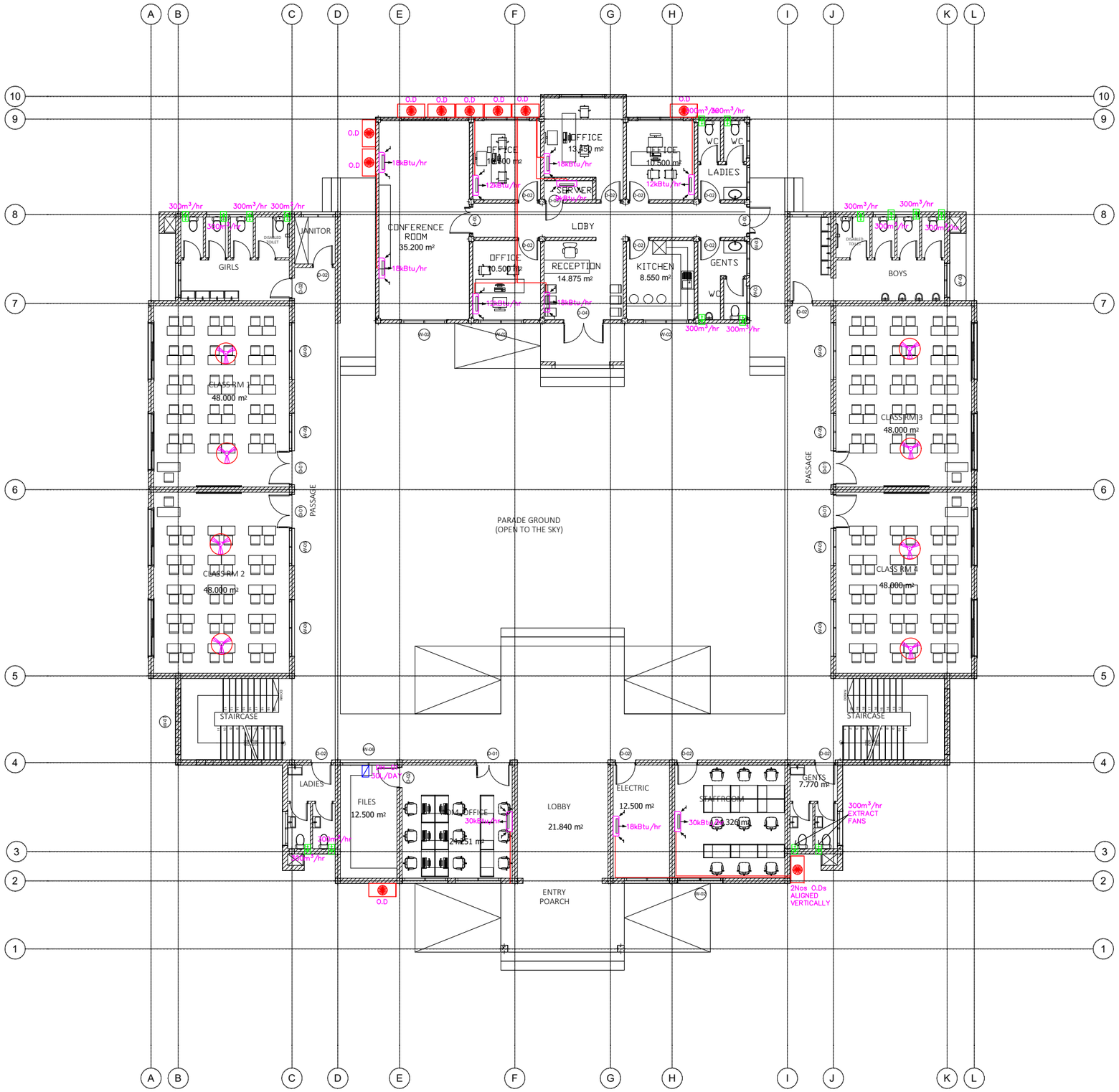

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CONDENSATE/REFREGIRANT PIPE TO BE PROPERLY INSULATED

CONDENSATE DRAIN PIPE FALL TO BE 1:100

ALL AC SHOULD BE PROTECTED WITH AUTOMATIC VOLTAGE STABILIZER (AVS)

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CONDENSATE DRAINAGE DIRECTED TO THE SEWER PIPES MUST HAVE AN U-TRAP CONNECTORS

CONDENSATE DRAINAGE DIRECTED TO OUTSIDE TO BE CHANNELED TO STORMWATER DRAINAGE

CONDENSATE PIPE

REFRIGERANT PIPE

OUTDOOR UNIT

HI-WALL UNIT

REV	DESCRIPTIONS

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CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
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Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

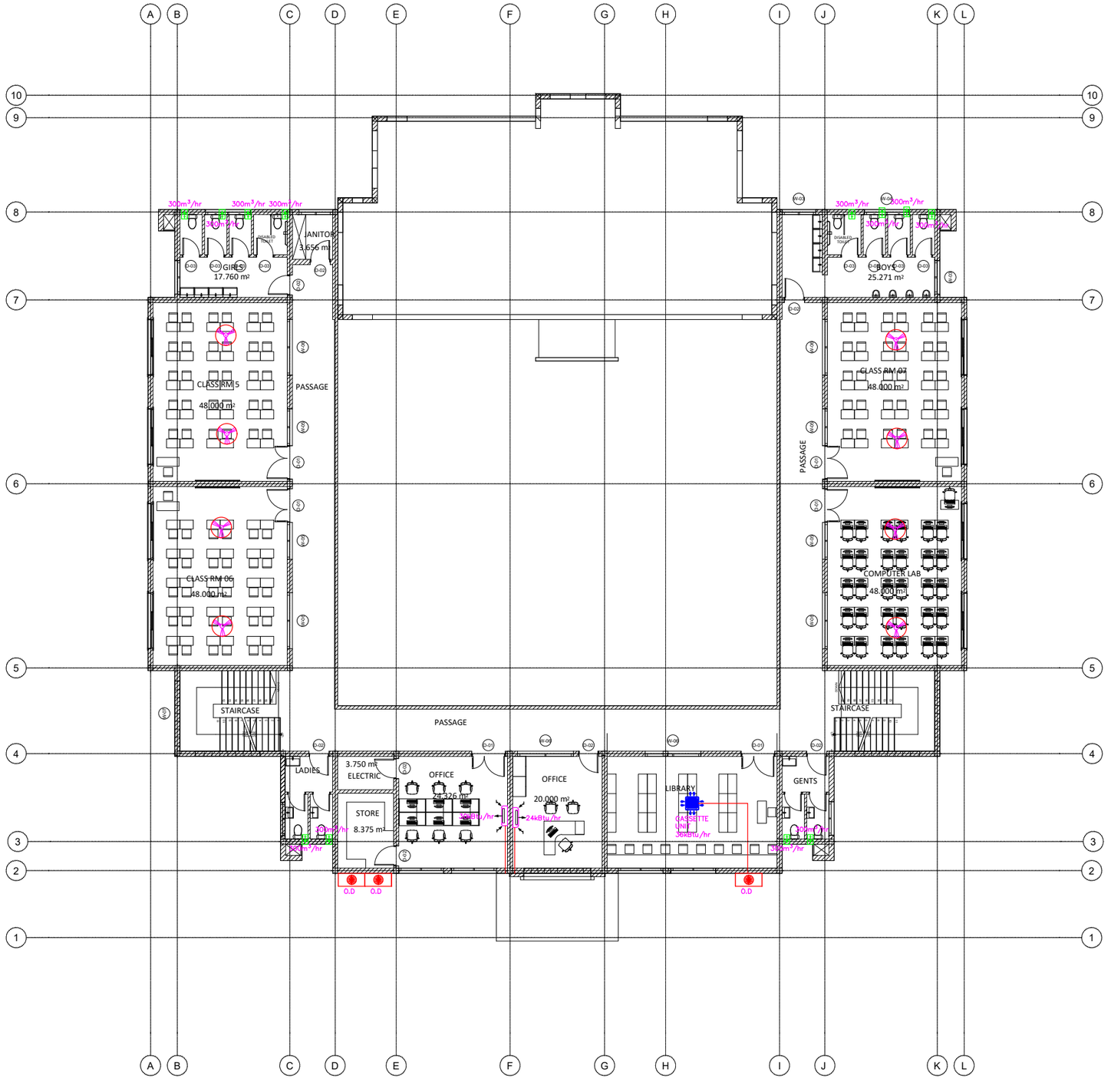
Drawing title

PROPOSED LAYOUT OF HVAC INSTALLATION GROUND FLOOR CLASSROOM PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MA-103 | Revision



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TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF
MULTI SERVICE PROJECT TO BE
BUILT ON PLOT No 777 BLOCK No 47,
AT KIJITONYAMA DAR ES SALAAM

Drawing title

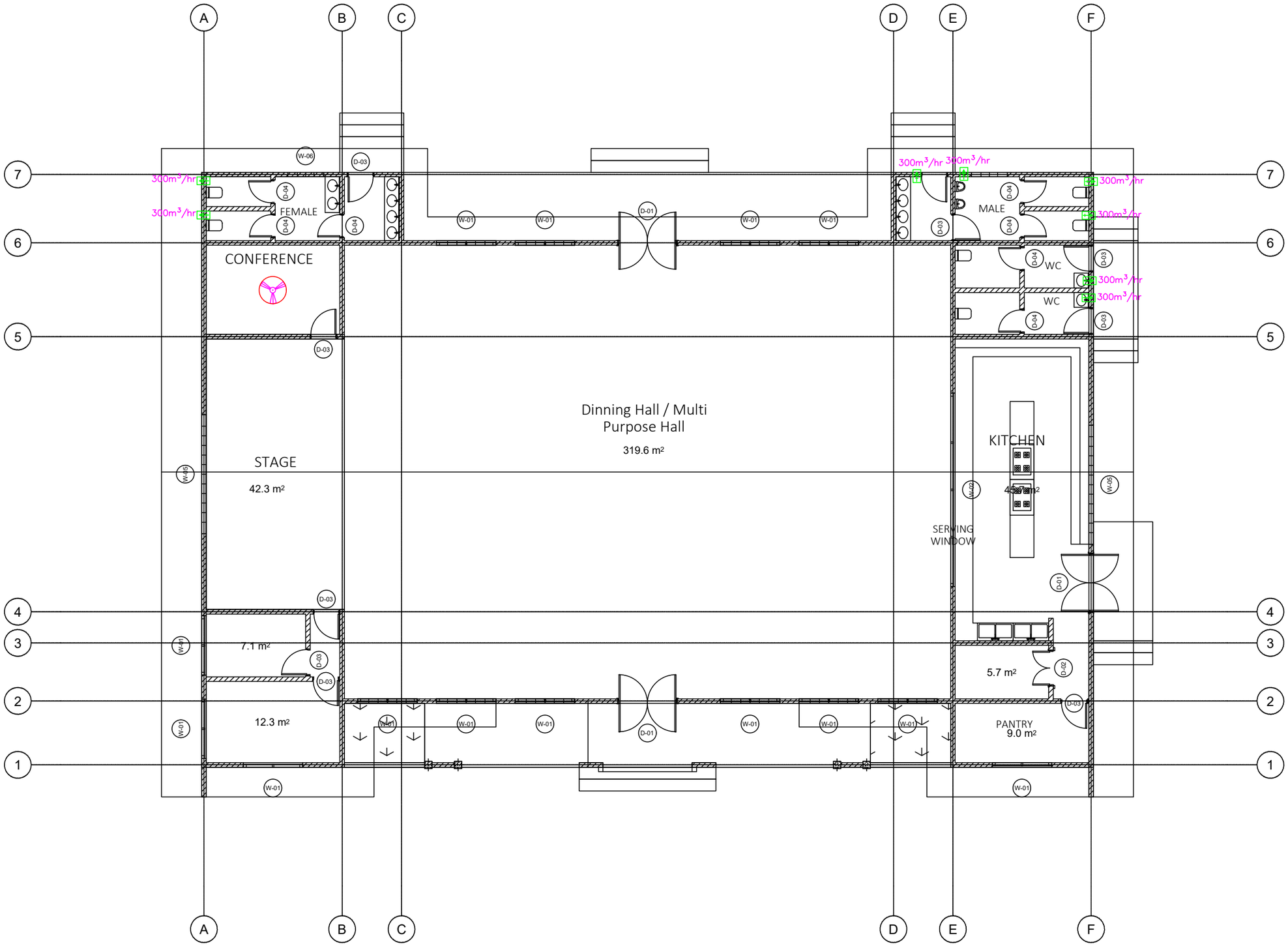
PROPOSED LAYOUT OF HVAC
INSTALLATION CLASSROOM
FIRST FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MA-103

Revision



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TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
E mail : info@tanserveengineers.co.tz

Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

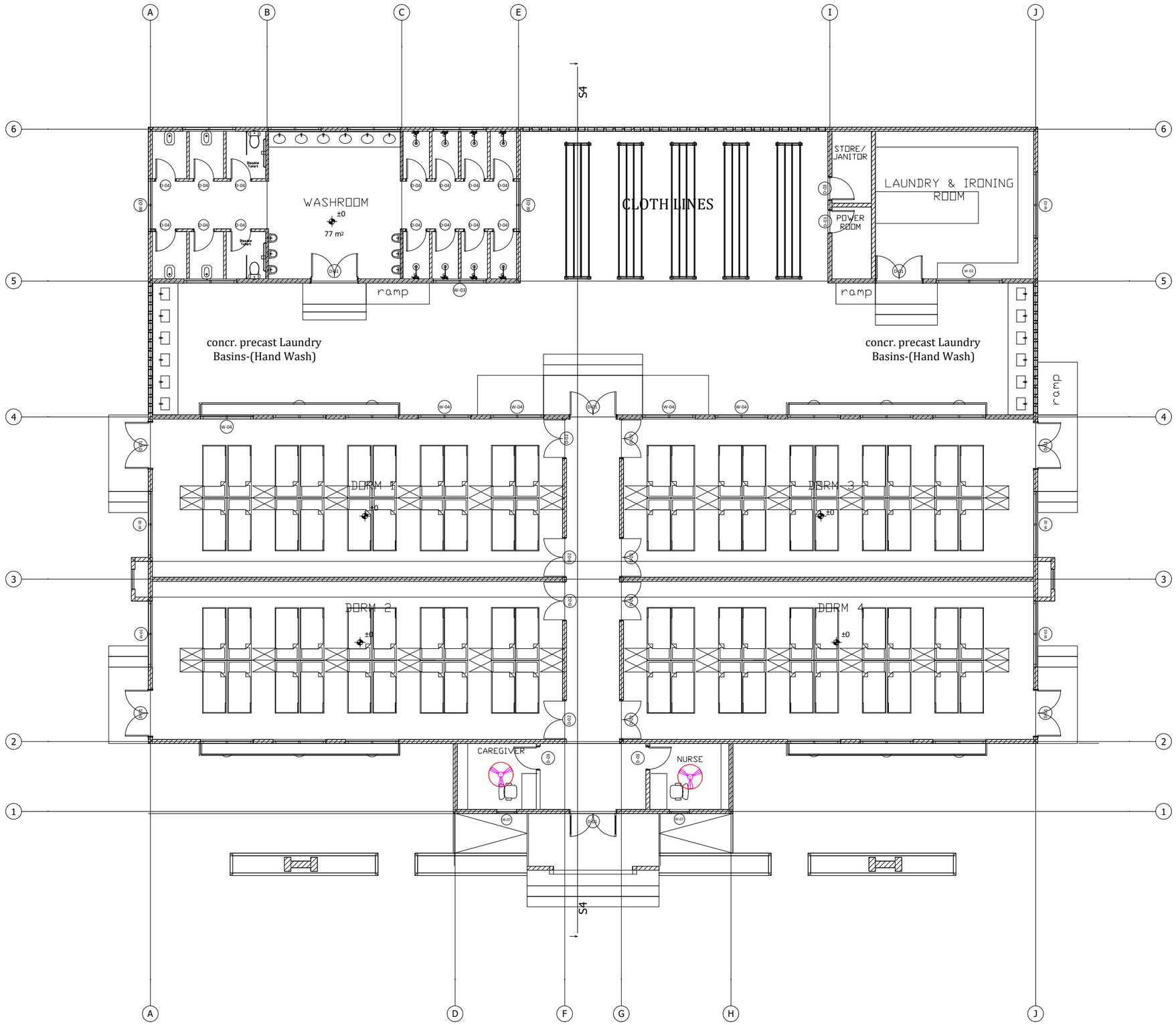
PROPOSED LAYOUT OF HVAC INSTALLATION DH GROUND FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MA-103

Revision



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Service Engineer

TANSERVE
CONSULTING ENGINEERS LTD
Electrical | Mechanical | ICT Engineers
P. O. Box 79769 Dar es Salaam, Tanzania
Mobile number : +255 748 651 047
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Architect

DXE DESIGN ARCHITECTURE ENGINEERING

Project title

PROPOSED CONSTRUCTION OF MULTI SERVICE PROJECT TO BE BUILT ON PLOT No 777 BLOCK No 47, AT KIJITONYAMA DAR ES SALAAM

Drawing title

PROPOSED LAYOUT OF HVAC INSTALLATION HOSTEL GROUND FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date	Date	Date	Date
MARCH 2025	MARCH 2025	MARCH 2025	MARCH 2025

Scale	Status
NTS	P

Drawing no. 2025/TS/1089-MA-103

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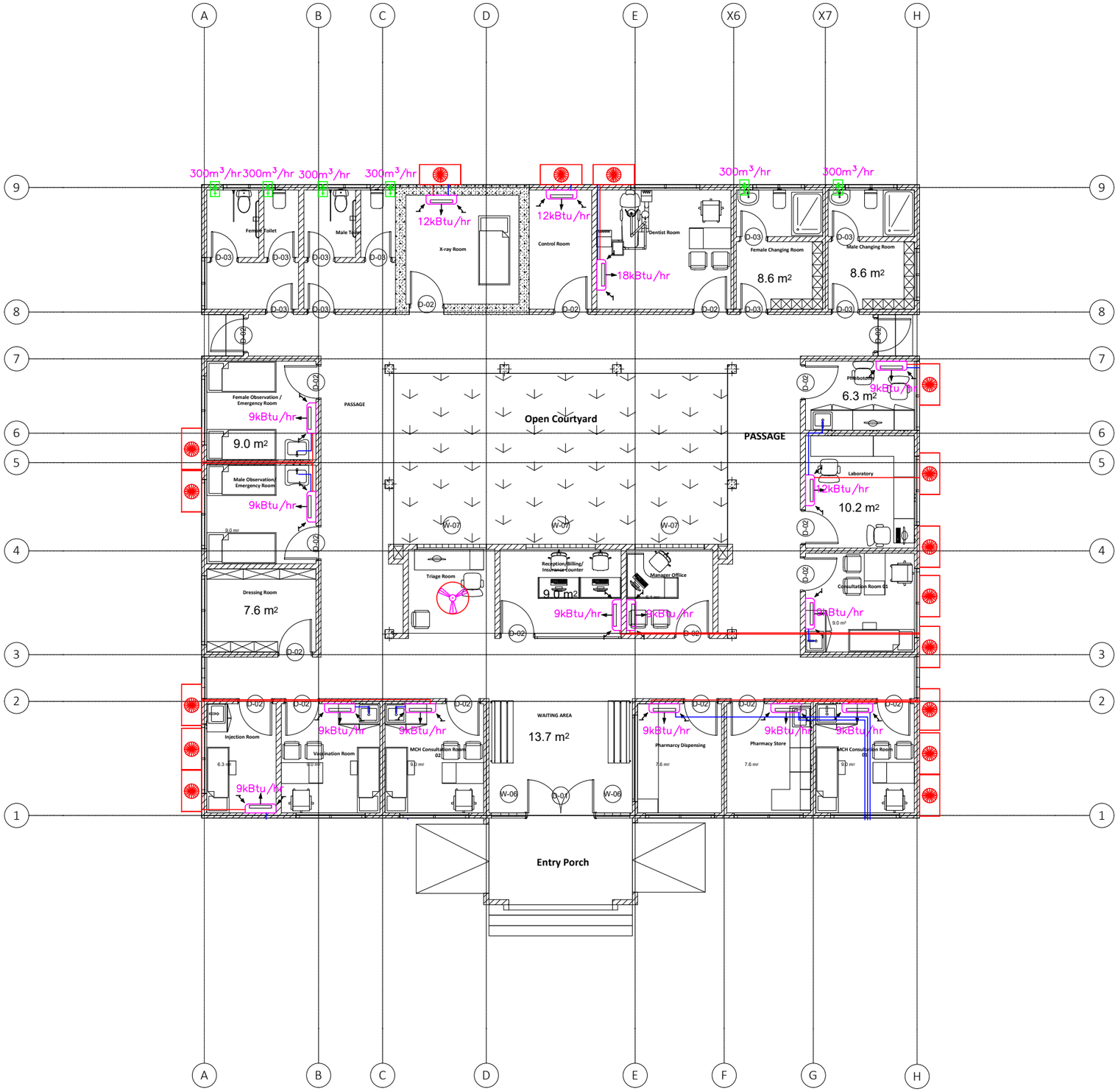

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PROPOSED CONSTRUCTION OF
MULTI SERVICE PROJECT TO BE
BUILT ON PLOT No 777 BLOCK No 47,
AT KIJITONYAMA DAR ES SALAAM

Drawing title

PROPOSED LAYOUT OF HVAC
INSTALLATION POLYCLINIC
GROUND FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
AD	NN	BB	AD
Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025	Date: MARCH 2025

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Drawing no. 2025/TS/1089-MA-103

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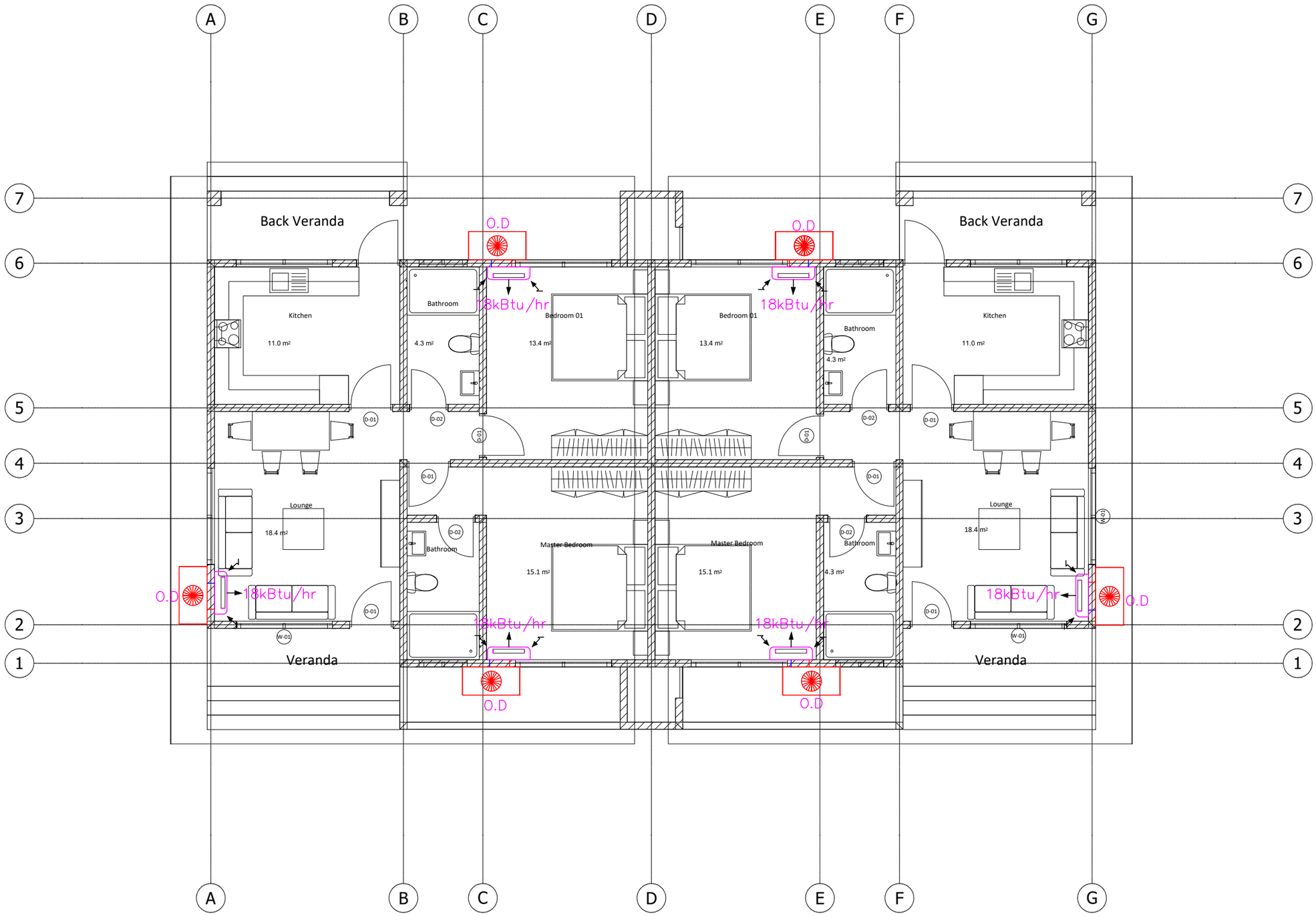

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BUILT ON PLOT No 777 BLOCK No 47,
AT KIJITONYAMA DAR ES SALAAM

Drawing title

PROPOSED LAYOUT OF HVAC
INSTALLATION DH GROUND
FLOOR PLAN

Designed by	Drawn by	Checked by	Approved by
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Date	Date	Date	Date
MARCH 2025	MARCH 2025	MARCH 2025	MARCH 2025

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