BIDDING DOCUMENT

FOR

CIVIL WORKS AND LAYING OF HDPE PIPE ALONG WITH PULLING, SPLICING AND TESTING OF OPTICAL FIBER CABLE FOR GPON NETWORK.

Bidding Document No: _____

Defence Housing Authority (DHA), Quetta

Date: February 26, 2025

PART-A

BIDDING PROCEDURE & REQUIREMENTS

SECTION I: INVITATION FOR BIDS

DEFENCE HOUSING AUTHORITY (DHA), QUETTA

Bid No. …….

CIVIL WORKS AND LAYING OF HDPE PIPE ALONG WITH PULLING, SPLICING AND TESTING OF OPTICAL FIBER CABLE FOR GPON NETWORK

Invitation For Bids

Date: February 27, 2025

1. This Invitation for Bids follows the Procurement Notice (PN) for the subject Project/Procurement which appeared on website of DHA Quetta www.dhaquetta.org

2. The Procuring Agency/Employer has reserved the funds for the CIVIL WORKS AND LAYING OF HDPE PIPE ALONG WITH PULLING, SPLICING AND TESTING OF OPTICAL FIBER CABLE FOR GPON NETWORK.

3. The Defence Housing Authority (DHA), Quetta now invites bids from eligible bidders for Civil Works and Laying of HDPE Pipe along with Pulling, Splicing and Testing of Optical Fiber Cable for GPON Network.

4. The bidding shall be conducted in line with the Single Stage Two Envelop procedure prescribed under DHA Quetta Regulations, Regulatory Guides, Procurement Guidelines or Instructions issued by the Authority (from time to time), and is open to all potential bidder.

5. All bids must be accompanied by a Bid Securing Declaration in the format provided in the Bidding Documents.

6. The bids prepared in accordance with the instructions prescribed in the bidding documents must be submitted through by Hand on or before March 14, 2025. Bids will be opened on the same day at least 30 minutes after the bid closing time.

Deputy Director
Procurement Department
DHA, Quetta
Quetta

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SECTION II: INSTRUCTION TO BIDDERS (ITBs)

A. INTRODUCTION

1. Scope of Bid	1.1	The Procuring agency/Employer (PA), as indicated in the **Bid Data Sheet** (BDS) invites Bids for the execution of Works as specified in the BDS and **Section V- Works Requirements**. The name, identification, and number of lots (contracts) of this National/ International Competitive Bidding process are specified in the BDS.
2. Source of Funds	2.1	Source of funds as referred in Bid Data Sheet.
3. Eligible Bidders	3.1	A bidder may be natural person, company or firm or public or semi-public agency of Pakistan or any foreign country**,** or any combination of them with a formal existing agreement (on Judicial Papers) in the form of a joint venture or consortium. In the case of a joint venture or consortium, all members shall be jointly and severally liable for the execution of the Contract in accordance with the terms and conditions of the Contract. The joint venture or consortium shall nominate a Lead Member as nominated in the BDS, who shall have the authority to conduct all business for and on behalf of any and all the members of the joint venture or consortium during the Bidding process, and in case of award of contract, during the execution of contract.
	3.2	The appointment of Lead Member in the joint venture or consortium shall be confirmed by submission of a valid Power of Attorney to the Procuring agency/Employer
	3.3	Verifiable copy of the agreement that forms a joint venture or consortium shall be required to be submitted as part of the Bid.
	3.4	Any bid submitted by the joint venture or consortium shall indicate the part of proposed contract to be performed by each party and each party shall be evaluated (or post qualified if required) with respect to its contribution only, and the responsibilities of each party shall not be substantially altered without prior written approval of the Procuring agency/Employer and in line with any instructions issued by the Authority.
	3.5	The invitation for bids is open to all prospective bidders subject to any provisions of incorporation or licensing by the respective national/ international incorporating agency or statutory body established for that particular trade or business.

	3.6 .	Foreign Bidders must be locally registered with the appropriate national incorporating body or the statutory body, before participating in the national/international competitive bidding with the exception of such procurements made by the foreign missions of Pakistan. For such purpose the bidder must have to initiate the registration process before the bid submission and the necessary evidence shall be submitted to the Procuring agency/Employer along with their bid, however, the final award will be subject to the complete registration process.
	3.7	A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidders may be considered to have a conflict of interest with one or more parties in this Bidding process, if they: a) are associated or have been associated in the past, directly or indirectly with a firm or any of its affiliates which have been engaged by the Procuring agency/Employer to provide consulting services for the preparation of design or technical specifications of the works that are the subject of the bid; or b) any of its affiliates has been hired (or is proposed to be hired) by the Procuring agency/Employer as Engineer for the Contract implementation; or c) The works to be executed are resulting from or directly related to consulting services for the preparation or implementation of the project that the bidder provided or were provided by any affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm; d) have controlling shareholders in common; or e) receive or have received any direct or indirect subsidy from any of them; or f) have the same legal representative for purposes of this Bid; or g) have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another bidder, or influence the decisions of the Procuring agency/Employer regarding this Bidding process; or h) Submit more than one bid in this bidding process.

	3.8	A Bidder may be ineligible if – (a) he is declared bankrupt or, in the case of company or firm, insolvent; (b) payments in favor of the bidder is suspended in accordance with the judgment of a court of law other than a judgment declaring bankruptcy and resulting (in accordance with the national laws) in the total or partial loss of the right to administer and dispose of its property; (c) legal proceedings are instituted against such bidder involving an order suspending payments and which may result, in accordance with the national laws, in a declaration of bankruptcy or in any other situation entailing the total or partial loss of the right to administer and dispose of the property; (d) the bidder is convicted, by a final judgment of a Court of Law or relevant Professional Statuary Body, of any offence involving professional conduct; (e) The bidder is debarred/ blacklisted by a national level Procuring agency/Employer and hence debarred due to involvement in corrupt and fraudulent practices, or performance failure or due to breach of bid securing declaration. (f) The bidder is blacklisted or debarred by a foreign country, international organization, or other foreign institutions for the period defined by them.
	3.9	Bidders shall provide to the Procuring agency/Employer evidence of their eligibility, proof of compliance with the necessary legal requirements to carry out the contract effectively.
	3.10	Bidders shall provide such evidence of their continued eligibility to the satisfaction of the Procuring agency/Employer, as the Procuring agency/Employer shall reasonably request.
	3.11	Bidders shall submit proposal relating to the nature, conditions and modalities of sub-contracting wherever the sub-contracting of any elements of the contract is envisaged.

4. Eligible Material and Equipment	4.1	All the material and equipment to be mobilized under the contract shall have their origin in eligible source countries, and all expenditures made under the contract will be limited to such materials and equipment. For this purpose, ineligible countries are stated in the section-IV titled as "Eligible Countries".
	4.2	For purposes of this Clause, "origin" means the place where the material, equipment is produced, manufactured, or processed, or through manufacture, procession, or assembly, another commercially recognized article results that differs substantially in its basic characteristics from its imported components or the place from where the services are/to be supplied.
	4.3	The nationality of the bidder shall not determine the origin of the material and equipment.
	4.4	To establish the eligibility of the material and equipment, Bidders shall fill the country-of-origin declarations included in the Form of Bid.
5. One Bid per Bidder	5.1	A bidder shall submit only one bid, in the same bidding process, either individually as a bidder or as a member in a joint venture or any similar arrangement.
	5.2	No bidder can be a sub-contractor while submitting a bid individually or as a member of a joint venture in the same bidding process.

6. Cost of Bidding	6.1	The Bidder shall bear all costs associated with the preparation and submission of its bid, and the Procuring agency/Employer shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
B. BIDDING DOCUMENTS		
7. Contents of Bidding Documents	7.1	The scope of Works, bidding procedures, and terms and conditions of the contract are prescribed in the bidding documents. In addition to the Invitation for Bids, the bidding documents which should be read in conjunction with any addenda issued in accordance with **ITB 9.2** include: **Section I -**Invitation for Bids **Section II** Instructions to Bidders (ITBs) **Section III** Bid Data Sheet (BDS) **Section IV** Eligible Countries **Section V** Works Requirements Technical Specifications & Schedule of Requirements **Section VI** Standard Bidding Forms
	7.2	The number of copies to be completed and submitted with the Bid is specified in the **BDS.**
	7.3	The Procuring agency/Employer is not responsible for the completeness of the bidding documents and their addenda, if they were not obtained directly from the Procuring agency/Employer or the signed pdf version downloaded from the website of the Procuring agency/Employer or the Authority's website or e-Procurement System as the case may be. However, procuring agency/Employer shall place both the pdf and editable version of the same on its website to facilitate the bidder for filling the standard bidding forms.
	7.4	The bidder is expected to examine all instructions, forms, specifications, terms and conditions prescribed in the bidding documents. Failure to furnish all the information required in the bidding documents will be at the bidder's risk and may result in the rejection of his bid.

8. Clarification of Bidding Document, Pre-bid Meeting	8.1	A prospective bidder requiring any clarification of the bidding document may notify the Procuring agency/Employer in writing or in electronic form that provides record of the contents of communication at the Procuring agency/Employer's address indicated in the **BDS.**
	8.2	The Procuring agency/Employer will within three (3) working days after receiving the request for clarification, respond in writing or in electronic form to any request for clarification provided that such request is received not later than three (03) days prior to the deadline for the submission of Bids as prescribed in **ITB 24.1.** However, this clause shall not apply in case of alternate methods of procurement.
	8.3	Copies of the Procuring agency/Employer's response will be forwarded to all identified prospective bidders through an identified source of communication, including a description of the inquiry, but without specifying its source. In case of downloading of the bidding documents from the website of Procuring agency/Employer, the response of all such queries will also be available on the same platform available at the website.
	8.4	Should the Procuring agency/Employer deem it necessary to amend the bidding documents as a result of a clarification, it shall do so following the procedure as prescribed under **ITB 09.**
	8.5	If indicated **in the BDS**, the bidder's designated representative is invited at the bidder's cost to attend a pre-bid meeting at the place, date and time mentioned in the **BDS**. During this pre-bid meeting, prospective bidders may request clarification of the schedule of requirement, the evaluation criteria or any other aspects of the bidding documents.
	8.6	Minutes of the pre-bid meeting, if applicable, including the text of the questions asked by bidders, including those during the meeting (without identifying the source) and the responses given, together with any responses prepared after the meeting will be transmitted promptly to all prospective bidders who have obtained the bidding documents. Any modification to the bidding documents that may become necessary as a result of the pre-bid meeting shall be made by the Procuring agency/Employer exclusively through the use of an Addendum pursuant to **ITB 9.** Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.

	8.7	The bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the bidder's own expense.
	8.8	The bidder and any of its authorized personnel will be granted permission by the Procuring agency/Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the bidder and its personnel will release and indemnify the Procuring agency/Employer from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
9. Amendment of Bidding Documents	9.1	Before the deadline for submission of bids, the Procuring agency/Employer for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder or pre-bid meeting may modify the bidding documents by issuing addenda.
	9.2	Any addendum issued including the notice of any extension of the deadline shall be part of the bidding documents pursuant to **ITB 7.1** and shall be communicated in a timely manner and on equal opportunity basis. Where notification of such change, addition, modification or deletion becomes essential, such notification shall be made in a manner similar to the original advertisement.
	9.3	To give prospective bidders reasonable time in which to take an addendum/corrigendum into account in preparing their bids, the Procuring agency/Employer may, at its discretion, extend the deadline for the submission of bids:

C. PREPARATION OF BIDS

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

		printed literature furnished by the bidder may be in another language provided they are accompanied by an accurate translation of the relevant pages in the English language unless specified in the **BDS**, in which case, for purposes of interpretation of the bidder, the translation shall govern.
11. Documents Establishing Eligibility of Material, Equipment and Works, their Conformity to Bidding Documents	11.1	The bid prepared by the bidder shall constitute the following components: - a) Documentary evidence established in accordance with **ITB 11** that the material, equipment and services to be provided by the Bidder are eligible material, equipment and services, and conform to the Bidding Documents; b) Documentary evidence established in accordance with **ITB 12** that the bidder has been authorized to carry out the Construction works; c) Documentary evidence established in accordance with **ITB 12** that the bidder is eligible and/or qualified for the subject bidding process; d) Form of Bid and Bid Prices completed in accordance with **ITB 14 and 15;** **e)** Completed schedules as required, including priced Bill of Quantities in accordance with **ITB 13 & 15.** **f)** Technical Proposal completed in all aspects in accordance with **ITB-17**. g) Bid security or Bid Securing Declaration furnished in accordance with **ITB 19;** h) Alternative bids, if permissible, in accordance with **ITB 20;** i) Duly Notarized Power of Attorney authorizing the signatory of the Bidder to submit the bid**;** and j) Any other document required in the **BDS**.
	11.2	In addition to the requirements, bids submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful bid shall be signed by all members and submitted with the bid, together with a copy of the proposed Agreement.
	11.3	The bidder shall furnish, as part of its bid, all those documents establishing the eligibility in conformity to the terms and conditions specified in the bidding documents for all material, equipment and works which the bidder proposes to execute.

	11.4	The documentary evidence of conformity of the material, equipment and works to the Bidding Documents may be in the form of literature, drawings, and data, and shall consist of: a) a detailed description of the work methodology, approach, schedule and resources to be mobilized at site; b) an item-by-item commentary on the Procuring agency/Employer's Technical Specifications demonstrating substantial responsiveness of the material, equipment and works to those specifications, or a statement of deviations and exceptions to the provisions of the Technical Specifications;
	11.5	The required documents and other accompanying documents must be in English. In case any other language than English is used the pertinent translation into English shall be attached to the original version.
12. Documents Establishing Eligibility and Qualification of the Bidder	12.1	The bidder shall furnish, as part of its bid, all those documents establishing the bidder's eligibility to participate in the bidding process and/or its qualification to perform the contract if its bid is accepted.
	12.2	The documentary evidence of the bidder's eligibility to bid shall establish to the satisfaction of the Procuring agency/Employer that the bidder, at the time of submission of its bid, is from an eligible country as defined in Section-IV titled as "Eligible Countries".
	12.3	The documentary evidence of the bidder's qualification to perform the contract if its bid is accepted shall establish to the satisfaction of Procuring agency/Employer that: a) The bidder has the financial and technical capability necessary to perform the Contract, meets the qualification criteria specified in Section-V, Evaluation and Qualification Criteria and **BDS**. b) In the case of a bidder not doing business within Pakistan, the bidder is or will be (if awarded the contract) represented by a local bidder (Joint Venture) in accordance with the PEC works bylaws, and in case of award of works such foreign firm is required to participate in the execution of works to carry out its obligations as prescribed in the Conditions of Contract and /or Technical Specifications. c) That the bidder meets the qualification criteria listed in Section-V, Evaluation and Qualification Criteria and **BDS.**

13. Letter of Bid and Schedules	13.1	The Letter of Bid (Technical or Financial as the case may be) and Schedules, including the Bill of Quantities, shall be prepared using the relevant forms furnished in Standard Bid Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under **ITB 22.** All blank spaces shall be filled in with the information requested.
14. Letter of Bid	14.1	The bidder shall fill the Letter of Bid (Technical or Financial as the case may be) furnished in the bidding documents. The Standard Bid Forms must be completed without any alterations to its format and no substitute shall be accepted.
15. Bid Prices	15.1	The bid prices quoted by the bidder in the Standard bid Forms, Bill of Quantities and in the Price Schedules shall conform to the requirements specified below or exclusively mentioned hereafter in the bidding documents.
	15.2	The bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. If a Price Schedule shows items listed but not priced, their prices shall be construed to be included in the prices of other items in the Bill of Quantities and will not be paid for separately by the Procuring agency/Employer.
	15.3	Items not listed in the Price Schedule shall be assumed not to be included in the bid, and provided that the bid is still substantially responsive in their absence or due to their nominal nature, the corresponding average price of the respective item(s) of the remaining substantially responsive bidder(s) shall be construed to be the price of those missing item(s): Provided that: a) where there is only one (substantially) responsive bidder, or b) where there is provision for alternate proposals and the respective items are not listed in the other bids, The Procuring agency/Employer may fix the price of missing items in accordance with market survey, and the same shall be considered as final price.
	15.4	The Bid price to be quoted in the Form of Bid in accordance with **ITB 15.1** shall be the total price of the bid.
	15.5	Unless otherwise specified in the **BDS** and the Contract, the rates and prices quoted by the bidder are subject to adjustment during

		the performance of the Contract in accordance with the provisions of the Conditions of Contract.
	15.6	If so specified in **ITB 1.1**, bids may be invited for individual lots (contracts) or for any combination of lots (packages).
	15.7	Prices quoted by the Bidder shall be fixed during the bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable price will be treated as non-responsive and shall be rejected, pursuant to **ITB 30,** unless otherwise price adjustment is permissible under Conditions of the Contract.
	15.8	All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date twenty-eight (28) days prior to the deadline for submission of bids, shall be included in the rates and prices and the total bid price submitted by the bidder.
16. Currencies of Bid and Payment	16.1	The currency(ies) of the bid and the currency(ies) of payments shall be as specified in the **BDS.**
	16.2	For the purposes of comparison of bids quoted in different currencies, the price shall be converted into a single currency specified in the bidding documents. The rate of exchange shall be the selling rate, prevailing on the date of opening of (financial part of) bids specified in the bidding documents, as notified by the State Bank of Pakistan on that day.
	16.3	Bidders shall indicate details of their expected foreign currency requirements in the Bid, if prescribed in the BDS.
	16.4	Bidders may be required by the Procuring agency/Employer to clarify their foreign currency requirements, if prescribed in the BDS and to substantiate that the amounts included in Lump Sum and in the **SCC** are reasonable and responsive to **ITB 16.1**.
17. Documents Comprising the Technical Proposal	17.1	The bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in **Section IV – Standard Bid Forms**, in sufficient detail to demonstrate the adequacy of the bidder's proposal to meet the work requirements and the completion time.
18. Bid Validity Period	18.1	Bids shall remain valid for the period specified in the **BDS** after the bid submission deadline prescribed by the Procuring agency/Employer. A bid valid for a shorter period shall be rejected by the Procuring agency/Employer as non-responsive**.**

		The period of bid validity will be determined from the complementary bid securing instrument i.e. the expiry period of bid security or bid securing declaration as the case may be.
	18.2	Under exceptional circumstances, prior to the expiration of the initial bid validity period, the Procuring agency/Employer may request the bidders' consent to an extension of the period of validity of their bids only once, for the period not more than the period of initial bid validity. The request and the bidders' responses shall be made in writing or in electronic forms that provide record of the content of communication. The Bid Security provided under **ITB 19** shall also be extended 28 days beyond the deadline of extended bid validity period. A bidder may refuse the request for the extension of his bid without forfeiting his bid security or causing to be executed his Bid Securing Declaration. A bidder agreeing to the request will not be required nor permitted to modify its bid, but will be required to extend the validity of its Bid Security or Bid Securing Declaration for the period of the extension, and in compliance with **ITB 19** in all respects.
19. Bid Security or Bid Securing Declaration	19.1	Pursuant to **ITB 11.1** unless otherwise specified in the **BDS**, the bidder shall furnish as part of its bid, a Bid Security in form of fixed amount not exceeding five percent of the estimated value of procurement determined by the Procuring agency/Employer and in the amount and currency specified in the **BDS** or Bid Securing Declaration as specified in the **BDS** in the format provided in **Section VI (Standard Bidding Forms)**. In case Procuring agency/Employer is inviting bids in lots / packages, the bidder shall be required to submit his bid security against the respective lot/ package for which he is submitting his bid, which shall not exceed five percent of the estimated value of that particular lot/ package.
	19.2	The Bid Security or Bid Securing Declaration is required to protect the Procuring agency/Employer against the risk of Bidder's conduct before award of the contract to the most advantageous bidder which would warrant the security's forfeiture, pursuant to **ITB 19.9.**
	19.3	The Bid Security shall be denominated in the local currency or in another freely convertible currency, and it shall be in the form specified in the **BDS** which shall be in any of the following:

		a) A bank guarantee, an irrevocable letter of credit issued by a Scheduled bank in the form provided in the Bidding Documents or another form acceptable to the Procuring agency/Employer and valid for twenty-eight (28) days beyond the end of the validity of the Bid. This shall also apply if the period for Bid Validity is extended. In either case, the form must include the complete name of the bidder; b) A cashier's or certified cheque; or c) Another security as indicated in the **BDS.**
	19.4	The Bid Security or Bid Securing Declaration shall be in accordance with the Form of the Bid Security or Bid Securing Declaration included in **Section VI (Standard Bidding Forms)** or another form approved by the Procuring agency/Employer prior to the bid submission.
	19.5	The Bid Security shall be payable promptly upon written demand by the Procuring agency/Employer in case any of the conditions listed in **ITB 19.9** are invoked.
	19.6	Any bid not accompanied by a Bid Security or Bid Securing Declaration in accordance with **ITB 19.1 or 19.3** shall be rejected by the Procuring agency/Employer and shall be declared as non-responsive bid, pursuant to **ITB 30**.
	19.7	Unsuccessful bidders' Bid Security will be discharged or returned as promptly as possible, however in no case later than thirty (30) days after the expiration of the period of Bid Validity prescribed by the Procuring agency/Employer pursuant to **ITB 18**. The Procuring agency/Employer shall make no claim to the amount of the Bid Security, and shall promptly return the Bid Security document, after whichever of the following that occurs earliest: (a) The expiry of the Bid Security; (b) The entry into force of a procurement contract and the provision of a performance security (or guarantee), for the performance of the contract if such a security (or guarantee), is required by the Biding documents; (c) The rejection by the Procuring agency/Employer of all Bids; (d) The withdrawal of the bid prior to the deadline for the submission of bids, unless the biding documents stipulate that no such withdrawal is permitted.

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

		conforming to the basic technical requirements (without altering the bid price) shall be considered by the Procuring agency/Employer.
21. Withdrawal of Bids	21.1	Before bid submission deadline, any bidder may withdraw, substitute, or modify its bid after it has been submitted by sending a written notice, duly signed by an authorized representative, and the corresponding must accompany the respective written notice.
	21.2	Bids requested to be withdrawn in accordance with **ITB 21.1** shall be returned unopened to the bidders.
22. Format and Signing of Bid	22.1	The Bidder shall prepare an original and the number of copies of the bid as indicated in the **BDS**, clearly marking each **"ORIGINAL"** and **"COPY"** as appropriate. In the event of any discrepancy between them, the original shall prevail:
	22.2	The original and the copy (ies) of the bid shall be typed or written in indelible ink and shall be signed by the bidder or a person or persons duly authorized to sign on behalf of the bidder. This authorization shall consist of a written confirmation as specified in the **BDS** and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid, except for un-amended printed literature, shall be initialed by the person or persons signing the bid.
	22.3	Any interlineations, erasures, or overwriting shall be valid only if they are signed by the person(s) authorized for signing the Bid.

D. SUBMISSION OF BIDS

23. Sealing and Marking of Bids	23.1	In case of Single Stage One Envelope Procedure, the bidder shall seal the original and each copy of the bid in separate envelopes, duly marking the envelopes as **"ORIGINAL"** and **"COPY".** The envelopes shall then be sealed in an outer envelope securely sealed in such a manner that opening and resealing cannot be achieved undetected. **Note:** *The envelopes shall be sealed and marked in accordance with the bidding procedure adopted as referred in Rule-36 of Public Procurement Rules,2004.*
	23.2	The inner and outer envelopes shall: a) be addressed to the Procuring agency/Employer at the address given in the **BDS**; and

		b) bear the title of the subject procurement or project name, as the case may be as indicated in the **BDS**, the Invitation for Bids (ITB) title and number indicated in the **BDS**, and a statement: **"DO NOT OPEN BEFORE",** to be completed with the time and the date specified in the **BDS**, pursuant to **ITB 24.1.**
	23.3	In case of Single Stage Two Envelope Procedure, The Bid shall comprise two envelopes submitted simultaneously, one called the Technical Proposal and the other Financial Proposal. Both envelopes to be enclosed together in an outer single envelope called the Bid. Each Bidder shall submit his bid as under: a) Bidder shall submit his **TECHNICAL PROPOSAL** and **FINANCIAL PROPOSAL** in separate inner envelopes and enclosed in a single outer envelope. b) **ORIGINAL** and each copy of the Bid shall be separately sealed and put in separate envelopes and marked as such. c) The envelopes containing the **ORIGINAL** and copies will be put in one sealed envelope and addressed / identified as given in **ITB 23.2.**
	23.4	The inner and outer envelopes shall: a) be addressed to the Procuring agency/Employer at the address provided in the **BDS**; b) bear the name and identification number of the contract as defined in the **BDS**; and provide a warning not to open before the time and date for bid opening, as specified in the **BDS** pursuant to **ITB 24.1.** c) In addition to the identification required in **ITB 23** hereof, the inner envelope shall indicate the name and address of the bidder to enable the bid to be returned unopened in case it is declared "late" pursuant to **ITB 25.**
	23.5	If all envelopes are not sealed and marked as required by **ITB 23.2**, **ITB 23.3** and **ITB 23.4** or incorrectly marked, the Procuring agency/Employer will assume no responsibility for the misplacement or premature opening of bid.
24. Deadline for Submission of Bids	24.1	Bids shall be received to the Procuring agency/Employer no later than the date and time specified in the **BDS.**
	24.2	The Procuring agency/Employer may, under exceptional circumstances and at its discretion, extend the deadline for the submission of bids by amending the Bidding Documents in accordance with **ITB 9**, in which case all rights and obligations

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

E. OPENING AND EVALUATION OF BIDS

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

		read out and recorded at the opening of the bids. Any modification shall be read out along with the Original Bid except in case of Single Stage Two Envelope Procedure where only the Technical Proposal, both Original as well as Modification, are to be opened, read out, and recorded at the opening. Financial Proposal, both Original and Modification, will remain unopened till the prescribed financial bid opening date.
	27.5	Other envelopes holding the bids shall be opened one at a time, in case of Single Stage One Envelope Procedure, the bidders' names, the bid prices, the total amount of each bid and of any alternative bid (if alternatives have been requested or permitted), the presence or absence of Bid Security, Bid Securing Declaration and such other details as the Procuring agency/Employer may consider appropriate, will be announced by the Procurement Evaluation Committee.
	27.6	In case of Single Stage Two Envelope Procedure, the Procuring agency/Employer will open the Technical Proposals in public at the address, date and time specified in the **BDS** in the presence of bidders' designated representatives who choose to attend and other parties with a legitimate interest in the bid proceedings. The Financial Proposals will remain unopened and will be held in custody of the Procuring agency/Employer until the specified time of their opening.
	27.7	The envelopes holding the Technical Proposals shall be opened one at a time, and the following read out and recorded: (a) the name of the bidder; (b) whether there is a modification or substitution; (c) the presence of a Bid Security or Bid Securing Declaration, if required; and (d) Any other details as the Procuring agency/Employer may consider appropriate.
	27.8	Bids not opened and not read out at the bid opening shall not be considered further for evaluation, irrespective of the circumstances.
	27.9	Bidders are advised to send in a representative with the knowledge of the content of the bid who shall verify the information read out from the submitted documents. Failure to send a representative or to point out any un-read information by the sent bidder's representative shall indemnify the Procuring agency/Employer against any claim or failure to read out the correct information contained in the bidder's bid.

	27.10	No bid will be rejected at the time of bid opening except for late bids which will be returned unopened to the bidder, pursuant to **ITB 25.**
	27.11	The Procuring agency/Employer shall prepare minutes of the bid opening. The record of the bid opening shall include, as a minimum: the name of the bidder and whether or not there is a withdrawal, substitution or modification, the bid price if applicable and the presence or absence of a Bid Security or Bid Securing Declaration.
	27.12	The bidders' representatives who are present shall be requested to sign on the attendance sheet. The omission of a bidder's signature on the record shall not invalidate the contents and affect the record. A copy of the record shall be distributed to all the bidders.
	27.13	A copy of the minutes of the bid opening shall be furnished to individual bidders upon request.
	27.14	In case of Single Stage -Two Envelop Bidding Procedure, after the announcement of technical evaluation report, the Procuring agency/Employer, shall at a time within the bid validity period, publicly open the financial proposals of the technically responsive bidder only. The financial proposal of bidders found technically non-responsive shall be returned un-opened to the respective bidders after seven days of the announcement of technical evaluation report, except those aggrieved bidder(s) whose complaints are pending before the Grievance Redressal Committee.
28. Confidentiality	28.1	Information relating to the examination, clarification, evaluation and comparison of bids and recommendation of contract award shall not be disclosed to bidders or any other persons not officially concerned with such process until the time of the announcement of the respective evaluation report.
	28.2	Any effort by a bidder to influence the Procuring agency/Employer processing of bids or award decisions may result in the rejection of its bid.
	28.3	Notwithstanding **ITB 28.2** from the time of bid opening to the time of contract award, if any bidder wishes to contact the Procuring agency/Employer on any matter related to the bidding process, it should do so in writing or in electronic forms that provides record of the content of communication.

29. Clarification of Bids	29.1	To assist in the examination, evaluation and comparison of bids, the Procuring agency/Employer may, ask any bidder for a clarification of its bid including breakdown of prices invariably in writing. Any clarification submitted by a bidder that is not in response to a request by the Procuring agency/Employer shall not be considered.
	29.2	The request for clarification and the response shall be in writing or in electronic forms that provide record of the content of communication. No change in the prices or substance of the bid shall be sought, offered, or permitted, except clarification for the correction of arithmetic errors discovered by the Procuring agency/Employer during the evaluation of bids which shall be sought in accordance with **ITB 32**.
	29.3	The alteration or modification in the bid which in any case affect the following parameters will be considered as a change in the substance of a bid: a) evaluation & qualification criteria; b) required scope of work; c) contract price; d) all securities requirements; e) tax requirements; f) terms and conditions of bidding documents. g) change in the ranking of the bidder
	29.4	From the time of bid opening to the time of Contract award if any bidder wishes to contact the Procuring agency/Employer on any matter related to the bid it should do so in writing or in electronic forms that provide record of the content of communication.

30. Preliminary Examination of Bids	30.1	Prior to the detailed evaluation of bids, the Procuring agency/Employer will determine whether each bid: a) meets the eligibility criteria defined in **ITB 3** and **ITB 4**; b) has been prepared as per the format and contents defined by the Procuring agency/Employer in the bidding documents; c) has been properly signed; d) is accompanied by the required securities; and e) is substantially responsive to the requirements of the bidding documents. The Procuring agency/Employer's determination of a bid's substantial responsiveness will be based on the contents of the bid itself.
	30.2	A substantially responsive Bid is one which conforms to all the terms, conditions, and specifications of the Bidding Documents, without material deviation or reservation. A material deviation or reservation is one that: - a) affects in any substantial way the scope, quality, or performance of the Works; b) limits in any substantial way, inconsistent with the bidding documents, the Procuring agency/Employer's rights or the bidders' obligations under the Contract; or c) if rectified, would affect unfairly the competitive position of other bidders presenting substantially responsive bids.
	30.3	The Procuring agency/Employer will confirm that the documents and information specified under **ITB 11, 12** and **13** have been provided in the bid. If any of these documents or information is missing, or is not provided in accordance with the Instructions to Bidders, the bid shall be rejected.
	30.4	The Procuring agency/Employer may waive-off any minor informality, nonconformity, or irregularity in a bid which does not constitute a material deviation, provided such waiver does not prejudice or affect the relative ranking of any Bidder.

	30.5	Provided that a Technical Bid is substantially responsive, the Procuring agency/Employer may request the bidder to submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities or omissions in the Technical Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any such aspect of the technical Proposal linked with the ranking of the bidders. Failure of the bidder to comply with the request may result in the rejection of its bid.
	30.6	Provided that a Technical Bid is substantially responsive, the Procuring agency/Employer shall rectify quantifiable nonmaterial nonconformities or omissions related to the Financial Proposal. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of the missing or nonconforming item or component.
	30.7	If a bid is not substantially responsive, it will be rejected by the Procuring agency/Employer and may not subsequently be evaluated for complete technical responsiveness.
31. Examination of Terms and Conditions; Technical Evaluation	31.1	The Procuring agency/Employer shall examine the bid to confirm that all terms and conditions specified in the **GCC** and the **SCC** have been accepted by the bidder without any material deviation or reservation. For this purpose: "Deviation" means departure from the requirements specified in the Bidding Document. "Reservation" means setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document.
	31.2	The Procuring agency/Employer shall evaluate the technical aspects of the bid submitted in accordance with **ITB 31,** to confirm that all requirements specified in **Section V – Works Requirement**, **Technical Specifications of** the Bidding Documents have been met without material deviation or reservation.
	31.3	If after the examination of the terms and conditions and the technical evaluation, the Procuring agency/Employer determines that the bid is not substantially responsive in accordance with **ITB 30,** it shall reject the bid.

32. Correction of Arithmetic Errors	32.1	Bids determined to be substantially responsive will be checked for any arithmetic errors. Errors will be corrected as follows: - a) if there is a discrepancy between unit prices and the sub-total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail, and the sub-total price shall be corrected, unless in the opinion of the Procuring agency/Employer there is an obvious misplacement of the decimal point in the unit price, in which the total price as quoted shall govern and the unit price shall be corrected; b) if there is an error in a total corresponding to the addition or subtraction of sub-totals, the sub-totals shall prevail, and the total shall be corrected; and c) where there is a discrepancy between the amounts in figures and in words, the amount in words will govern. d) Where there is discrepancy between grand total of price schedule and amount mentioned on the Form of Bid, the amount referred in Price Schedule shall be treated as correct subject to elimination of other errors.
	32.2	The amount stated in the Bid will, be rectified by the Procuring agency/Employer in accordance with the above procedure for the correction of errors and, with, the concurrence of the bidder, shall be considered as binding upon the bidder. If the bidder does not accept the corrected amount, its bid shall be rejected after forfeiture of Bid Security or execution of the Bid Securing Declaration, as the case may be, in accordance with **ITB 19.9.**

33. Conversion to Single Currency	33.1	The unit rates and the prices shall be quoted by the bidder entirely in Pak rupees. A bidder expecting to incur expenditures in other currencies for inputs to the Works from outside the Procuring agency/Employer's country (referred to as the "Foreign Currency Requirements") shall indicate the same in the letter of bid-financial proposal. The proportion of the Bid Price (excluding Provisional Sums) needed by him for the payment of such Foreign Currency Requirements either (i) entirely in the currency of the Bidder's home country or, (ii) at the bidder's option, entirely in Pak rupees provided always that a bidder expecting to incur expenditures in a currency or currencies other than those stated in (i) and (ii) above for a portion of the foreign currency requirements, and wishing to be paid accordingly, shall indicate the respective portions in his bid.
	33.2	To facilitate evaluation and comparison, the Procuring agency/Employer will convert all bid prices expressed in the amounts in various currencies in which the bid prices are payable. For the purposes of comparison of bids quoted in different currencies, the price shall be converted into a single currency specified in the bidding documents. The rate of exchange shall be the selling rate, prevailing on the date of opening of (financial part of) bids specified in the bidding documents, as notified by the State Bank of Pakistan on that day.
	33.3	The currency selected for converting bid prices to a common base for the purpose of evaluation, along with the source and date of the exchange rate, are specified in the **BDS**.
34. Evaluation of Bids	34.1	The Procuring agency/Employer shall evaluate and compare only the bids determined to be substantially responsive, pursuant to **ITB 30**.
	34.2	In evaluating the Technical Proposal of each Bid, the Procuring agency/Employer shall use the criteria and methodologies listed in the **BDS** and in terms of works requirement. No other evaluation criteria or methodologies shall be permitted.
	34.3	The Procuring agency/Employer's evaluation of a bid will take into account: a) the bid price, excluding provisional sums and the provision, if any, for contingencies in the summary bill

		of quantities, but including day work items, where priced competitively; b) price adjustment for correction of arithmetic errors in accordance with **ITB 32.1;** c) converting the amount resulting from applying (a) and (b) above, if relevant, to a single currency in accordance with **ITB 33**;
	34.4	The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.
	34.5	If these bidding documents allow bidders to quote separate prices for different lots, and the award to a single bidder of multiple lots, the methodology of evaluation to determine the lowest evaluated lot combinations in the Form of Bid, is specified in the **BDS.**
	34.6	If the bid, which results in the Evaluated Bid Price (Most Advantageous Bid), is seriously unbalanced or front loaded in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, taking into consideration the schedule of estimated Contract payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.

35. Domestic Preference	35.1	If the **BDS** so specifies, the Procuring agency/Employer will grant a margin of preference to the domestic contractor in line with the rules, regulations, regulatory guides or instructions issued by the Authority from time to time.
36. Determination of Most Advantageous Bid	36.1	The Procuring agency/Employer shall compare the evaluated bids in accordance with the predefined bidding procedure, of all substantially responsive bids to determine the Most Advantageous bidder.
37. Qualification of Bidder	37.1	The Procuring agency/Employer shall determine to its satisfaction whether the bidder is substantially responsive and whose bid is declared as most advantageous bid either continues to meet (if prequalification applies) or meets (if post-qualification applies) the qualifying criteria specified in Evaluation and Qualification Criteria.
	37.2	The determination shall be based upon an examination of the documentary evidence of the bidder's qualifications submitted by the bidder, pursuant to **ITB 12**.
	37.3	Prior to contract award, the Procuring agency/Employer will verify that the successful bidder (including each member of a JV) is not blacklisted/debarred. The Procuring agency/Employer will conduct the same verification for each sub-contractor proposed by the successful bidder.
38. Sub-Contractors	38.1	The bidder shall provide details regarding any specialized sub-contractor to the Procuring agency/Employer. In case change of sub-contractors, the bidder shall promptly notify the Procuring agency/Employer and obtain approval for replacement of sub-contractors.
	38.2	Bidders may propose sub-contracting up to the percentage of total value of contracts or the volume of works as specified in the **BDS.**

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

		(iii) Comparing the bid price with prices paid in similar contracts in the recent past either government- or development partner-funded.
	39.2	The Procuring agency/Employer will determine to its satisfaction whether the bidder that is selected as having submitted the most advantageous bid is qualified to perform the contract satisfactorily, in accordance with the criteria listed in **ITB 12**
	39.3	The determination will take into account the bidder's financial and technical capabilities. It will be based upon an examination of the documentary evidence of the bidder's qualifications submitted by the bidder, pursuant to **ITB 12,** as well as such other information as the Procuring agency/Employer deems necessary and appropriate. Factors not included in these bidding documents shall not be used in the evaluation of the bidders' qualifications.
	39.4	Procuring agency/Employer may seek "Certificate for Independent Price Determination" from the bidder and the results of reference checks may be used in determining award of contract.
	39.5	An affirmative determination will be a prerequisite for award of the contract to the bidder. A negative determination will result in rejection of the bidder's bid, in which event the Procuring agency/Employer will proceed to the next ranked bidder to make a similar determination of that bidder's capabilities to perform satisfactorily.

F. AWARD OF CONTRACT

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

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

45. Valuation of Variations	45.1	All variations and any additions to the Contract Price which are required to be determined in accordance with **ITB 15** (for the purposes of this Clause referred to as "varied work"), shall be valued at the rates and prices set out in the Contract if, in the opinion of the Engineer, the same shall be applicable. If the Contract does not contain any rates or prices applicable to the varied work, the rates and prices in the Contract shall be used as the basis for valuation so far as may be reasonable, failing which, after due consultation by the Engineer with the Procuring agency/Employer and the Contractor, suitable rates or prices shall be agreed upon between the Engineer and the Contractor. In the event of disagreement, the Engineer shall fix such rates or prices as are, in his opinion, appropriate and shall notify the Contractor accordingly, with a copy to the Employer. Until such time as rates or prices are agreed or fixed, the Engineer shall determine provisional rates or prices to enable on-account payments to be included in certificates issued in accordance with **ITB 15.**
46. Notification of Award	46.1	Prior to the award of contract, the Procuring agency/Employer shall issue a Final Evaluation Report giving justification for acceptance or rejection of the bids.
	46.2	Where no complaints have been lodged, the bidder whose bid has been accepted will be notified of the award by the Procuring agency/Employer prior to expiration of the bid validity period in writing or through electronic means that provide record of the content of communication. However, the Procuring agency/Employer shall not award any procurement contract atleast for fifteen (15) days after the acceptance of bid. The notification letter (herein after and in the condition of the contract and contract form called “Letter of Acceptance” will specify the sum that the Procuring agency/Employer will pay the successful bidder in consideration for the execution and completion of the works as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price).
	46.3	The notification of award will constitute the formation of the Contract, subject to the bidder furnishing the Performance Security (or guarantee) in accordance with **ITB 48** and signing of the contract in accordance with **ITB 47.**
	46.4	Upon the successful bidder’s furnishing of the performance security (or guarantee) pursuant to **ITB 48**, the Procuring

		agency/Employer will promptly notify each unsuccessful bidder, the name of the successful bidder and the Contract amount and will discharge the Bid Security or Bid Securing Declaration of the bidder(s) pursuant to **ITB 19**.
47. Signing of Contract	47.1	Promptly after notification of award, Procuring agency/Employer shall send the successful bidder the draft agreement, incorporating all terms and conditions as agreed by the parties to the contract.
	47.2	Immediately after the Redressal of grievance by the GRC, and after fulfillment of all conditions precedent of the Contract Form, the successful bidder and the Procuring agency/Employer shall sign the contract.
	47.3	Where no formal signing of a contract is required, work order issued to the bidder shall be construed to be the contract.
48. Performance Security (or Guarantee)	48.1	After the receipt of the Letter of Acceptance, the successful bidder, within the specified time, shall deliver to the Procuring agency/Employer a Performance Guarantee in the amount and in the form stipulated in the **BDS and SCC**, denominated in the type and proportions of currencies in the Letter of Acceptance and in accordance with the Conditions of Contract.
	48.2	If the Performance Guarantee is provided by the successful bidder and it shall be in the form specified in the **BDS** which shall be in any of the following: (a) certified cheque, cashier's or manager's cheque, or bank draft; (b) irrevocable letter of credit issued by a scheduled bank of Pakistan or in the case of an irrevocable letter of credit issued by a foreign bank, the letter shall be confirmed or authenticated by a scheduled bank of Pakistan; (c) bank guarantee confirmed by a reputable local bank or, in the case of a successful foreign bidder, bonded by a foreign bank; or (d) surety bond callable upon demand issued by any reputable surety or insurance company. Any Performance Guarantee submitted shall be enforceable in Pakistan.
	48.3	Failure of the Most Advantageous Bidder to comply with the requirement of **ITB 47** shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security or declare blacklisted (in case bid securing declaration is submitted)

		in which event the Procuring agency/Employer may make the award to the next most advantageous bidder or reinitiate the procurement process afresh (as a case may be).
49. Advance Payment	49.1	Advance payment will be provided to the bidder in percentage and in the manner as agreed by the both parties in terms of Conditions of the Contract.
	49.2	The Procuring agency/Employer will provide an advance payment as stipulated in the Conditions of Contract, subject to a maximum amount, as stated and/or Conditions of the Contract. The advance payment request shall be accompanied by an advance payment security (guarantee) in the form provided in Section X. For the purpose of receiving the advance payment, the bidder shall make and estimate of, and include in its bid, the expenses that will relate to the purchase of equipment, machinery, materials, and on the engagement of labor during the first month beginning with the date of the Procuring agency/Employer's "Notice to Commence" as specified in the **SCC.**

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

F. GRIEVANCE REDRESSAL & COMPLAINT REVIEW MECHANISM

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

	53.3	In case, the complaint is filed against the technical evaluation report, the GRC shall suspend the procurement proceedings.
	53.4	In case, the complaint is filed after the issuance of the final evaluation report, the complainant cannot raise any objection on technical evaluation of the report:
	53.5	The GRC, in both the cases shall investigate and decide upon the complaint within ten days of its receipt. The decision of GRC is final and not challenge in any Court of the Pakistan.

G. MECHANISM OF BLACKLISTING

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

	54.5	In case the bidder or contractor submits written reply of the show cause notice, the Procuring agency/Employer may decide to file the matter or direct issuance of a notice to the bidder or contractor for personal hearing.
	54.6	The Procuring agency/Employer shall give minimum of seven days to the bidder or contractor for appearance before the designated officer of the Procuring agency/Employer for personal hearing. The designated officer shall decide the matter on the basis of the available record and personal hearing of the bidder or contractor, if availed.

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

SECTION III: BID DATA SHEET

Bid Data Sheet (BDS)

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

BDS Clause Number	**ITB Number**	**Amendments of, and Supplements to, Clauses in the Instruction to Bidders**
A. Introduction		
1.	**1.1**	Name of Procuring agency/Employer: Defence Housing Authority (DHA) Quetta. The subject of procurement is: CIVIL WORKS AND LAYING OF HDPE PIPE ALONG WITH PULLING, SPLICING AND TESTING OF OPTICAL FIBER CABLE FOR GPON NETWORK Period for completion of the works **04 Months** Commencement date execution of the works: **10 days after signing the contract.** Type of Procurement National competitive bidding
2.	**2.1**	Financial year for the operations of the Procuring agency/Employer: 2024 – 2025 Name of Project CIVIL WORKS AND LAYING OF HDPE PIPE ALONG WITH PULLING, SPLICING AND TESTING OF OPTICAL FIBER CABLE FOR GPON NETWORK Name of financing institution: Defence Housing Authority (DHA) Quetta.
3.	**3.1**	Maximum number of members in the joint venture, consortium shall be: Two (02).

B. Bidding Documents

4.	**7.2**	The number of copies to be completed and returned is one original and one (01) copy shall be submitted to Client.
5.	**8.1**	The address for clarification of Bidding Documents is DHA Quetta Head Office, Main RCD Highway, DHA Quetta
	8.5	Pre-bid meeting will be held at DHA Quetta Head Office, Main RCD Highway, DHA Quetta for which Date and Time will be communicated after the floating this document.

C. Preparation of Bids

6.	**10.1**	The Language of all correspondences and documents related to the Bid is in English
7.	**15.5**	Not Applicable
8.	**15.6**	Name of the works CIVIL WORKS AND LAYING OF HDPE PIPE ALONG WITH PULLING, SPLICING AND TESTING OF OPTICAL FIBER CABLE FOR GPON NETWORK
9.	**16.1**	The currency of the Bid shall be in Pakistani Rupees
10.	**18.1**	The Bid Validity period shall be 180 days.
11.	**19.1**	The amount of Bid Security shall be 6,000,000/- The currency of the Bid Security shall be in Pakistani Rupees (PKR)
12.	**19.3**	The Bid Security shall be in the form of Deposit at Call or a Bank Guarantee issued by a Scheduled Bank in Pakistan
13.	**19.3 (c)**	Not Applicable
14.	**20.1**	Alternative Bids to the requirements of the Bidding Documents will not be permitted.
15.	**20.2**	Not Applicable
16.	**22.1**	The number of copies of the Bid to be completed and returned shall be 01 Original and 01 Copy.

17.	**22.2**	The written confirmation of authorization to sign on behalf of the Bidder shall be on letter head of the Company / Organization.

D. Submission of Bids

18.	**23.2 (a)**	Hard Copy of the Bid shall be submitted on following address: Deputy Director Procurement Department DHA Quetta Head Office, Main RCD Highway, Quetta
19.	**23.2 (b)**	Title of the subject Procurement or Project name: CIVIL WORKS AND LAYING OF HDPE PIPE ALONG WITH PULLING, SPLICING AND TESTING OF OPTICAL FIBER CABLE FOR GPON NETWORK Time and date for submission: March 14, 2025
20.	**24.1**	The deadline for Bid submission is a) Day: *Friday* b) Date*: March 14, 2025* c) Time*: 10:00 AM*

E. Opening and Evaluation of Bids

21.	**27.1**	The Bid opening shall take place at: DHA Quetta Head Office, Main RCD Highway, Quetta Day: *Friday* Date: *March 14, 2025* Time: *10:30 AM*
22.	**33.2**	Not Applicable
23.	**33.3**	The bids shall be quoted in Pakistani Rupees (PKR)
24.	**34**	**Evaluation Techniques** **Quality and Cost Based Selection (QCBS)** In such combination, there shall be some specific weightage of both the technical features (such as prescribed in **ITB 34.2**)

		and financial aspects of the proposal. The financial marks shall be awarded in accordance with the formula stipulated in the BDS or Evaluation Criteria prescribed in the bidding documents. The highest ranked bid shall be declared, on the basis of combined evaluation.
25.	**35**	Not Applicable
26.	**38.2**	Sub-contracting 30% of the total value of the contract.
F. Award of Contract		
27.	**48**	The Performance Security (or guarantee) shall be 10 percent of the Contract Price
28.	**48**	The Performance Security (or guarantee) shall be in the form of Deposit at Call or a Bank Guarantee issued by a Scheduled Bank in Pakistan.
G. Review of Procurement Decisions		
29.	**53.3**	Not Applicable

Section IV. Eligible Countries

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

Following countries are ineligible to participate in the procurement process:

1. India
2. Israel

Section V. Qualification Criteria

Mandatory Eligibility Criteria

The Bidders fulfilling the following eligibility criteria shall only be considered for further evaluation (relevant documents to be attached):

1. The bidder shall be duly licensed by Pakistan Engineering Council (PEC) in category C-3 or higher with field of specialization CE01, EE02, EE07, EE08 and EE11. In case validity of License has expired; the bidder had applied for renewal of license before submission of its bid, however, in such case last year PEC Certificate shall be available.

2. Registration with Income Tax and the bidder is on Active Taxpayers List of Federal Board of Revenue (FBR).

3. Bank Statements of last twelve months along with account maintenance certificates shall be included in the Bid.

4. Registration with DHA Quetta as register vendor.

5. Affidavit for Correctness of Information on the Judicial Stamp paper of value 100 Rs.

6. Affidavit on non-judicial stamp paper stating the following:

Eligibility and Qualification Criteria			**Compliance Requirements**			
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**		
				All Parties Combined	**Each Member**	**One Member**
1.1	**Nationality**	Nationality in accordance with **ITB 4.3**	Must meet requirement	Must meet requirement	Must meet requirement	N/A
1.2	**Conflict of Interest**	No conflicts of interest in accordance with **ITB 3.7**	Must meet requirement	Must meet requirement	Must meet requirement	N/A
1.3	**Pending Litigation**	Bidder's financial position and prospective long term profitability sound according to criteria established in 3.1 below and assuming that all pending litigation will be resolved against the Bidder	Must meet requirement	N/A	Must meet requirement	N/A

Eligibility and Qualification Criteria			Compliance Requirements			
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**		
				All Parties Combined	**Each Member**	**One Member**
1,4	**Litigation History**	No consistent history of court/arbitral award decisions against the Bidder since 1st January 2015	Must meet requirement	Must meet requirement	Must meet requirement	N/A

Note: In case of joint venture, all the partners have to meet in full the basic Eligibility requirement mentioned at Sr. No. 2 & 3 above. JV partners shall collectively meet requirement of Sr. no. 1 above wherein, all the partner shall be duly licensed by PEC and the sum total of the limit of construction cost in relevant category permitted by the categories of the individual licensees shall not be less than limit of construction cost permitted by the category required here above.
A maximum of two firms can form a Joint Venture (JV) to participate in the Bidding process. Bids submitted by a joint venture shall meet the qualification requirement as a whole the requirement mentioned above. Audit Sheets and No Litigation certificates shall be provided by both the partners with the Bid

Qualification / Evaluation Criteria

Keeping in view the complexity of the project works, criteria for evaluation as defined hereunder.

The weights given to the Technical (T) and Financial (F) Proposals are:

Technical (T%): 80%
Financial Score (F%): 20%

Proposals are ranked according to their combined technical score (St) and financial (Sf) scores using the weights (T%: the weight given to the Technical Proposal; F: the weight given to the Financial Proposal; T% + F%: l00%) as following:

$$\boldsymbol{S = St \times T\% + Sf \times F\%}$$

St = Technical Score
T% = the weight given to the Technical Proposal
Sf = Financial Score
F% = the weight given to the Financial Proposal

The lowest evaluated Financial proposal (Fm) is given the maximum financial score (Sf) of 100. The formula for determining the financial scores (Sf) of all other Proposals is calculated as following:

$$\boldsymbol{Sf = \frac{Fm}{F} \times 100}$$

Sf = Financial Score
Fm = Lowest Quoted Price
F = Price of the Specific Proposal

Technical Evaluation Criteria:

Category	Max Marks	Evaluation Basis
Firm's Experience (Completed Projects Similar Nature)	**20**	Similar Nature projects equal to PKR 100 million each **(4 Marks for each project maximum marks are 20)** *Bidders must submit completion certificates / acceptance letters from the relevant Employer.*
Technical Evaluation of Working Methodology	**15**	- Construction Time Schedule **(10 Marks)** • WBS • CPM • Gantt Chart • Schedule of Material • Schedule of Plant - QC Plan **(02 Marks)** - EHS Plan **(02 Marks)** - Organogram **(01 Marks)**
Technical Team	**10**	- Engineer with relevant experience of Optical Fiber Network (Minimum 02 Nos. with 5 years exp or above.): **10 marks** - Engineer with relevant experience of Optical Fiber Network (01 No. with 5 years exp or above.): **05 marks** - 1 DAE with relevant experience of Optical Fiber Network (01 No. with 5 years exp or above.): **02 marks** - No qualified Engineer: **0 marks** *The relevant CVs, Degrees, PEC Cards and PEC Verification (Engineers only) shall be provided as evidence*
Equipment & Tools (Purchase Receipts)	**5**	- Owns all required tools (OTDR, Splicing Machine, Power Meter, Butt Fusion Welding Machine etc.): **05 marks** - Rented equipment or incomplete toolset: **2 marks** - No tools/equipment details: **0 marks**
Project in Hand	**15**	Similar Nature projects equal to PKR 100 million each **(05 Marks for each project maximum marks are 15)**

		Bidders must submit acceptance letters / letter of award from the relevant Employer.
Authorized Dealership for Passive Equipment of FTTx	**5**	- Authorized Dealership: **5 marks** (for OFC, FDH, NAP, Splitters and Joint Enclosures) - Authorized Dealership: 3 **marks** (for OFC, FDH, NAP) - No Authorized Dealership: **0 marks**
Financial Soundness	**30 Marks**	Bidder must have cash liquidity in bank account or available line of credit of the same value *(Documentary Evidence to be furnished in the shape of bank statement showing referred amount at least on any single day during the last 3-month period preceding the date of Tender Notice)* **100 million or above (25 Marks)** **From 75 million to 99 million (20 Marks)** **From 50 million to 74 million (15 Marks)** **From 25 million to 49 million (10 Marks)** **Less than 24 million (05 Marks)** Must attach audited financial statements for the last three (03) years. (**05 Marks**)
Total Marks (Technical + Financial Soundness)	**100**	**Minimum Passing Marks: 70**

Note: Similar nature project means any project in Societies or in Cities related to deployment GPON network / FTTx works.

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

Scope of Works

Project Overview:

This scope of work (SOW) outlines the requirements for laying HDPE (High-Density Polyethylene) pipes, performing associated civil works, and pulling optical fiber cables for the GPON (Gigabit Passive Optical Network) infrastructure in DHA Quetta. The project includes all necessary materials, labor, tools, and accessories described in BOQ or as instructed by the Engineers Incharge for the successful completion of the work.

Scope of Work:

1. **Site Survey and Preparation:**

    - Conduct a site survey to assess the route for pipe installation.
    - Mark the route and obtain necessary approvals.
    - Set up traffic management and safety signs as required.

2. **Material Procurement and Inspection:**

    - Supply HDPE pipes (sized as per the design specification) and related fittings (elbows, tees, couplers, etc.).
    - Verify the quality of HDPE pipes and accessories to ensure they comply with industry standards and specifications.
    - Delivery of materials to site.

3. **Excavation Works:**

    - Perform trench excavation as per the required depth and width, ensuring proper safety measures.
    - Ensure the trench is clear of any rocks, debris, or obstructions.
    - If required, install shoring or trench boxes for safety.

4. **Laying of HDPE Pipes:**

    - Lay the HDPE pipes in the excavated trench according to the approved design and alignment.
    - Ensure that the pipe installation follows the proper bending radius and does not get overstressed.
    - Use required fittings (elbows, tees, couplings) for changes in direction or size.
    - Install warning tapes above the pipe at the correct depth to indicate the presence of underground utilities.

5. **Jointing and Welding:**

- Perform butt fusion welding or electro-fusion welding of HDPE pipes to form secure and leak-proof joints.
- Ensure proper alignment and pressure testing of joints.

6. **Backfilling and Compaction:**

    - Backfill the trench with suitable material once the pipes are laid.
    - Ensure proper compaction of the backfill material to avoid future settlement or damage to the pipes.
    - Restore the surface as per the existing ground conditions (road reinstatement, landscaping, etc.).

Civil Works:

1. **Manhole and Access Chamber Construction:**

    - Construct manholes and access chambers at specified intervals for the maintenance and access to the HDPE pipes.
    - Ensure proper sealing and cover installation to prevent any ingress of water, dirt, or debris.

2. **Route Marking and Signage:**

    - Mark the pipeline route clearly with signage or posts for future identification.
    - Ensure the pipeline route is properly documented in all drawings.

Pulling of Optical Fiber Cable (GPON):

1. **Cable Preparation and Inspection:**

    - Procure the required optical fiber cable (GPON type) in the specified length.
    - Inspect the cable for quality, continuity, and any potential damage.

2. **Cable Pulling:**

    - Use cable-pulling equipment (e.g., winches, cable rollers, and pullers) to pull the optical fiber cable through the laid HDPE conduit.
    - Ensure that the cable is not damaged during the pulling process, particularly in areas with bends or obstructions.
    - Monitor the pulling tension to prevent excessive strain on the cable.
    - Secure the cable with proper supports at regular intervals.

3. **Cable Splicing and Termination:**

    - Perform the splicing of optical fiber cables at designated points to maintain continuous signal integrity.

- Ensure proper termination of the cables at the manholes and other access points for future connections.

Testing and Commissioning:

1. **Quality Control:**

    - Perform necessary tests to ensure the integrity of the HDPE pipe installation, including pressure testing.
    - Conduct optical fiber tests (OTDR, end-to-end testing) to verify the performance of the optical fiber network.

2. **Documentation:**

    - Provide detailed as-built drawings of the pipeline route and the installed fiber network.
    - Submit testing reports and final handover documents to the client.

Site Restoration and Cleanup:

1. **Site Clean-Up:**

    - Clean the construction site thoroughly after the completion of works.
    - Remove any debris, unused materials, or equipment from the site.

2. **Restoration:**

    - Restore any affected areas (e.g., roads, landscaping, etc.) to their original condition or as per the client's specifications.

Technical Specifications

Following Specifications shall be followed during the execution of the project:

1. TR-192C Fiber to the Home (FTTH) Optic Fiber Cable Laying for Passive Optic Network (GPON Network)
2. TR-192A – Optical Fiber Cable Laying (Direct-Duct buried)

Drawings

OPTICAL FIBER NETWORK PLAN

FOR

DHA QUETTA SMART & SAFE CITY

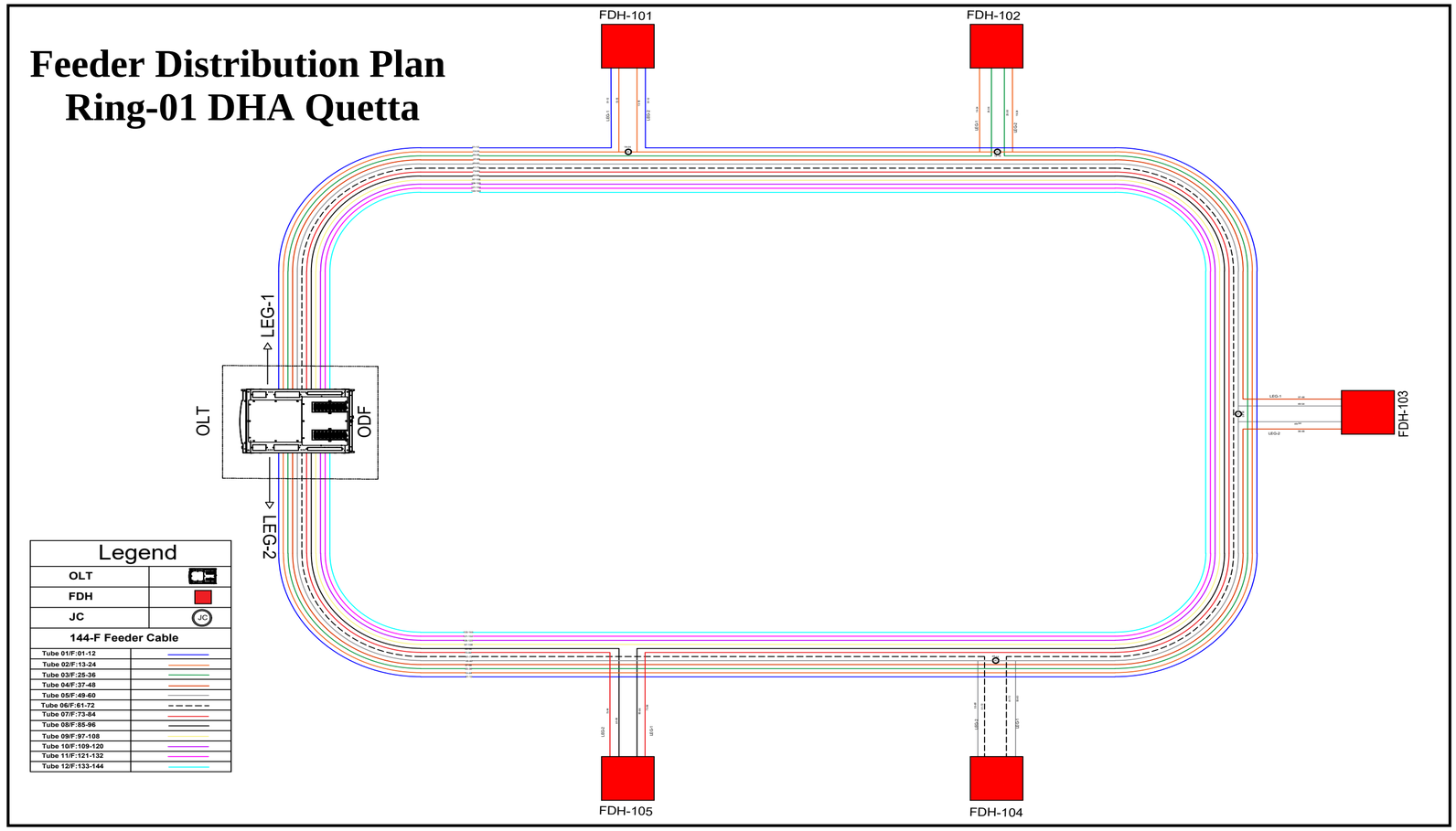
RING-01 SECTOR A1

BOQ Ring-01,Sector A1 DHA Quetta

Connection Summary									ODN Ports			Feeder BOQ												DISTRIBUTION BOQ																				
Exchange Ring No/ Route Area	OLT Location	FDH List	FDH 144	Plots	Residential		Commercial		Total Users	Design Residential ODN Ports	Design Commercial ODN Ports	Total Design ODN Ports	Feeder Fiber Length(Meter)			JOINT ENCLOSURE	Duct Length(HDPE 57/63mm)			Feeder Civil Work (Trench)/Mtr)			HandHole			Distribution Cable (MTR)			Duct HDPE Pipe 57mm/63mm (Meter)		Civil Work (Trench)/Mtr)		RNAP+CNAP				Total NAP 8P	Total FAT 8P	FDH Spiltters								
					Total Residential Plots	User	Total Commercial Plots	User					144F	48F	24F	144F	2 Way Duct (Feeder)	3 Way Duct (Feeder+Dist)	Feeder Common Route Duct (3 Way)	Trench 2 Ways	Trench (3 Way) Feeder+Dist	Feeder Common Trench 3 Way	FDH-Base 3x4x3	HandHole 3x2x2	48F	24F	12F	1 Way 57mm	2 Ways 57mm	Trench (3ft) 1 Way	Trench (3ft) (2 Way)	*JOINT BOX*						No Of ISP	Residential Splitter Level 2	Commercial Splitter Level 2	Feeder Core	Used Cores
																																48F	24F	12F				2x4	2x4		
Ring-01/Sector A1	DHA-Quetta	FDH 101	1	146	127	127	19	19	146	128	192	320	10304	0	500	7	1926	14979	1929	963	4993	643	5	140	0	952	1002	921	154	921	77	0	16	0	16	24	1	4	6	18	10
		FDH 102	1	153	140	140	13	13	153	192	128	320													0	1129	0	326	0	326	0	0	24	0	24	16	1	6	4	18	10
		FDH 103	1	173	149	149	24	24	173	192	192	384													0	2307	1865	2611	0	2611	0	0	24	0	24	24	1	6	6	18	12
		FDH 104	1	214	200	200	14	14	214	256	128	384													0	1920	296	759	134	759	67	0	32	0	32	16	1	8	4	18	12
		FDH 105	1	161	119	119	42	42	161	128	384	512													0	1473	165	635	0	635	0	0	16	0	16	48	1	4	12	18	16
			5	847	735	735	112	112	847	896	1024	1920	10304	0	500	7	16905			963	4993		5	140	0	7781	3328	5252	288	5252	144	0	112	0	112	128	1	28	32	90	60
TOTAL SUMMARY			5	847	735	735	112	112	847	896	1024	1920	10304	0	500	7	16905			963	4993	643	5	140	0	7781	3328	5252	288	5252	144	0	112	0	112	128	1	28	32	90	60
																				6599			145																			

Loss Budget Ring 01 DHA Quetta

		Feeder Distance(KM)		Attenuation Loss / KM	A side Per Kilometer Attenuation Loss	B side Per Kilometer Attenuation Loss	Splice Loss	Connector Loss	Splitter Loss @ FDH	Total Loss at FDH Side A	Total Loss at FDH Side B	2 Connector + 2splice+Drop Cable Loss	Loss at Customer From A Side	Loss at Customer From B Side
FDH_No	SFP Class B+ Tx Power	A side	B side				0.05*5	4*0.5	Splitter 2:32					
FDH 101	2	1.628	8.676	0.35	0.57	3.04	0.25	2	15.05	17.9	20.3	1	**-17.0**	-19.4
FDH 102	2	2.404	7.900	0.35	0.84	2.77	0.25	2	15.05	18.1	20.1	1	**-17.2**	-19.2
FDH 103	2	3.167	7.137	0.35	1.11	2.50	0.25	2	15.05	18.4	19.8	1	**-17.5**	-18.9
FDH 104	2	4.581	5.723	0.35	1.60	2.00	0.25	2	15.05	18.9	19.3	1	**-18.0**	-18.4
FDH 105	2	5.834	4.447	0.35	2.04	1.56	0.25	2	15.05	19.3	18.9	1	**-18.4**	-18.0



DHA-QUETTA
Feeder Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST

Note: 1 FDR+1NAP/1FDR FEEDER & 01 WAYS FIBE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH

- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

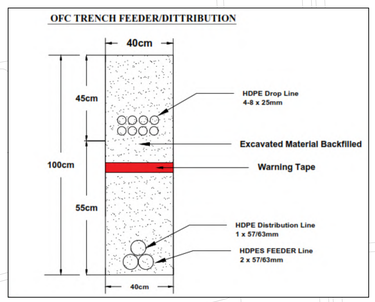
Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

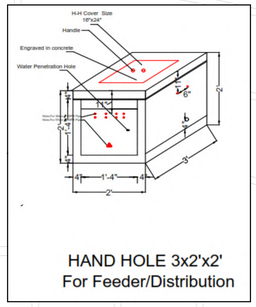
- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

EDUCATIONAL
MOSQUE
PARK 34.19K
PARK 15.80 K
FAMILY PARK 18.98 K
2 MOSQUE 4.03 K
PARK 32.21 K
FDH-101
FDH-102
FDH-103
FDH-104
FDH-105

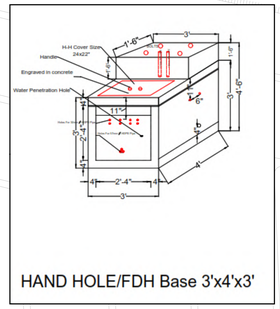
General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable: 2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.





HAND HOLE 3x2'x2'
For Feeder/Distribution



HAND HOLE/FDH Base 3'x4'x3'

REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FEEDER DUCT PLAN RING 01

SCALE: 1:1,788

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
CABLE Plan

Legend

- OLT
- **FDH-Cabinet** FDH Handhole with Base, 3x4x3
- **CNAP** CNAP(Commercial NAP) HandHole, 3x2x2
- **RNAP** RNAP(Residential NAP) HandHole, 3x2x2
- **FCNAP** FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- **FRNAP** FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- **FEEDER** Handhole, 3x2x2
- **DISTRIBUTION** Handhole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST (No. of Ways may vary based on Area Requirements)
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

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- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable: 2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FEEDER CABLE PLAN RING-01

SCALE: 1:3,000

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH HandHole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2

- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST
  Note:3 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH

- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

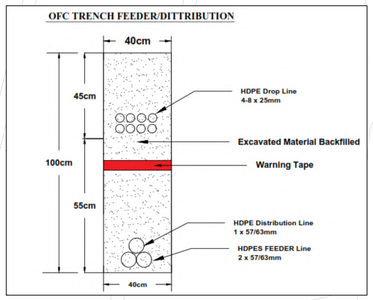
Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

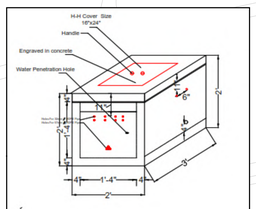
- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

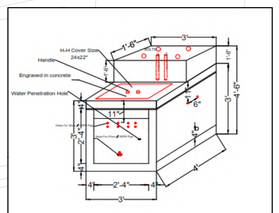
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- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

OFC TRENCH FEEDER/DITTRIBUTION

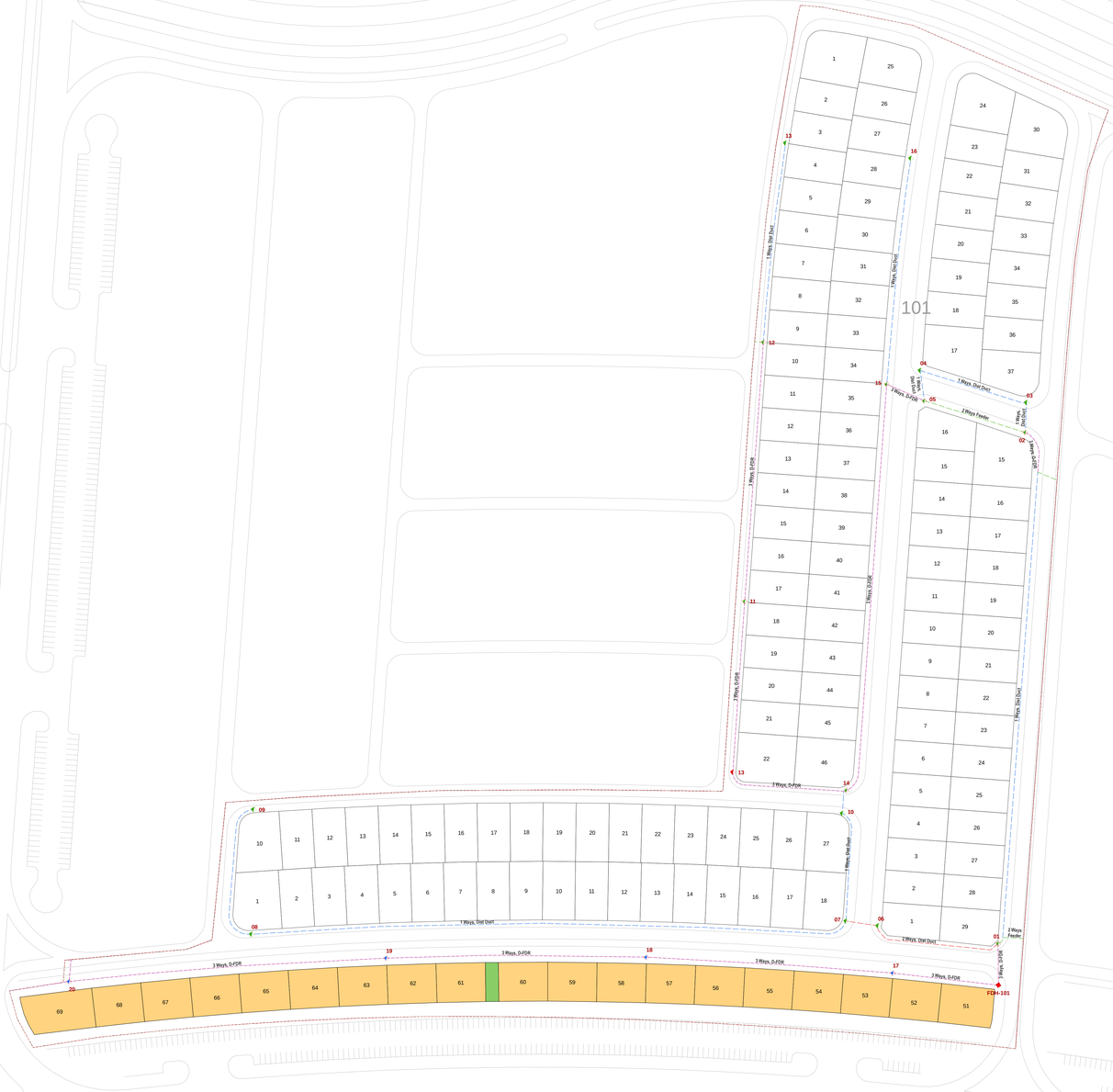




HAND HOLE 3x2'x2'
For Feeder/Distribution



HAND HOLE/FDH Base 3'x4'x3'



REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT:
Designing of Optical Fiber Network
For
DHA Quetta Smart & Safe City

TITLE:
DHA QUETTA
GPON FDH-101 DUCT PLAN RING-01

SCALE: 1:940

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
CABLE Plan

Legend

- **OLT**
- **FDH-Cabinet** — FDH HandHole with Base, 3x4x3
- **CNAP** — CNAP/Commercial NAP) HandHole, 3x2x2
- **RNAP** — RNAP/Residential NAP) HandHole, 3x2x2
- **FCNAP** — FCNAP/Feeder + Commercial NAP) HandHole, 3x2x2
- **FRNAP** — FRNAP/Feeder + Residential NAP) HandHole, 3x2x2
- **FEEDER** HandHole, 3x2x2
- **DISTRIBUTION** HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 2 NOS HH/ FDH RECEIVE 6 nr HDPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
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REV	DATE	DESCRIPTION	APPROVED	APPROVED	
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03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-101 CABLE PLAN RING-01

SCALE: 1:970

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2

- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — *Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH*
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

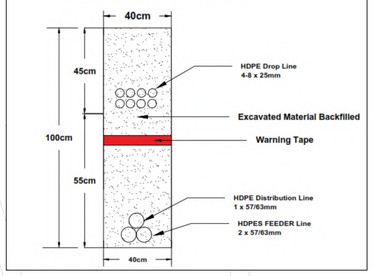
Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

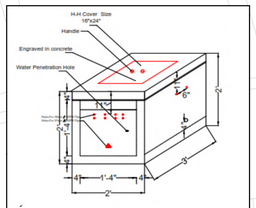
- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

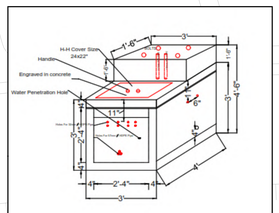
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- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

OFC TRENCH FEEDER/DITTRIBUTION





HAND HOLE 3x2'x2'
For Feeder/Distribution



HAND HOLE/FDH Base 3'x4'x3'

REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-102 DUCT PLAN RING-01

SCALE: 1:670

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
CABLE Plan

Legend

- **OLT**
- **FDH-Cabinet** FDH HandHole with Base, 3x4x3
- **CNAP** CNAP/Commercial NAP) HandHole, 3x2x2
- **RNAP** RNAP/Residential NAP) HandHole, 3x2x2
- **FCNAP** FCNAP/Feeder + Commercial NAP) HandHole, 3x2x2
- **FRNAP** FRNAP/Feeder + Residential NAP) HandHole, 3x2x2
- **FEEDER** HandHole, 3x2x2
- **DISTRIBUTION** HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST Note: 1 USED FIRS FOR FEEDER & 01 USED FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

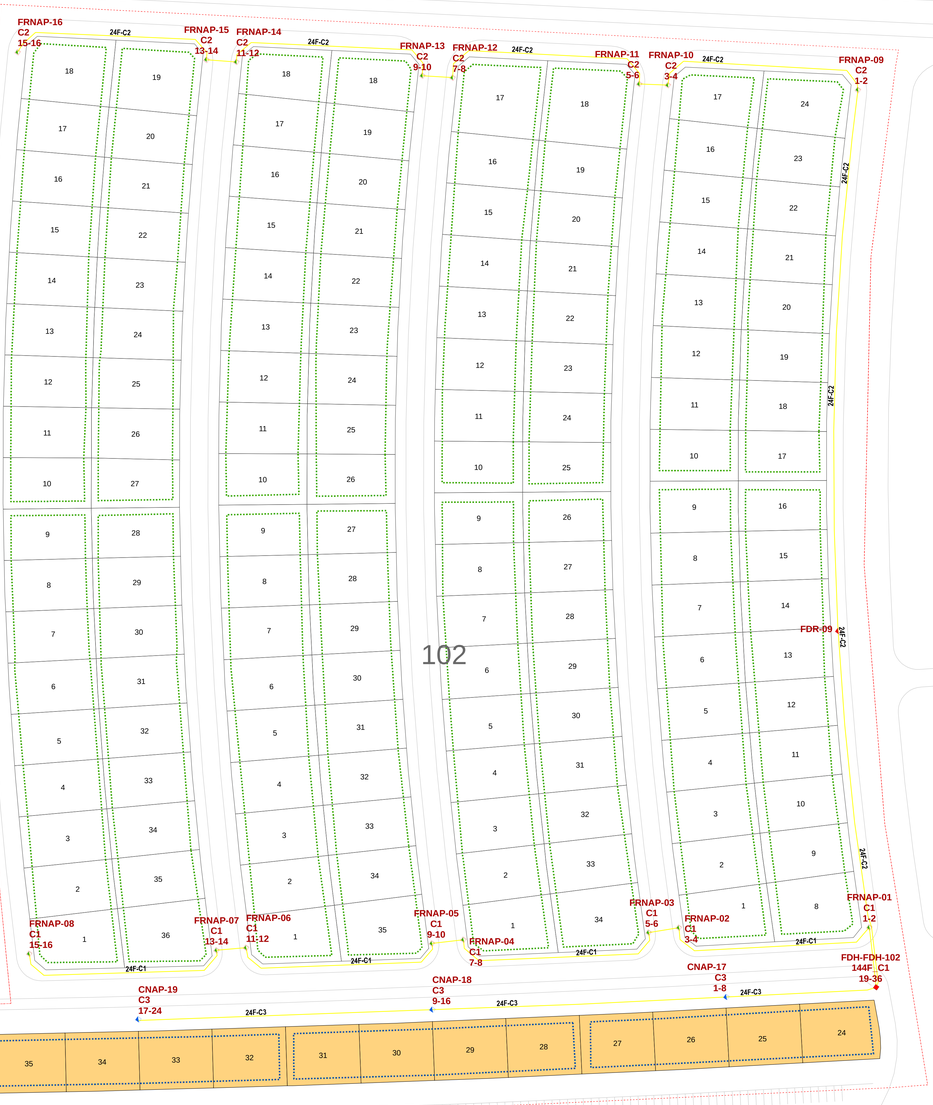
Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

Ring-01
Ring-02
Ring-03
Ring-04
Ring-05
Ring-06
Ring-07



General Guidelines

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REV	DATE	DESCRIPTION	APPROVED	APPROVED	
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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-102 CABLE PLAN RING-01

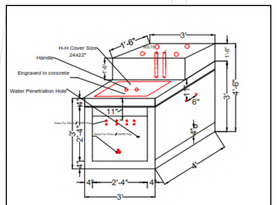
SCALE: 1:680

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

General Guidelines

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HAND HOLE/FDH Base 3'x4'x3'



DHA-QUETTA
Civil/Duct Plan

Legend

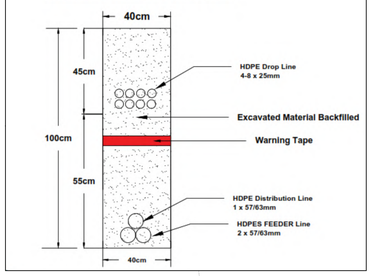
- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
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- DISTRIBUTION HandHole, 3x2x2
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- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
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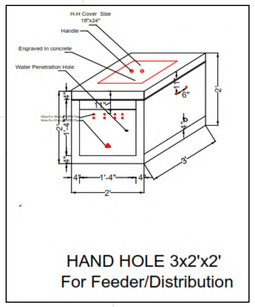
Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

Ring-01
Ring-02
Ring-03
Ring-04
Ring-05
Ring-06
Ring-07

OFC TRENCH FEEDER/DITTRIBUTION





HAND HOLE 3x2'x2'
For Feeder/Distribution

REV	DATE	DESCRIPTION	APPROVED		
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03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-103 DUCT PLAN RING-01

SCALE: 1:830

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
CABLE Plan

Legend

- **OLT**
- **FDH-Cabinet** FDH Handhole with Base, 3x4x3
- **CNAP** CNAP/Commercial NAP) Handhole, 3x2x2
- **RNAP** RNAP/Residential NAP) Handhole, 3x2x2
- **FCNAP** FCNAP/Feeder + Commercial NAP) Handhole, 3x2x2
- **FRNAP** FRNAP/Feeder + Residential NAP) Handhole, 3x2x2
- **FEEDER** Handhole, 3x2x2
- **DISTRIBUTION** Handhole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST (Note: 3 WAYS PIPE FOR FEEDER & 01 WAYS PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH)
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

PARK 32.21 K

103

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable: 2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-103 CABLE PLAN RING-01

SCALE: 1:810

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

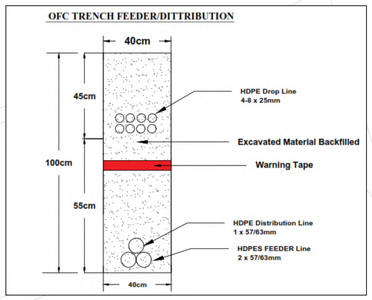
Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

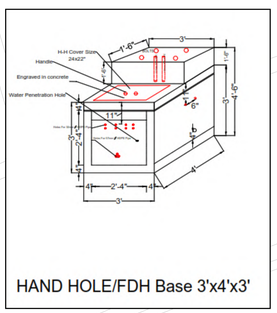
Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

Ring-01
Ring-02
Ring-03
Ring-04
Ring-05
Ring-06
Ring-07

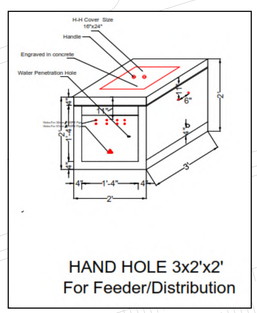
General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.





HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution



REV	DATE	DESCRIPTION	APPROVED		
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-104 DUCT PLAN RING-01

SCALE: 1:830

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH HandHole with Base, 3x4x3
- CNAP — CNAP/Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP/Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP/Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP/Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER Handhole, 3x2x2
- DISTRIBUTION Handhole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 3 WAYS PIPE FOR FEEDER & 01 WAYS PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

PARK 15.80 K

2 MOSQUE
4.03 K

FAMILY PARK
18.98 K

104

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable: 2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-104 CABLE PLAN RING-01

SCALE: 1:840

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 1x2x2

- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH

- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

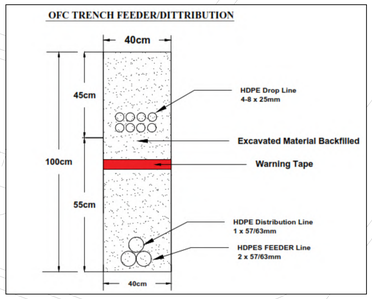
Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

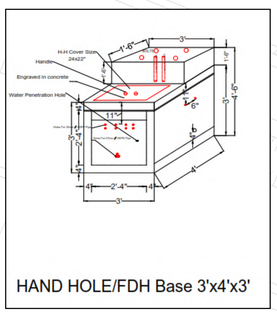
Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

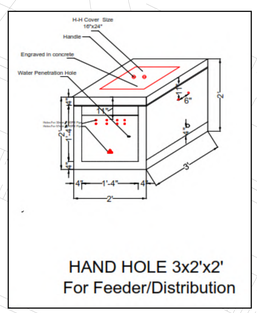
General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
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- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.





HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution

REV	DATE	DESCRIPTION	APPROVED		
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA
GPON FDH-105 DUCT PLAN RING-01

SCALE 1:830

DATE 15.01.25

DWG NO. DHAQ-GPON-PNI-v1.0

DHA-QUETTA
CABLE Plan

Legend

- **OLT**
- **FDH-Cabinet** — FDH HandHole with Base, 3x4x3
- **CNAP** — CNAP(Commercial NAP) HandHole, 3x2x2
- **RNAP** — RNAP(Residential NAP) HandHole, 3x2x2
- **FCNAP** — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- **FRNAP** — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- **FEEDER** — HandHole, 3x2x2
- **DISTRIBUTION** — HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 1 HDPE PIPE FOR RECEIVE 6 nr HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

EDUCATIONAL

PARK 34.19K

MOSQUE

105

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable: 2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-105 CABLE PLAN RING-01

SCALE: 1:770

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

OUTSIDE PLANT OSP

Core Network

Central Office

Feeder Network

Distribution Network

Customer Premises

TELEPHONE

IPTV

INTERNET

Surveillance

Smart Metering

A

B

OLT

FDH-101

144F Feeder Ring

Feeder JC

FDH-102

FDH-103

Splitter

Distribution Cable 12/24/48F

Distribution Cable 12/24/48F

FDH-106

FDH-105

144F Feeder Ring

Feeder JC

FDH-104

Cable 12F

Surveillance Cameras

Pole

Cable 12F

Surveillance Cameras

Pole

R-NAP

Joint Box

ONT

Drop Cable 2F

C-NAP

FAT-1 (2:8)

Drop Cable 2F

FAT-2 (2:8)

FAT-3 (2:8)

Legend

OLT	
FDH	
Splitter	
CNAP	
RNAP	
FAT	
ONT	
Feeder Cable	
Distribution Cable	
Drop Cable	

REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

TITLE: Single Line Diagram (SLD) Plan A

SCALE: N.T.S

DATE: October 2025

DWG. NO.: DHAQ–GPON–PNI–v1.0

SHEET NO.: 01

OUTSIDE PLANT OSP

Core Network | Central Office | Feeder Network | Distribution Network | Customer Premises

TELEPHONE
IPTV
INTERNET
Surveillance
Smart Metering

A
B

OLT

FDH-101
FDH-102
144F Feeder Ring
FDH-103
FDH-104
FDH-105
FDH-106
144F Feeder Ring

Splitter

Distribution Cable
12/24/48F
Distribution Cable
12/24/48F

ONT
Drop Cable 2F
R-NAP
Joint Box
Drop Cable 2F
Surveillance Cameras
Pole

C-NAP
FAT-1
(2:8)
Drop Cable 2F
FAT-2
(2:8)
FAT-3
(2:8)

Legend

OLT	
FDH	
Splitter	
CNAP	
RNAP	
FAT	
ONT	
Feeder Cable	
Distribution Cable	
Drop Cable	

REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

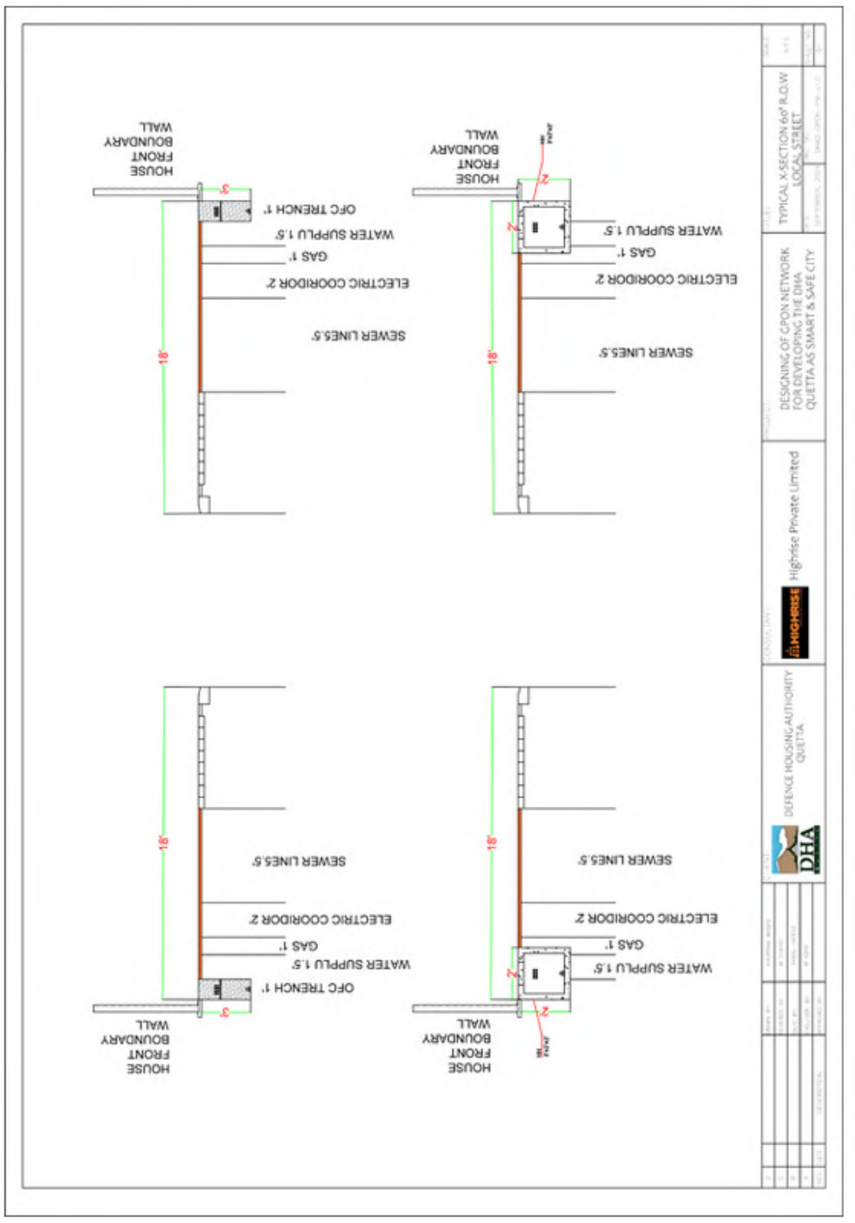
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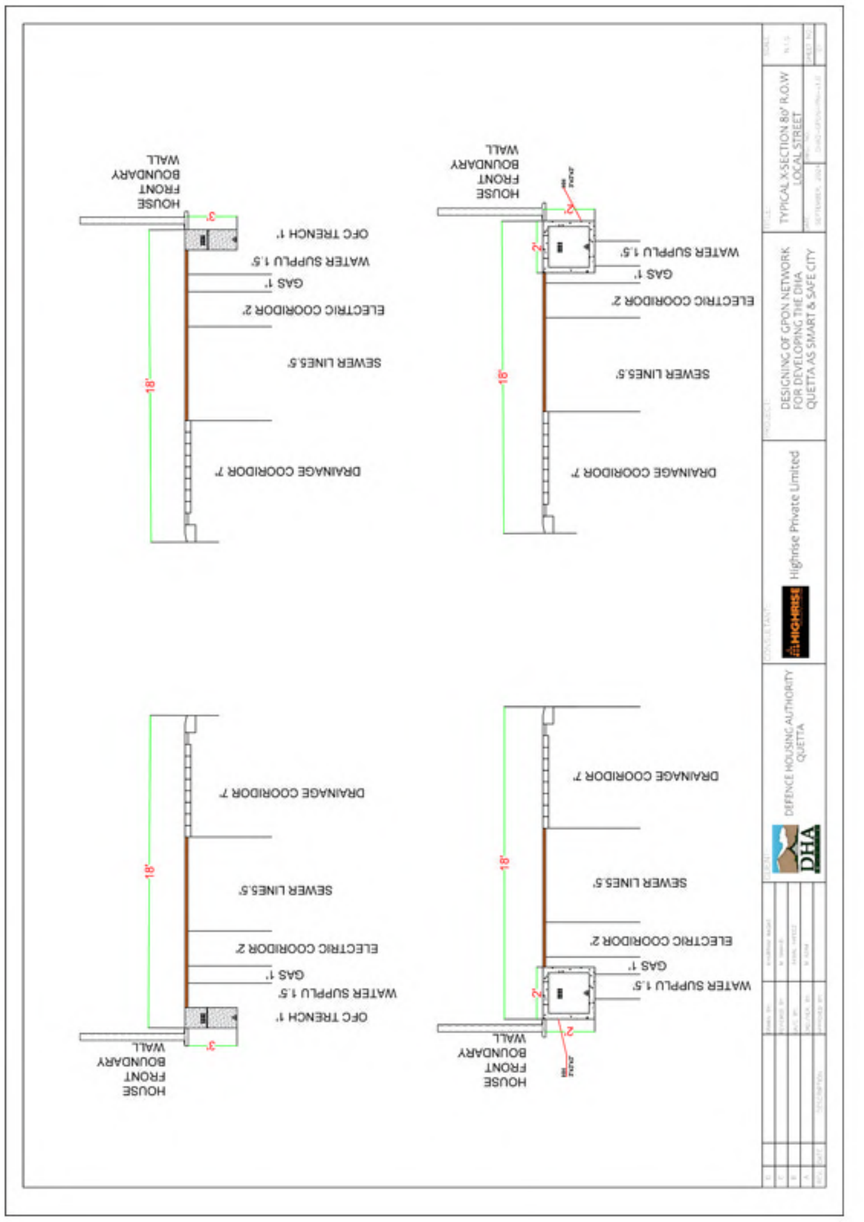
SCALE: N.T.S

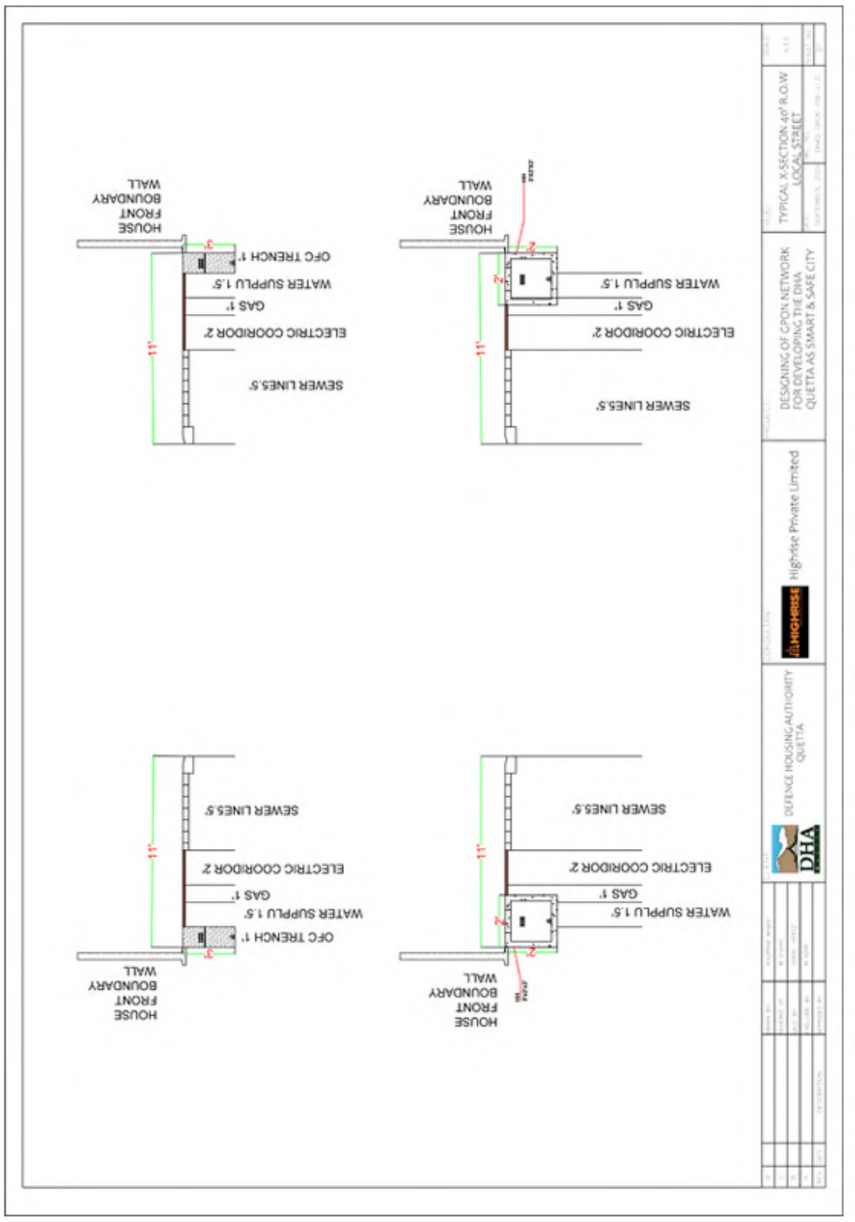
DATE: October 2025

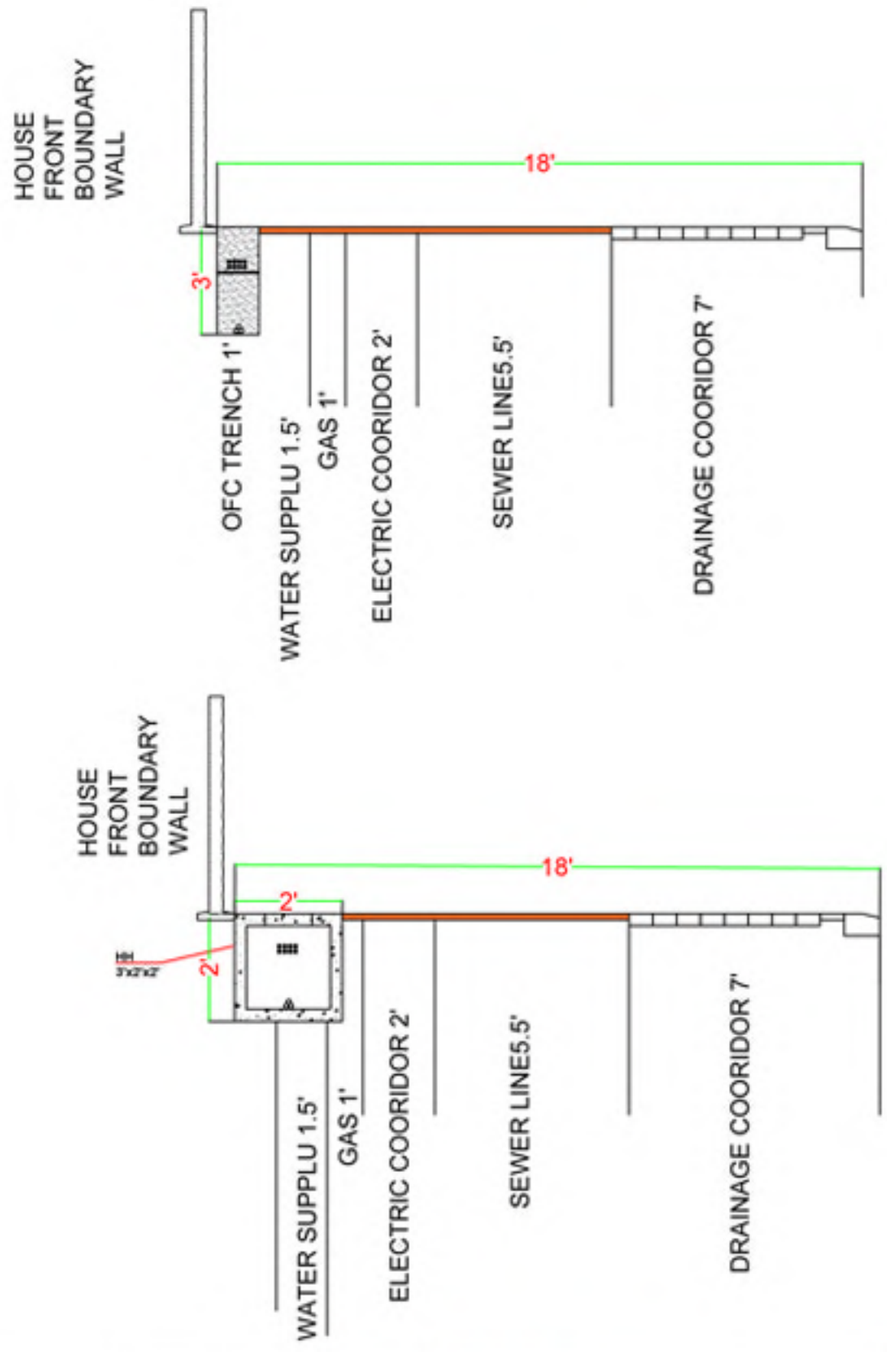
DWG. NO.: DHAQ–GPON–PNI–v1.0

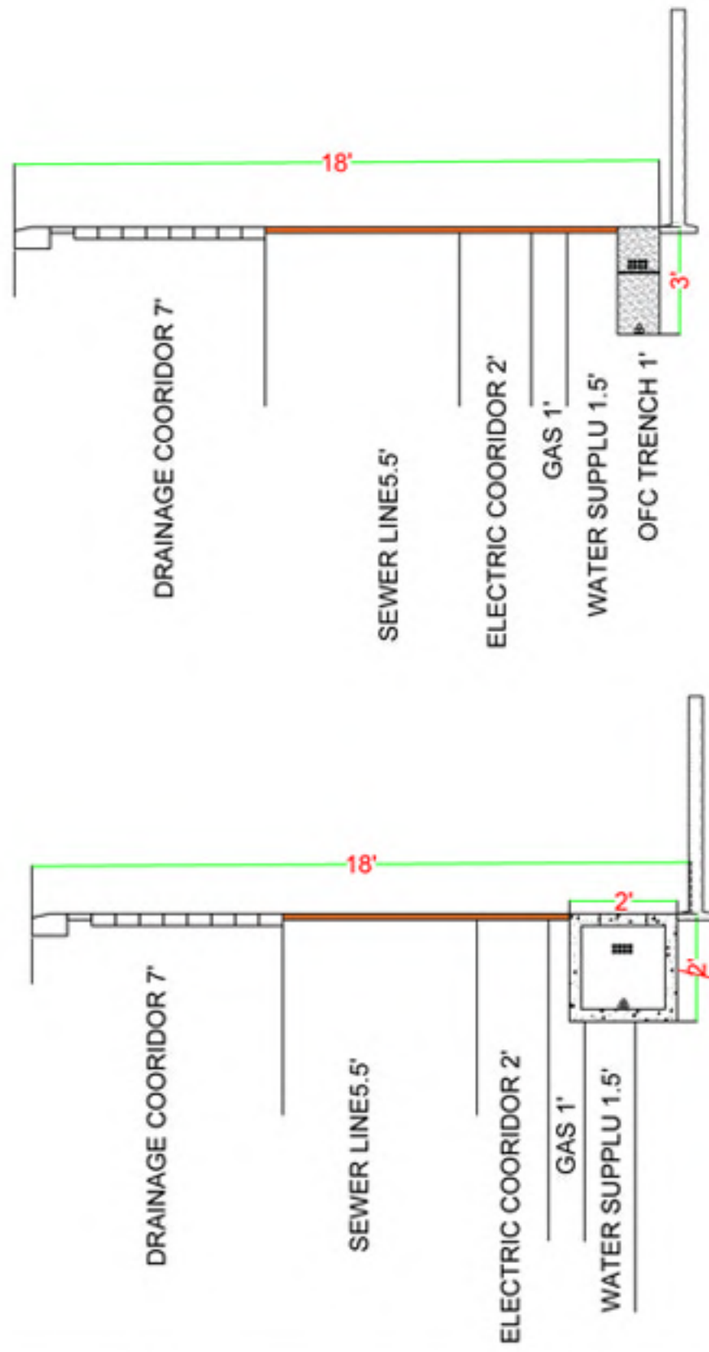
SHEET NO.: 01

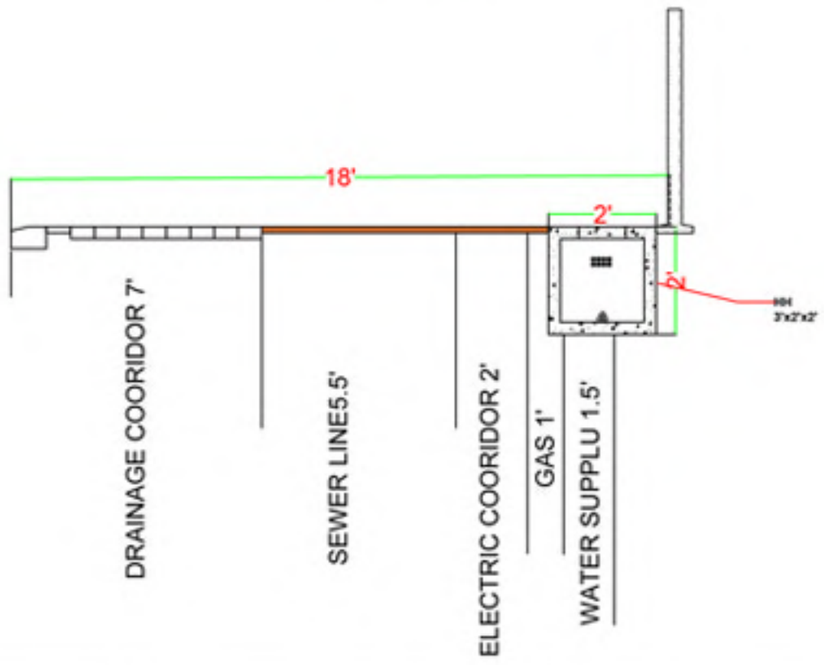

HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
18'
3'
2'
2'
TYPICAL X-SECTION 60' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA


HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
DRAINAGE COORIDOR 7'
18'
3'
2'
2'
TYPICAL X-SECTION 80' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA


HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
11'
3'
2'
2'
TYPICAL X-SECTION 40' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA







REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

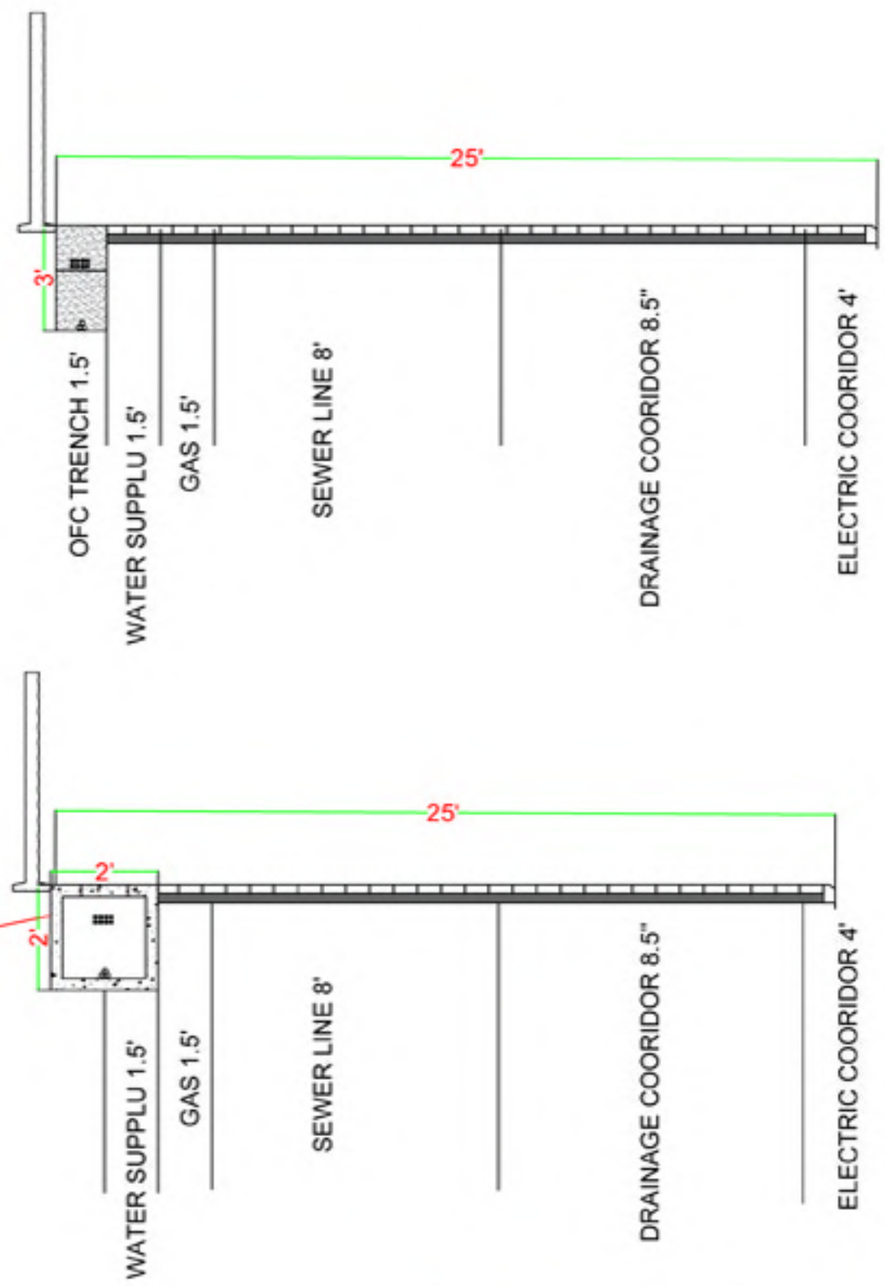
TITLE: TYPICAL X-SECTION 98' R.O.W LOCAL STREET

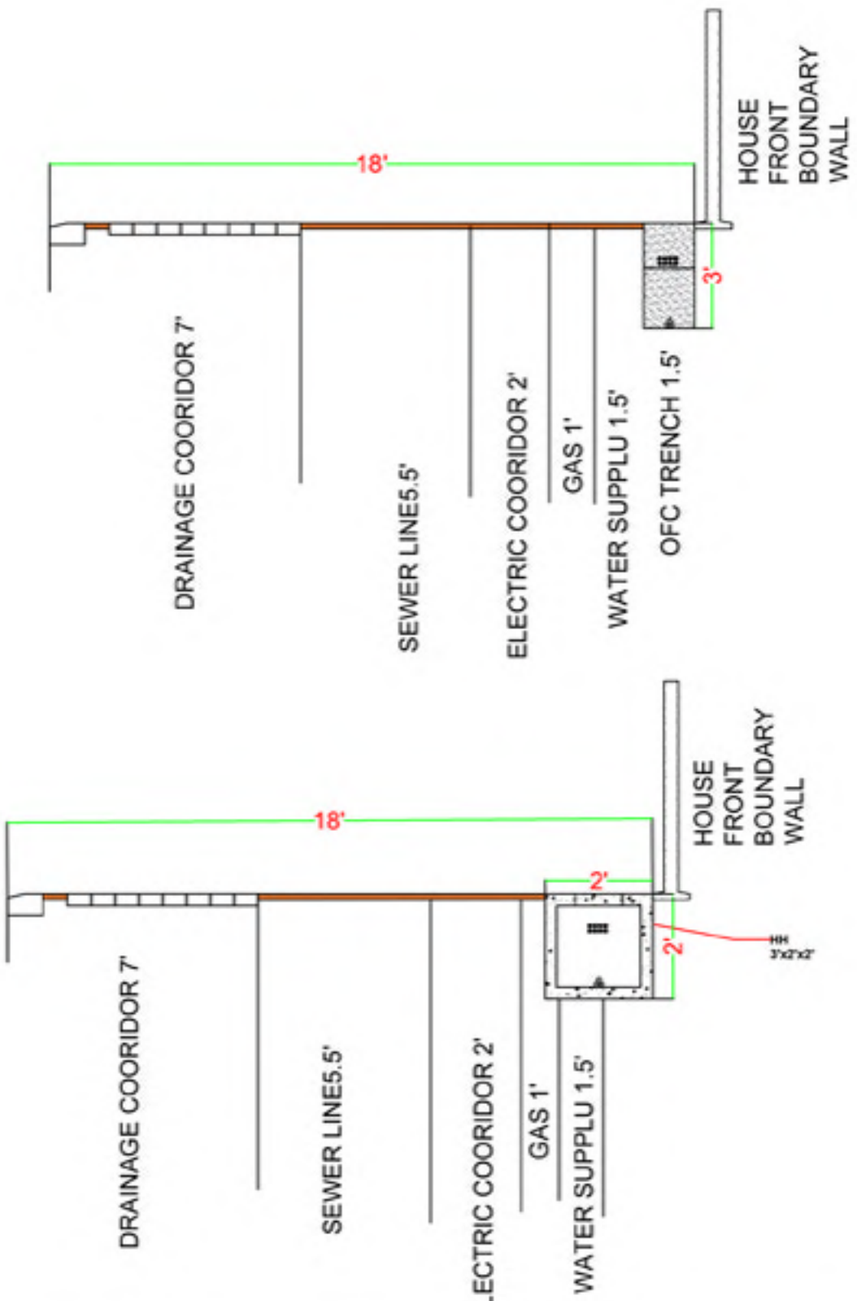
SCALE: N.T.S

DATE: SEPTEMBER, 2024

DWG. NO.: DHAQ-GPON-PN-v1.0

SHEET NO.: 01





REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

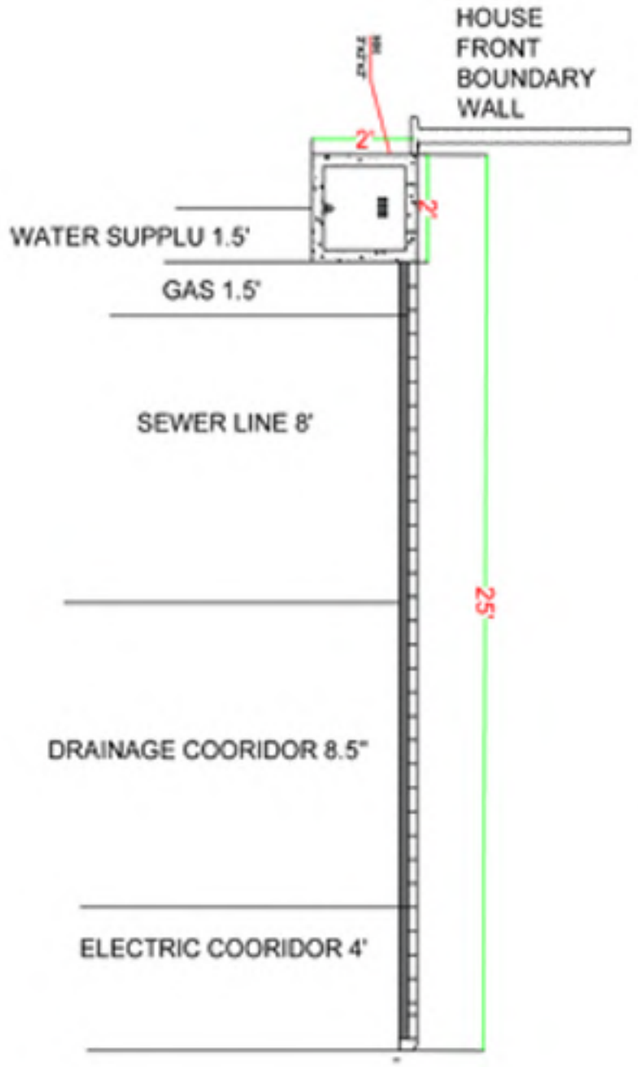
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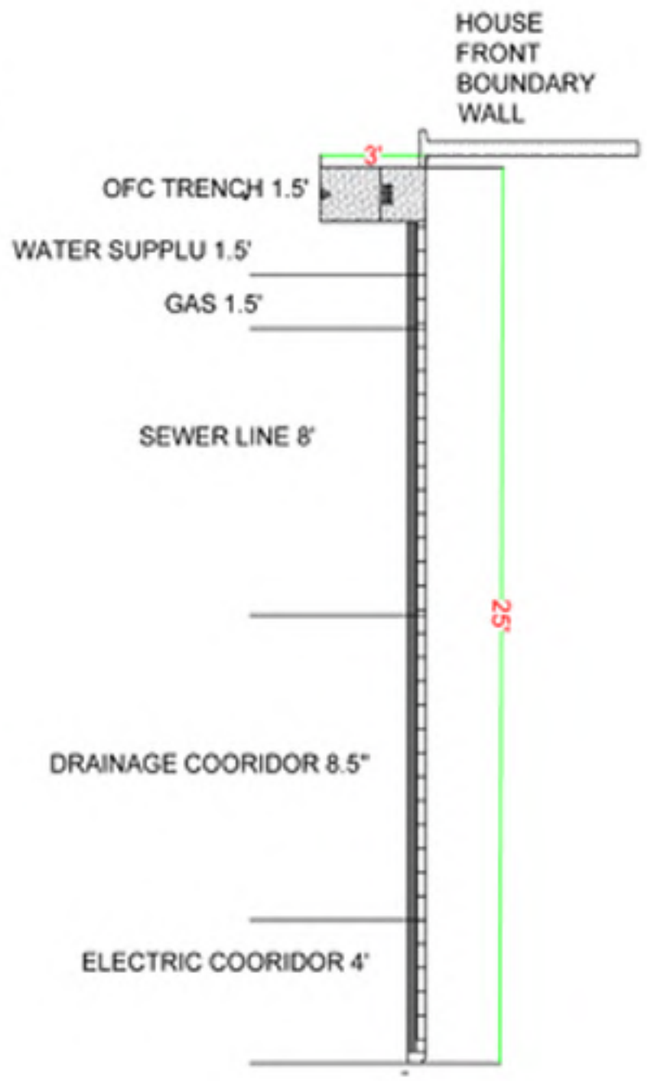
SCALE: N.T.S

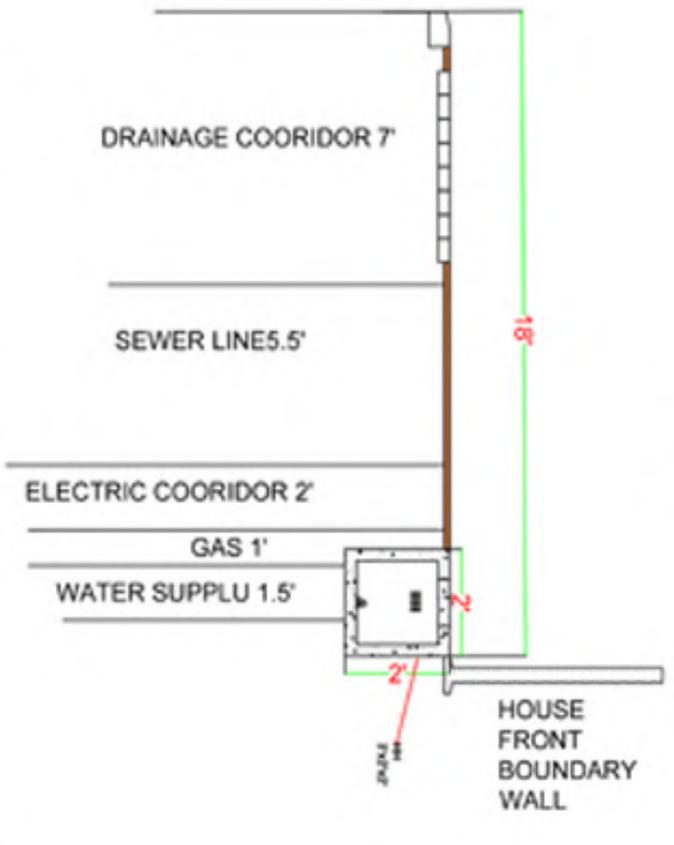
DATE: SEPTEMBER, 2024

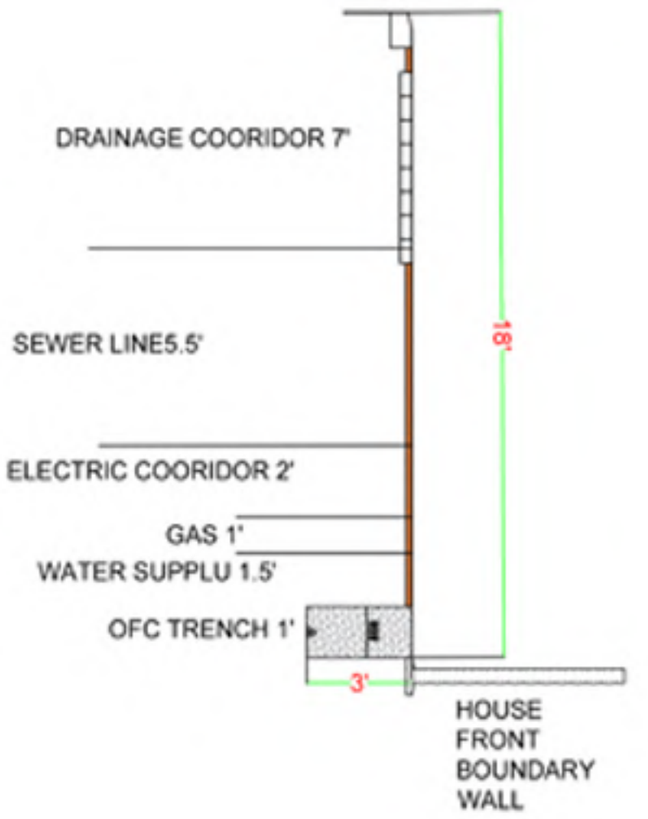
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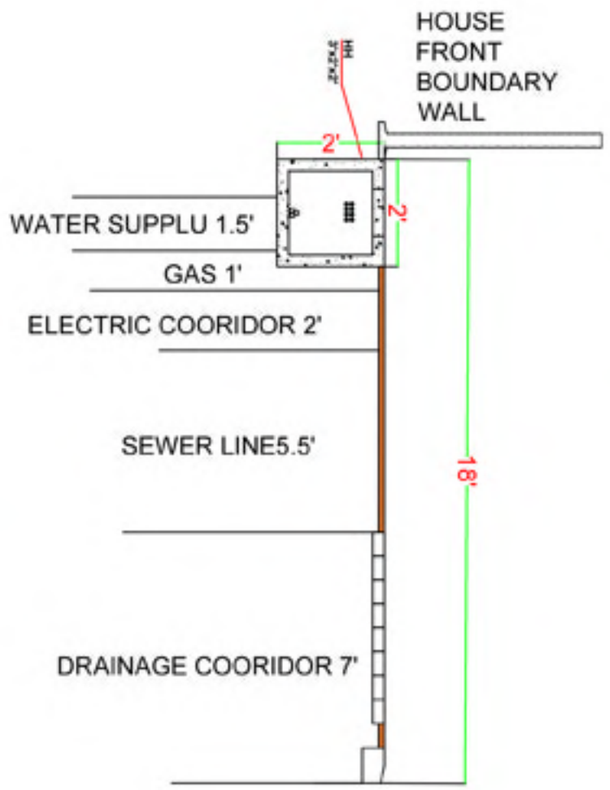
SHEET NO.: 01

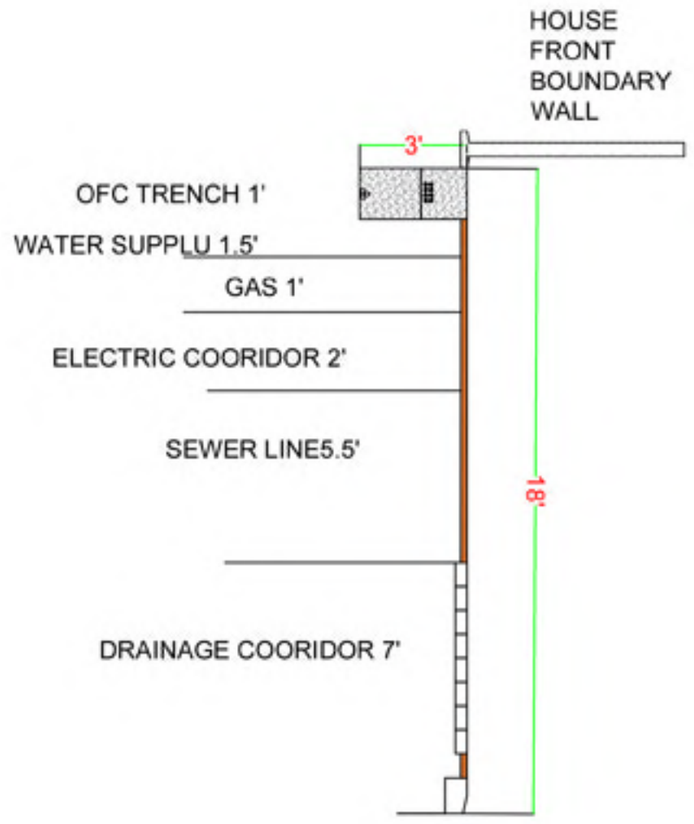


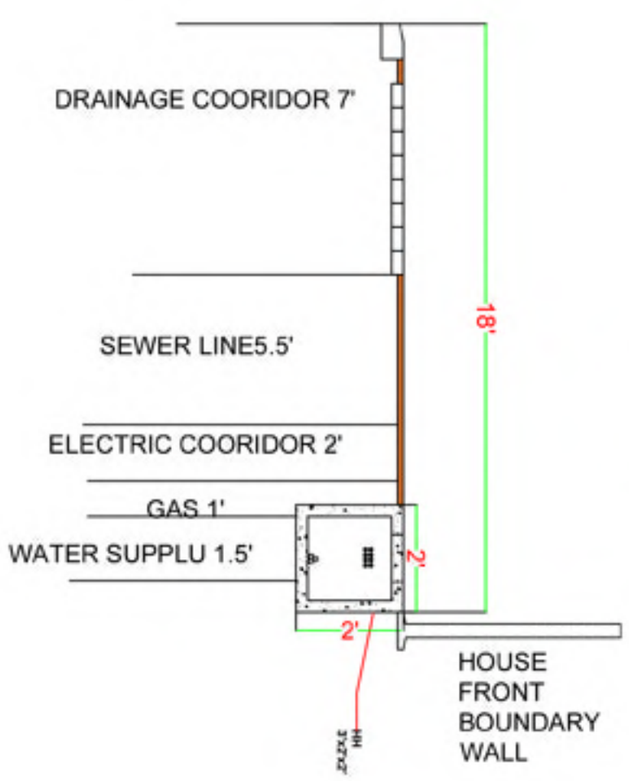


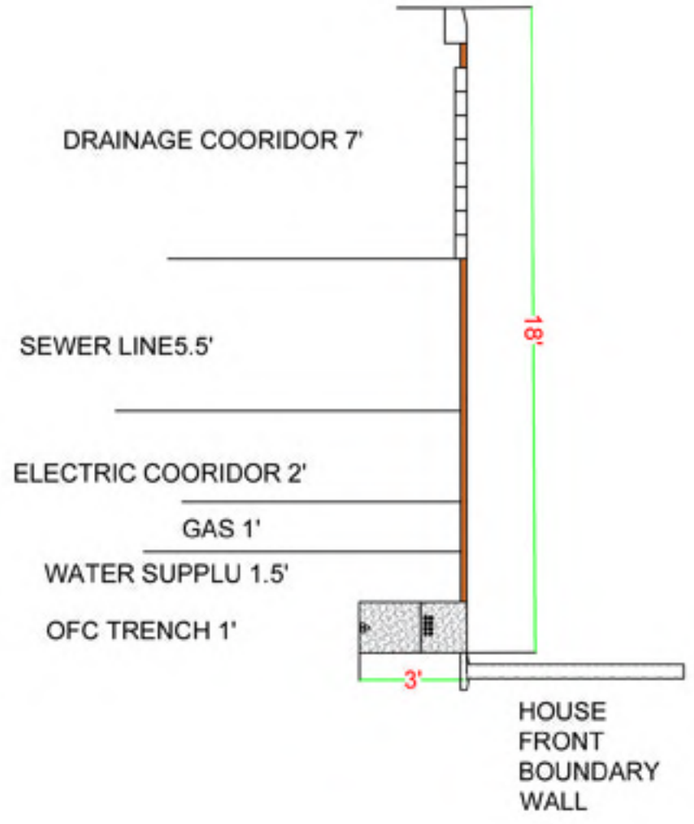












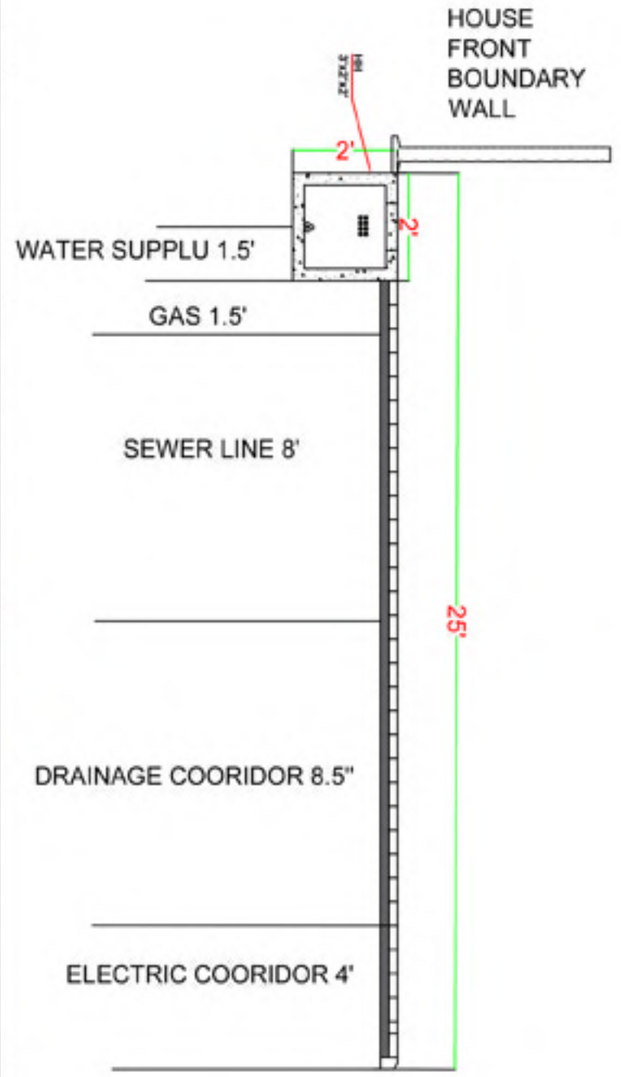
DEFENCE HOUSING AUTHORITY QUETTA

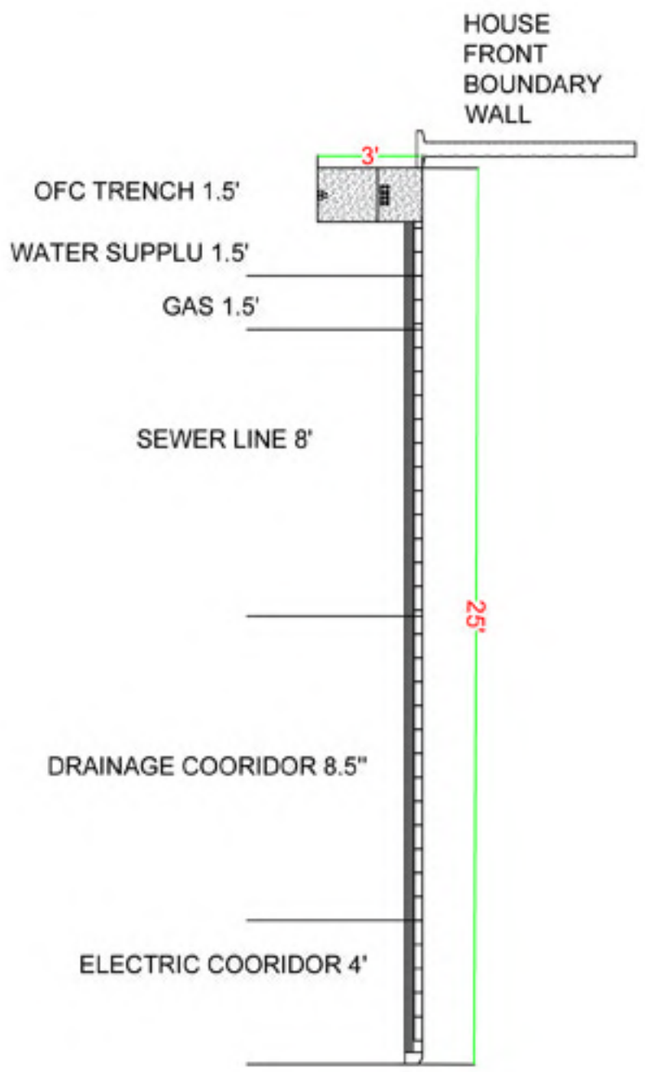
Highrise Private Limited

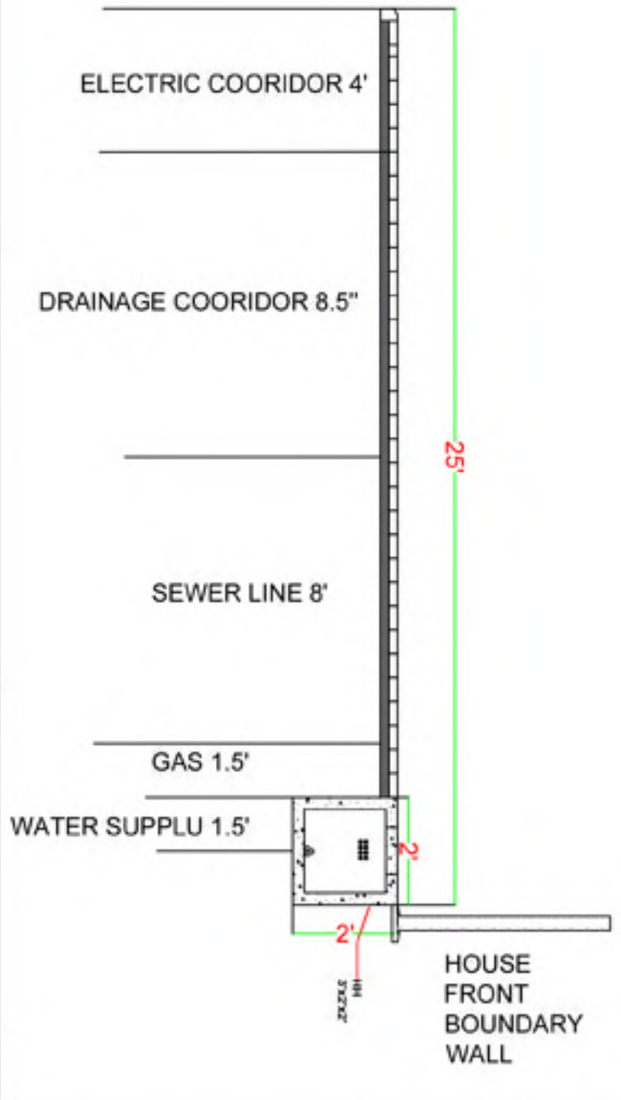
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

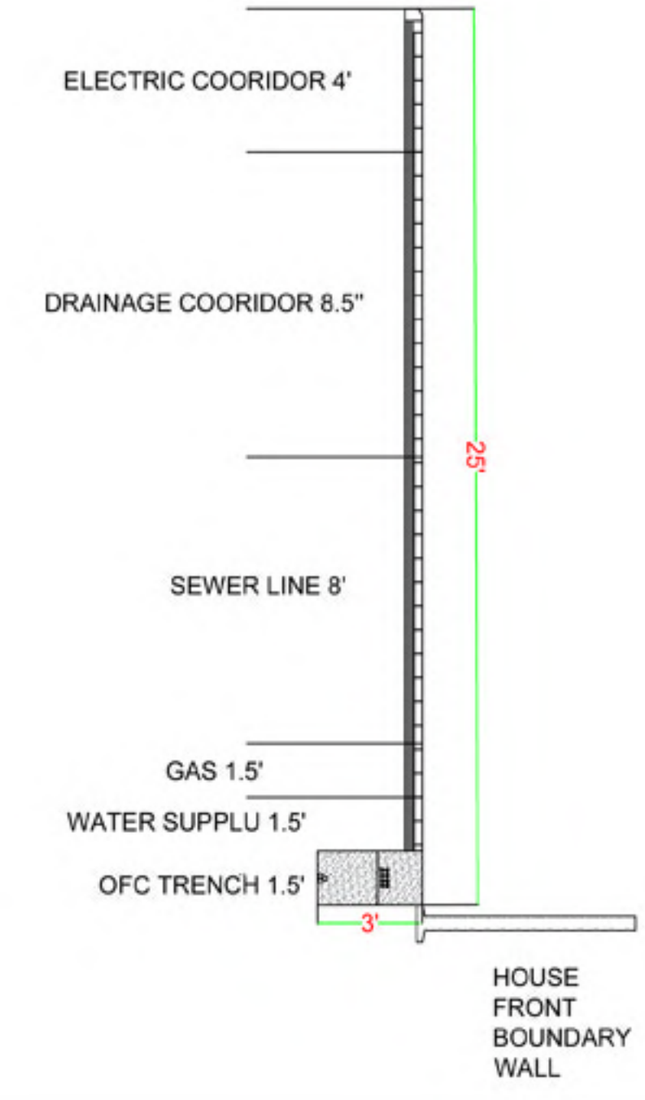
TYPICAL X-SECTION 295' R.O.W LOCAL STREET

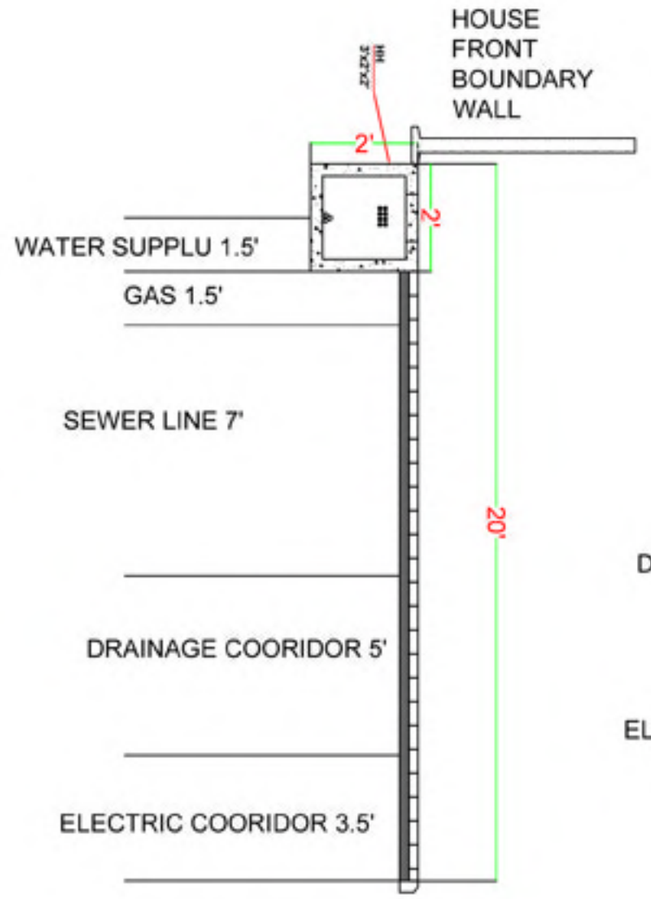
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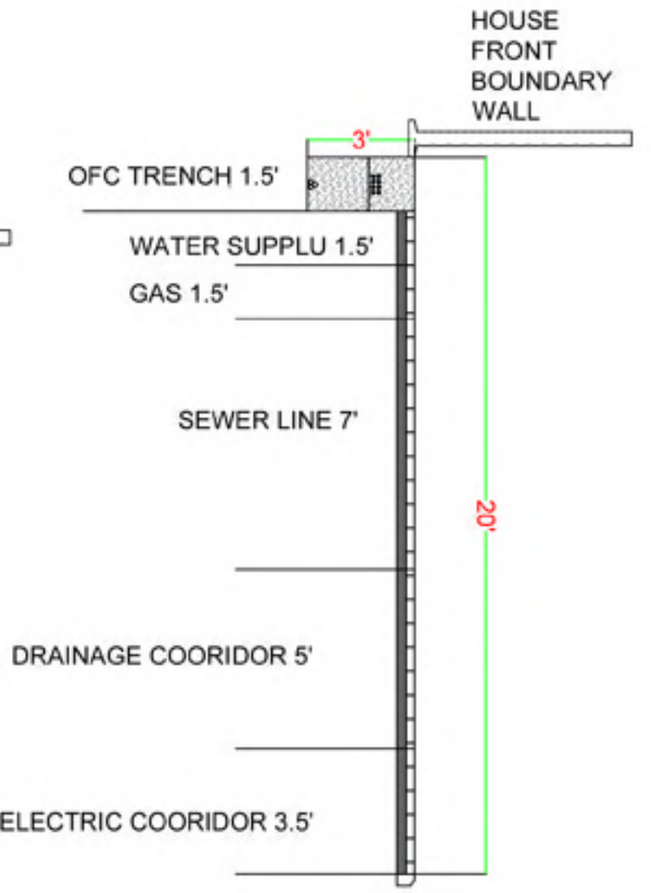


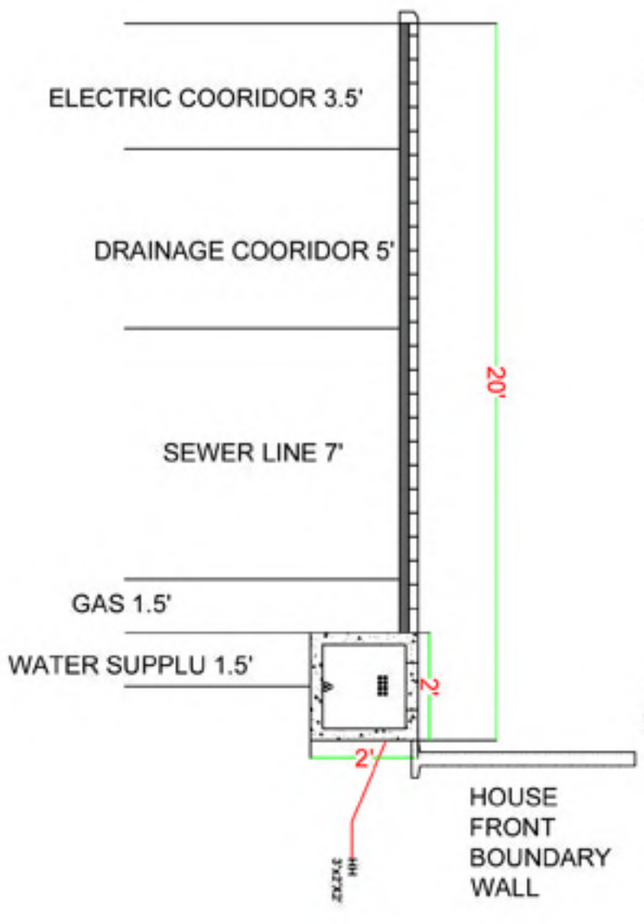


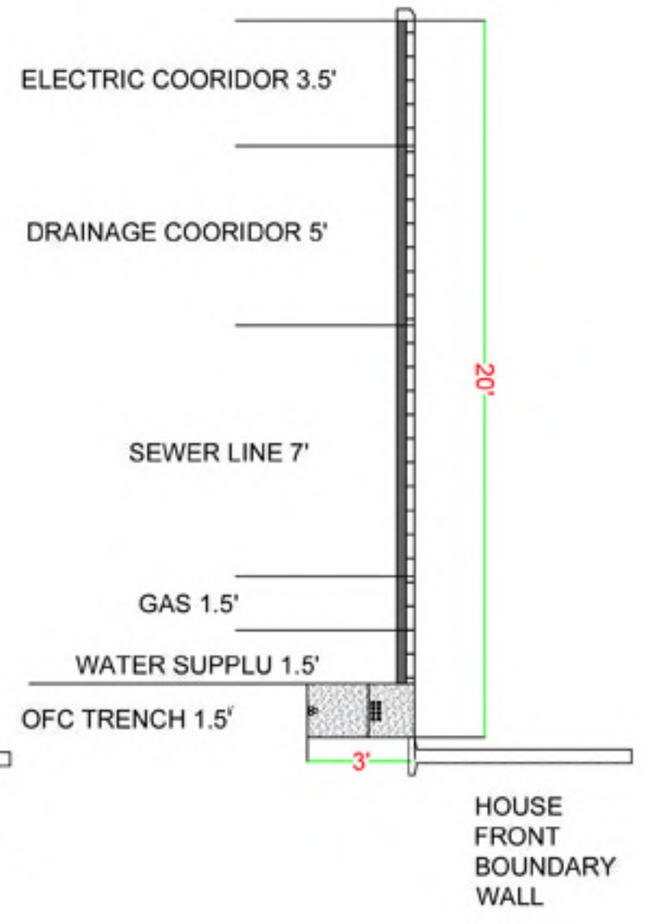












DEFENCE HOUSING AUTHORITY
QUETTA

Highrise Private Limited

DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

TYPICAL X-SECTION 350' R.O.W LOCAL STREET

SEPTEMBER, 2024

N.T.S

OPTICAL FIBER NETWORK PLAN

FOR

DHA QUETTA SMART & SAFE CITY

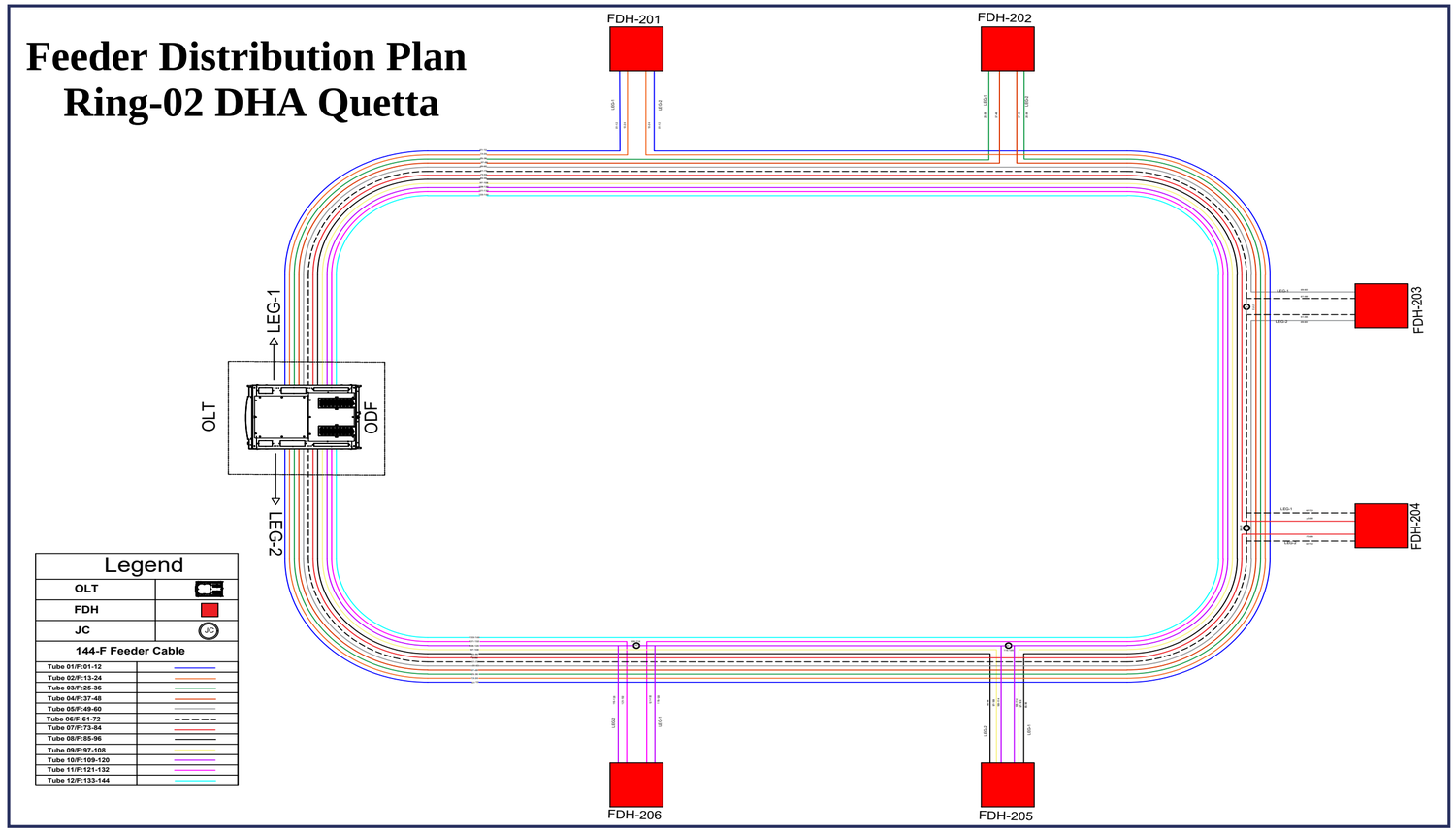
RING-02 SECTOR A2

BOQ Ring-02,Sector A2 DHA Quetta

Connection Summary									ODN Ports			Feeder BOQ										DISTRIBUTION BOQ																				
Exchange Ring No/ Route Area	OLT Location	FDH List	FDH 144	Plots	Residential		Commercial		Total Users	Design Residential ODN Ports	Design Commercial ODN Ports	Total Design ODN Ports	Feeder Fiber Length(Meter)			JOINT ENCLOSURE	Duct Length(HDPE 57/63mm)			Feeder Civil Work (Trench)/Mtr)			HandHole		Distribution Cable (MTR)			Duct HDPE Pipe 57mm/63mm (Meter)		Civil Work (Trench)/Mtr)		RNAP+CNAP				Total FAT 8P	FDH Spliters					
					Total Residential Plots	User	Total Commercial Plots	User					144F	48F	24F	144F	2 Way Duct (Feeder)	3 Way Duct (Feeder+Dist)	Feeder Common Route Duct (3 Way)	Trench 2 Ways	Trench (3 Way) Feeder+Dist	Feeder Common Trench 3 Way	FDH-Base 3x4x3	HandHole 3x2x2	48F	24F	12F	1 Way 57mm	2 Ways 57mm	Trench (3ft) 1 Way	Trench (3ft) (2 Way)	*JOINT BOX*			Total NAP 8P		No Of ISP	Residential Splitter Level 2	Commercial Splitter Level 2	Feeder Core	Used Cores
																															48F	24F	12F				2x4	2x4		
Ring-02/Sector A2	DHA-Quetta	FDH 201	1	58	0	0	58	58	58	0	512	512	5844	0	600	8	358	8139	1929	179	2713	643	6	146	0	1144	0	342	392	342	196	0	0	0	0	64	1	0	16	18	16
		FDH 202	1	58	0	0	58	58	58	0	512	512													0	1180	7	569	0	569	0	0	0	0	0	64	1	0	16	18	16
		FDH 203	1	233	233	233	0	0	233	256	0	256													0	616	2647	2804	0	2804	0	0	32	0	32	0	1	8	0	12	8
		FDH 204	1	232	218	218	14	14	232	256	128	384													0	1807	642	934	784	934	392	0	32	0	32	16	1	8	4	18	12
		FDH 205	1	202	149	149	53	53	202	192	448	640													0	1663	1100	1642	818	1642	409	0	24	0	24	56	1	6	14	24	20
		FDH 206	1	163	142	142	21	21	163	192	192	384													0	1380	1076	1498	0	1498	0	0	24	0	24	24	1	6	6	18	12
			6	946	742	742	204	204	946	896	1792	2688	5844	0	600	8	8497			179	2713	643	6	146	0	7790	5472	7789	1994	7789	997	0	112	0	112	224	1	28	56	108	84
TOTAL SUMMARY			6	946	742	742	204	204	946	896	1792	2688	5844	0	600	8	10426			179	2713	643	6	146	0	7790	5472	7789	1994	7789	997	0	112	0	112	224	1	28	56	108	84
																				3535			152																	

Loss Budget Ring 02 DHA Quetta

		Feeder Distance(KM)		Attenuation Loss / KM	A side Per Kilometer Attenuation Loss	B side Per Kilometer Attenuation Loss	Splice Loss	Connector Loss	Splitter Loss @ FDH	Total Loss at FDH Side A	Total Loss at FDH Side B	2 Connector + 2splice+Drop Cable Loss	Loss at Customer From A Side	Loss at Customer From B Side
FDH_No	SFP Class B+ Tx Power	A side	B side				0.05*6	4*0.5	Splitter 2:32					
FDH 201	2	1.691	4.112	0.35	0.59	1.44	0.3	2	15.05	17.9	18.8	1	**-17.0**	-17.9
FDH 202	2	1.825	3.988	0.35	0.64	1.40	0.3	2	15.05	18.0	18.7	1	**-17.1**	-17.8
FDH 203	2	1.936	3.877	0.35	0.68	1.36	0.3	2	15.05	18.0	18.7	1	**-17.1**	-17.8
FDH 204	2	2.234	3.579	0.35	0.78	1.25	0.3	2	15.05	18.1	18.6	1	**-17.2**	-17.7
FDH 205	2	2.923	2.890	0.35	1.02	1.01	0.3	2	15.05	18.4	18.4	1	**-17.5**	-17.5
FDH 206	2	3.375	2.438	0.35	1.18	0.85	0.3	2	15.05	18.5	18.2	1	**-17.6**	-17.3



DHA-QUETTA
Feeder Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 1 FDR+1NO FOR FEEDER & 01 NOS. FIRE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

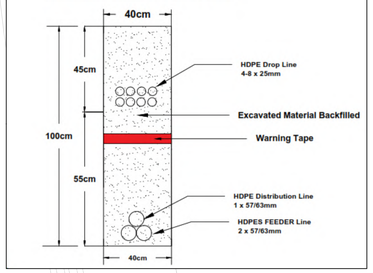
Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

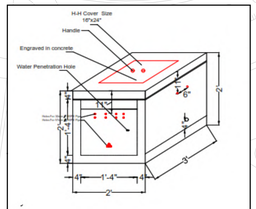
Ring-01, Ring-02, Ring-03, Ring-04, Ring-05, Ring-06, Ring-07

General Guidelines

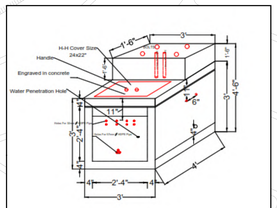
- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable: 2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

OFC TRENCH FEEDER/DITTRIBUTION





HAND HOLE 3x2'x2'
For Feeder/Distribution



HAND HOLE/FDH Base 3'x4'x3'

REV	DATE	DESCRIPTION	APPROVED		
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FEEDER DUCT PLAN RING 02

SCALE: 1:2,051

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
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CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FEEDER CABLE PLAN RING-02

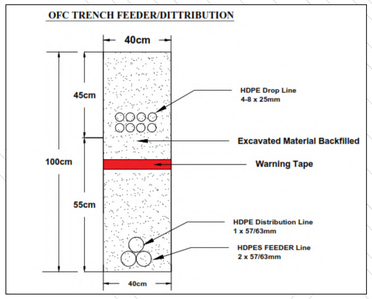
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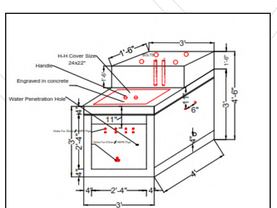
DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

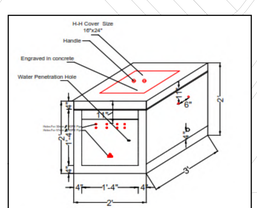
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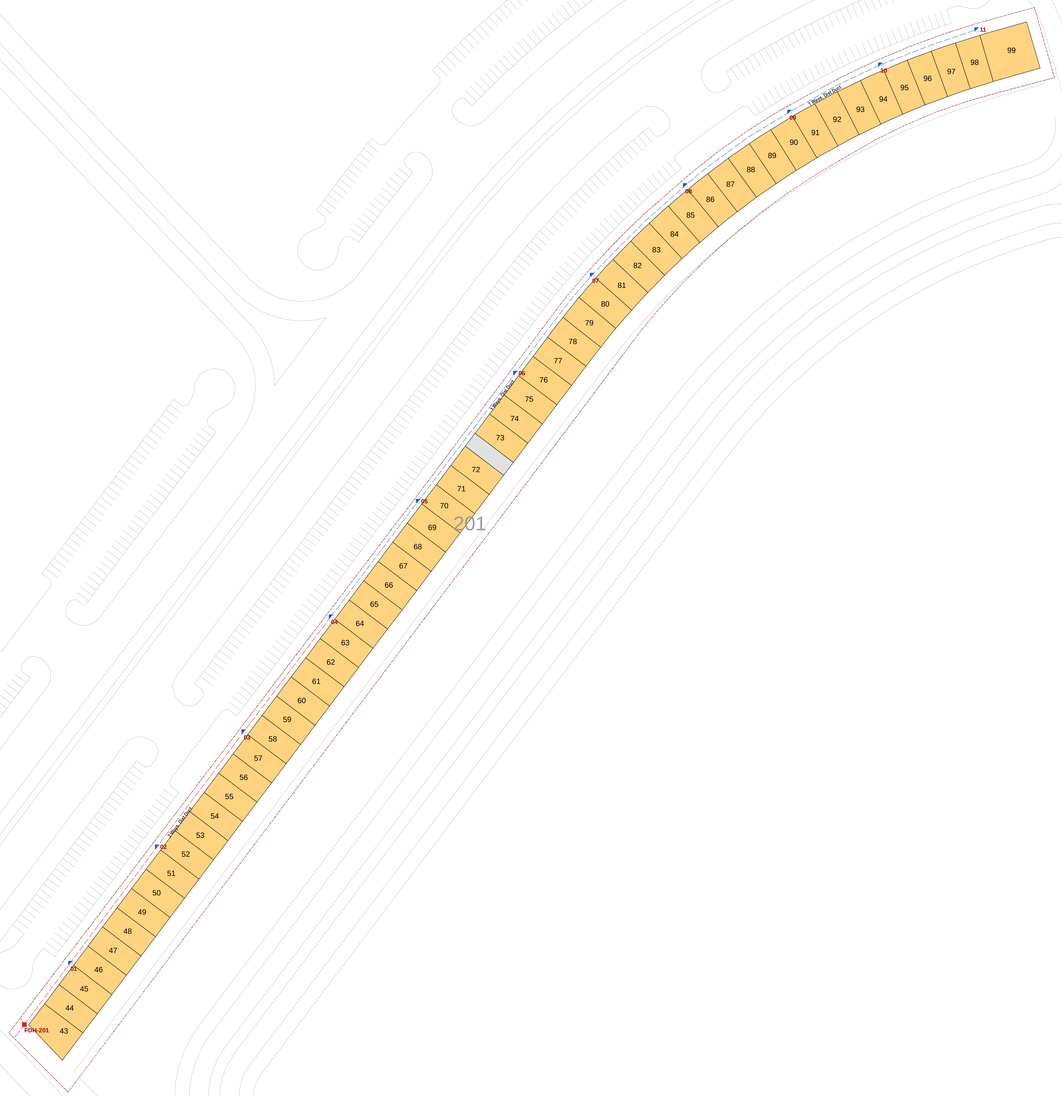




HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution



N
W E
S

DHA-QUETTA
Civil/Duct Plan

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- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2

- 1 Ways, 1', HomePass
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- 3 Ways, 3', FDR+DIST — *Note:2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH*
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- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

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CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

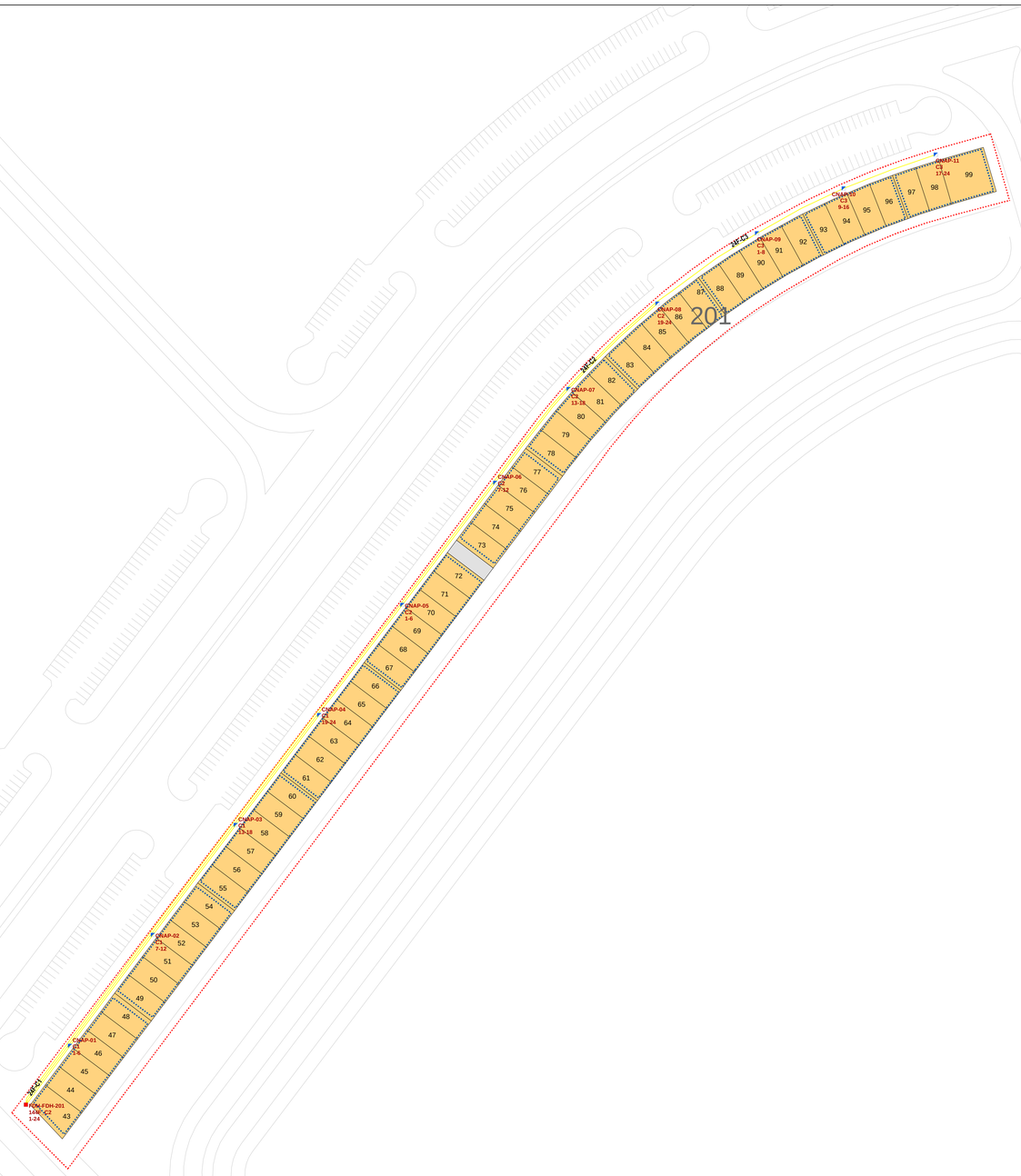
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-201 DUCT PLAN RING-02

SCALE: 1:830

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



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DHA-QUETTA
CABLE Plan

Legend

- **OLT**
- **FDH-Cabinet** FDH HandHole with Base, 3x4x3
- **CNAP** CNAP(Commercial NAP) HandHole, 3x2x2
- **RNAP** RNAP(Residential NAP) HandHole, 3x2x2
- **FCNAP** FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- **FRNAP** FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- **FEEDER** HandHole, 3x2x2
- **DISTRIBUTION** HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
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04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-201 CABLE PLAN RING-02

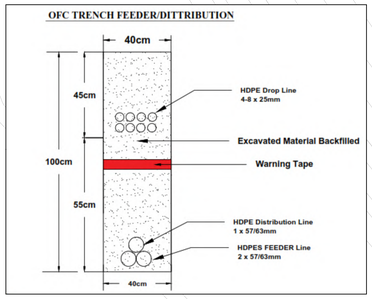
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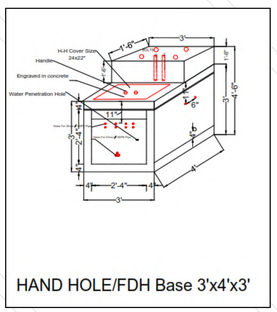
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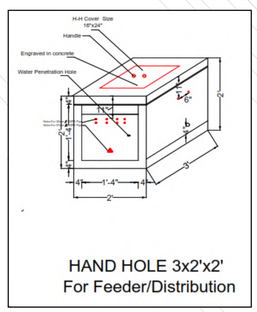
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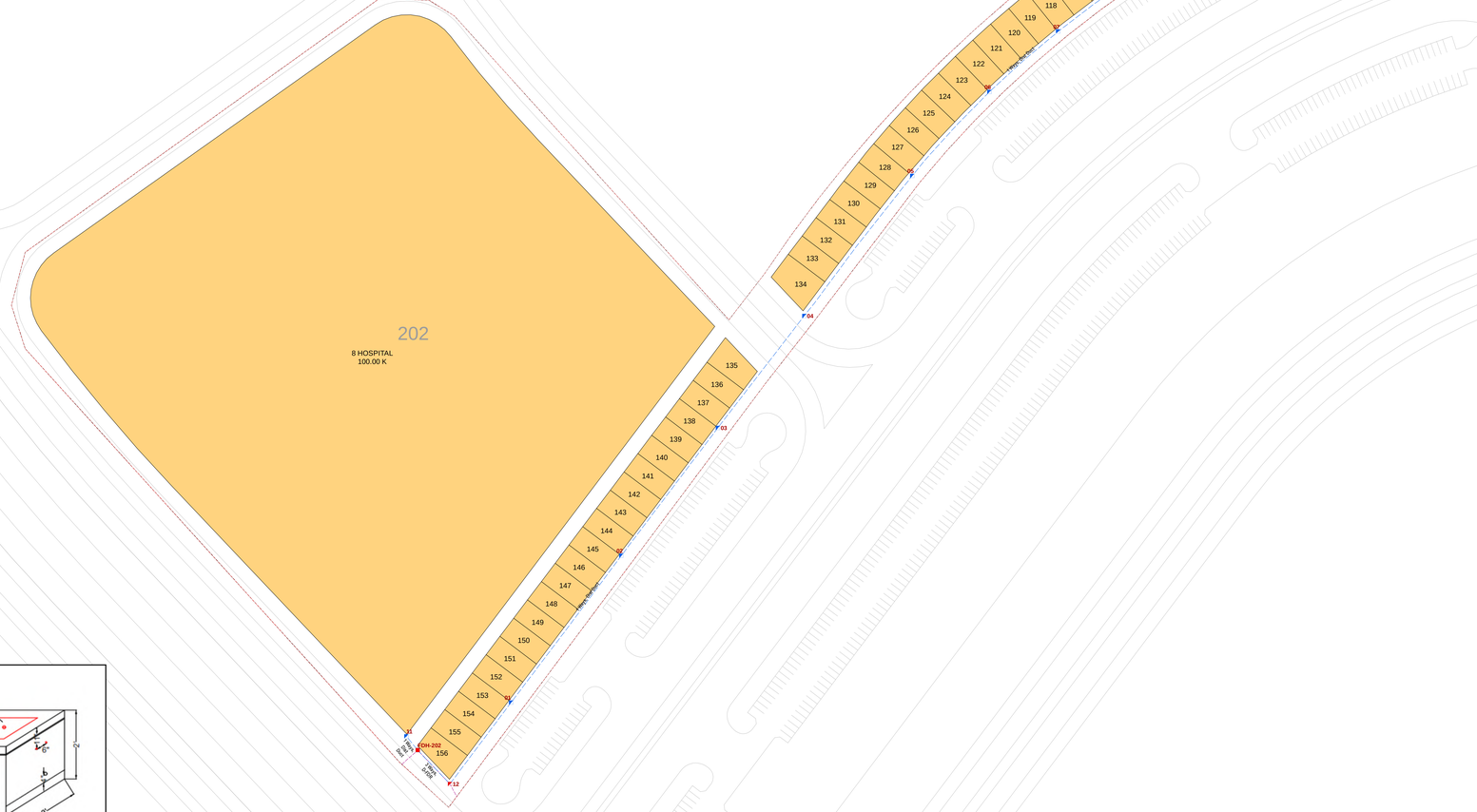




HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution



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DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
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- Drop Cable

Feeder OFC Cable
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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

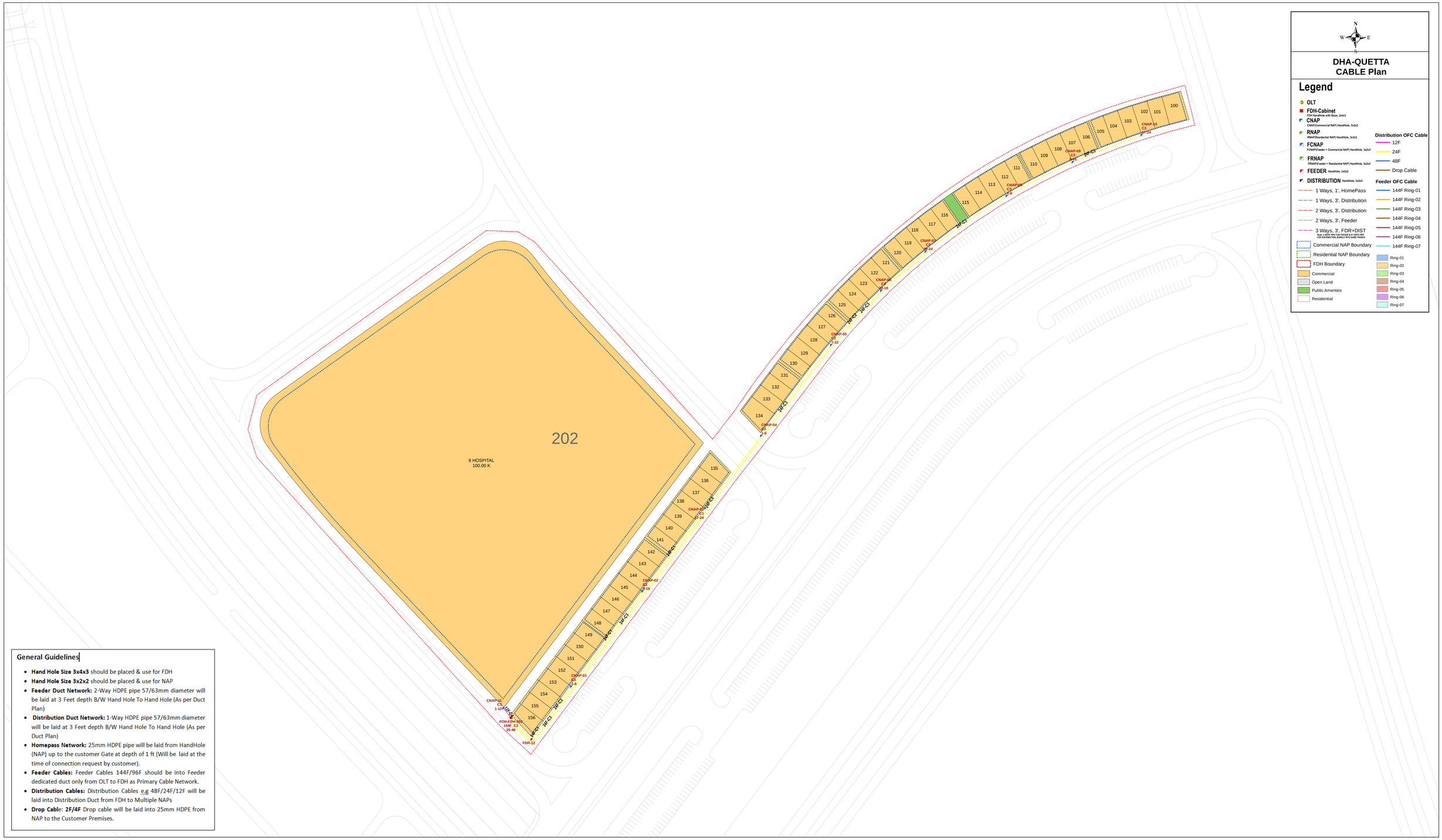
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-202 DUCT PLAN RING-02

SCALE: 1:830

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



General Guidelines

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CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-202 CABLE PLAN RING-02

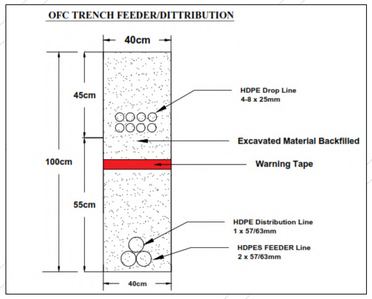
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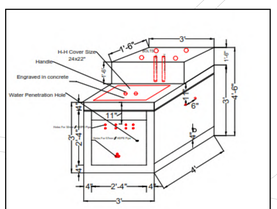
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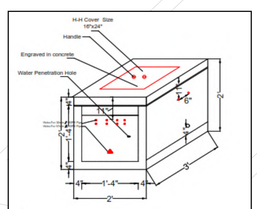
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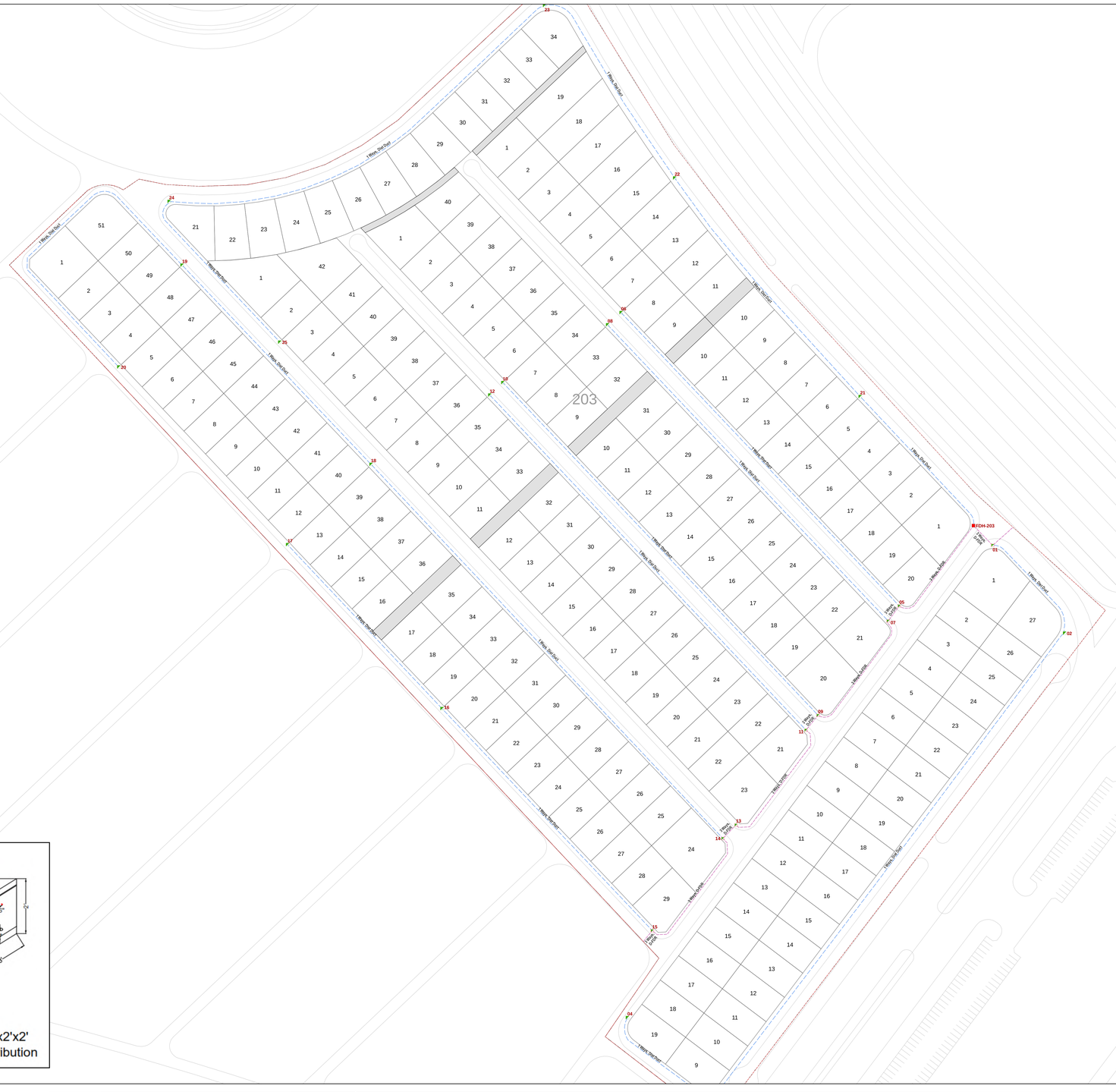




HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution



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DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
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- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 1x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
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- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
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- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
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Ring-01
Ring-02
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01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA
GPON FDH-203 DUCT PLAN RING-02

SCALE 1:830

DATE 15.01.25

DWG NO. DHAQ-GPON-PNI-v1.0

DHA-QUETTA
CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH HandHole with Base, 3x4x3
- CNAP — CNAP/Commercial NAP) HandHole, 3x2x2
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- FEEDER — Handhole, 3x2x2
- DISTRIBUTION — Handhole, 3x2x2
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Distribution OFC Cable

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- 144F Ring-01
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Ring-01
Ring-02
Ring-03
Ring-04
Ring-05
Ring-06
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203

General Guidelines

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CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-203 CABLE PLAN RING-02

SCALE: 1:650

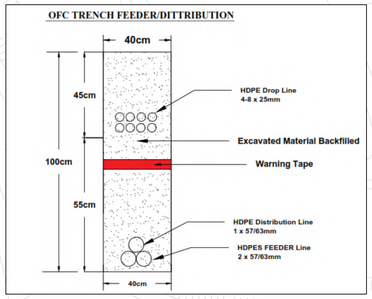
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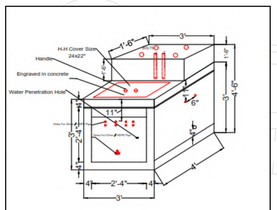
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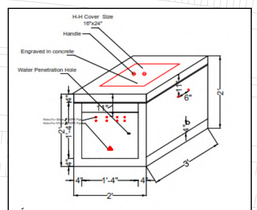
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OFC TRENCH FEEDER/DITTRIBUTION

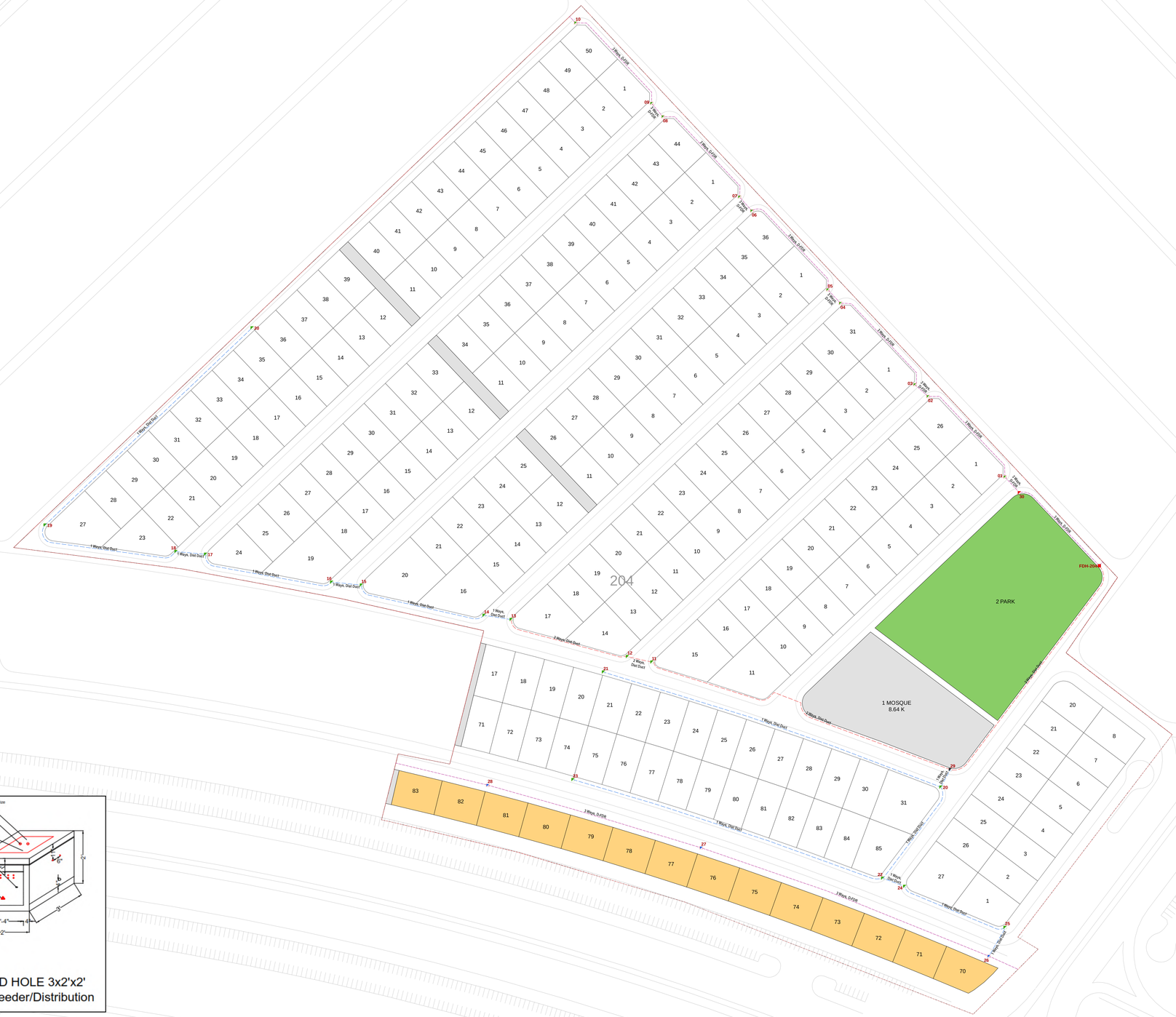




HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution



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DHA-QUETTA
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Distribution OFC Cable
- 12F
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- Drop Cable

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CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-204 DUCT PLAN RING-02

SCALE: 1:830

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



DHA-QUETTA CABLE Plan

Legend

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- 144F Ring-02
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04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-204 CABLE PLAN RING-02

SCALE: 1:690

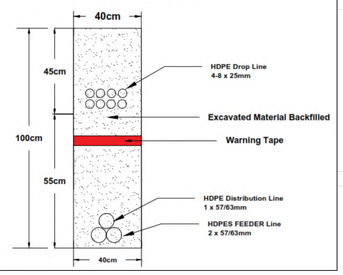
DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

OFC TRENCH FEEDER/DITTRIBUTION



DHA-QUETTA
Civil/Duct Plan

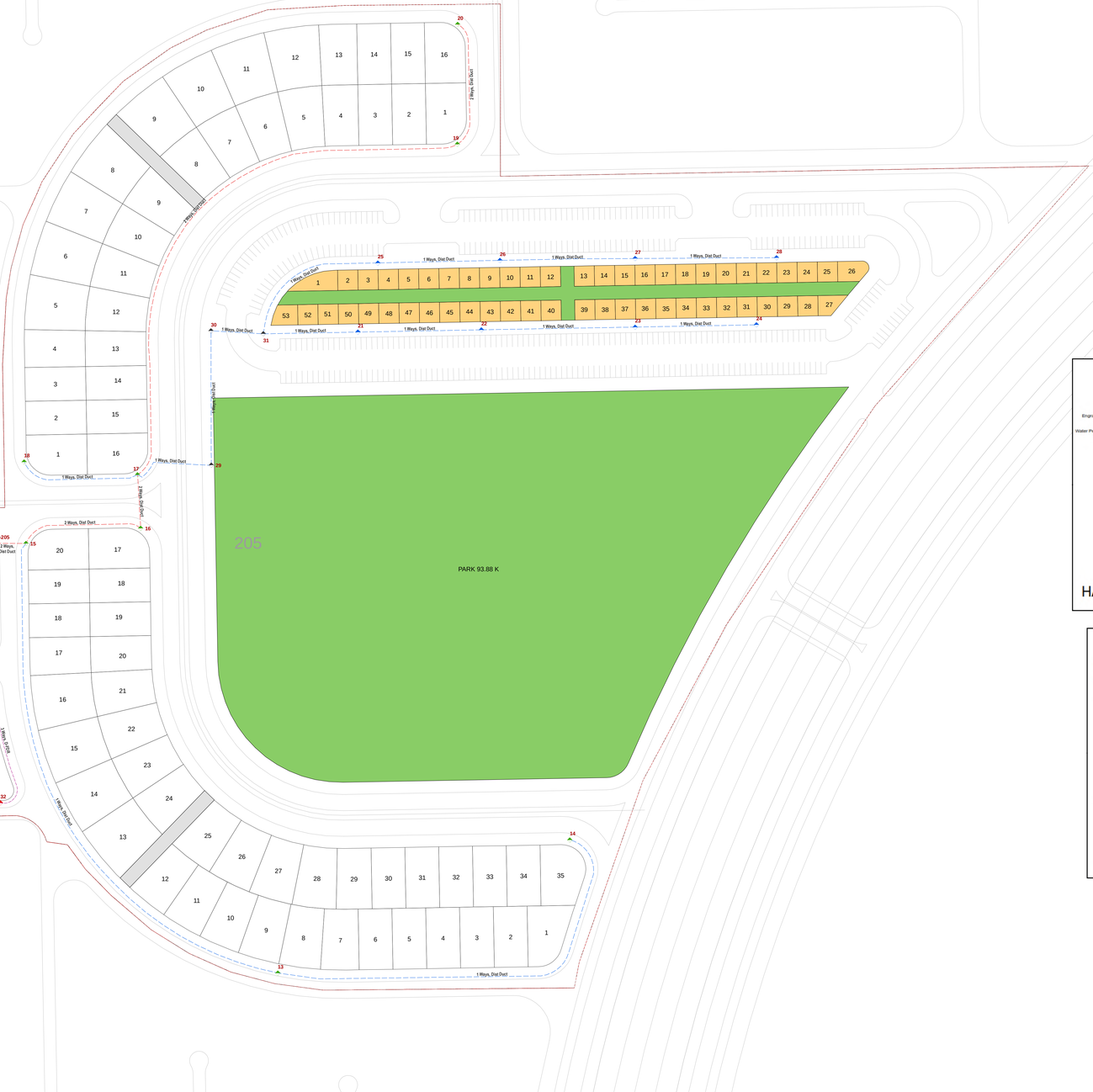
Legend

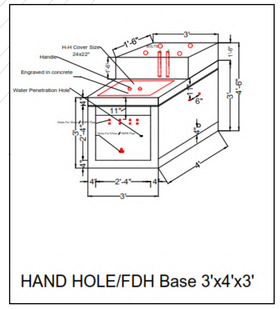
- OLT
- FDH-Cabinet — FDH HandHole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER HandHole, 3x2x2
- DISTRIBUTION HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

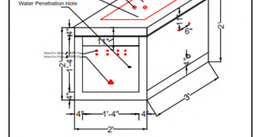
Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

Ring-01
Ring-02
Ring-03
Ring-04
Ring-05
Ring-06
Ring-07





HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution

REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

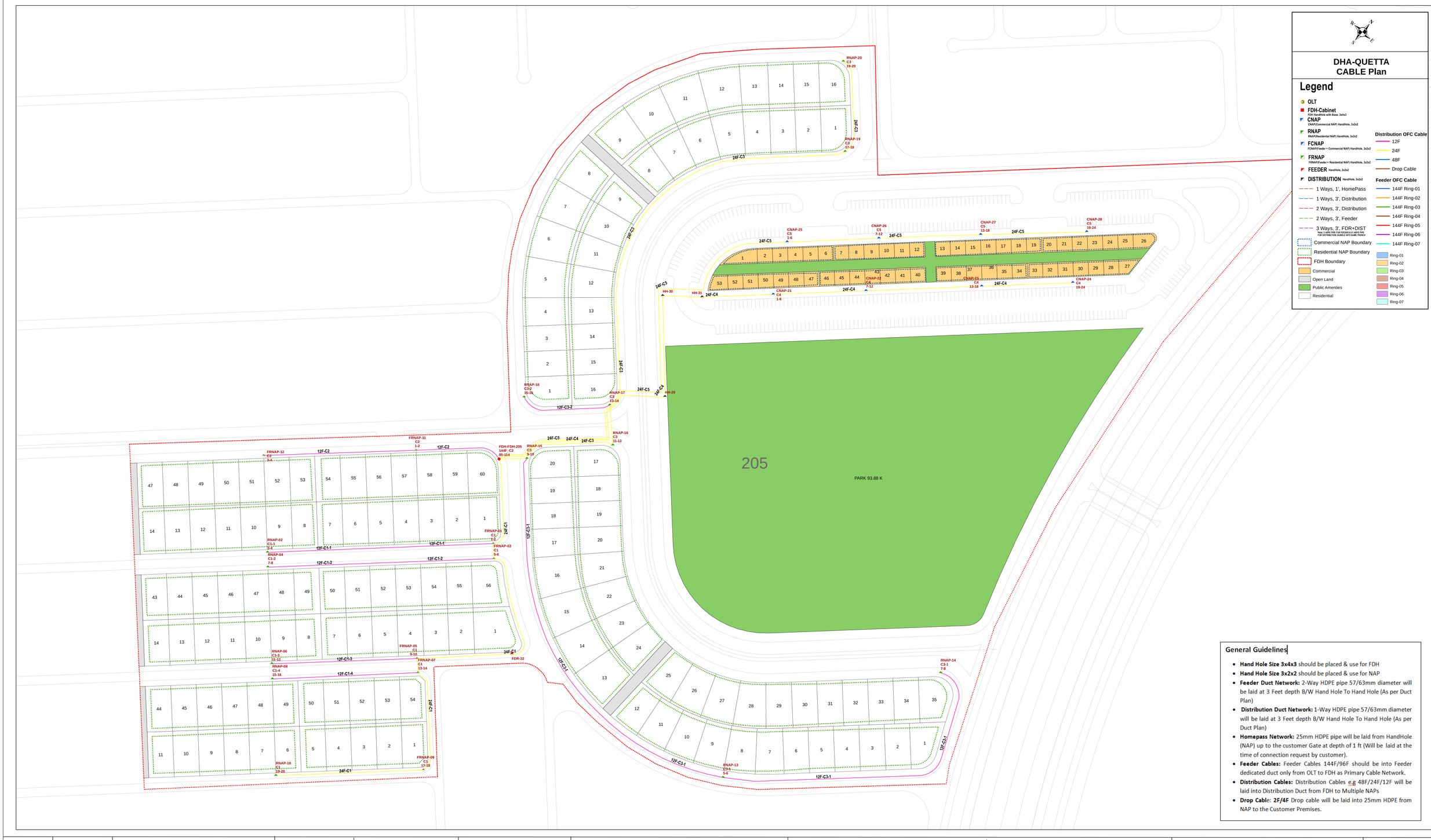
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-205 DUCT PLAN RING-02

SCALE: 1:830

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP/Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP/Residential NAP) Handhole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- FEEDER — Handhole, 1x2x2
- DISTRIBUTION — Handhole, 1x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note:1 HDPE PIPE FOR DISTRIBUTION & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE WITH SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
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01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-205 CABLE PLAN RING-02

SCALE: 1:760

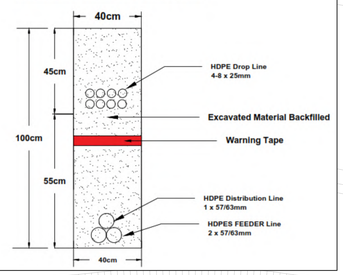
DATE: 15.01.25

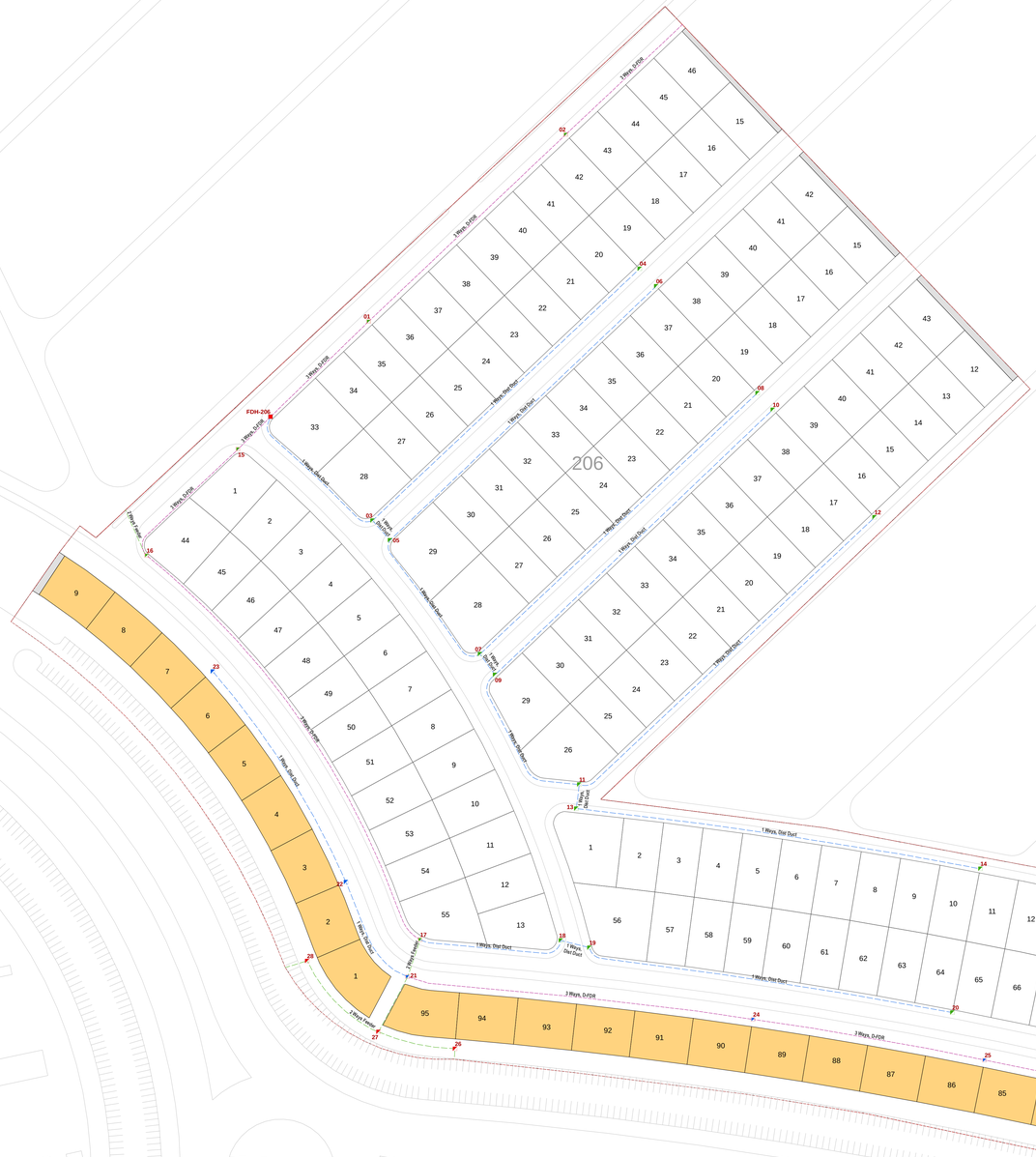
DWG NO.: DHAQ-GPON-PNI-v1.0

General Guidelines

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OFC TRENCH FEEDER/DITTRIBUTION





N
W E
S

DHA-QUETTA
Civil/Duct Plan

Legend

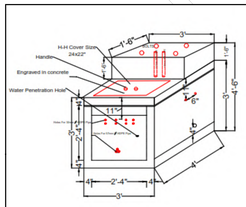
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- FEEDER HandHole, 3x2x2
- DISTRIBUTION HandHole, 3x2x2

- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST
  Note:2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
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- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

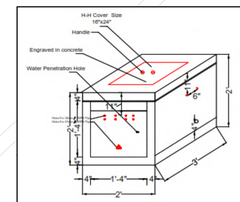
Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07



HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution

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01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

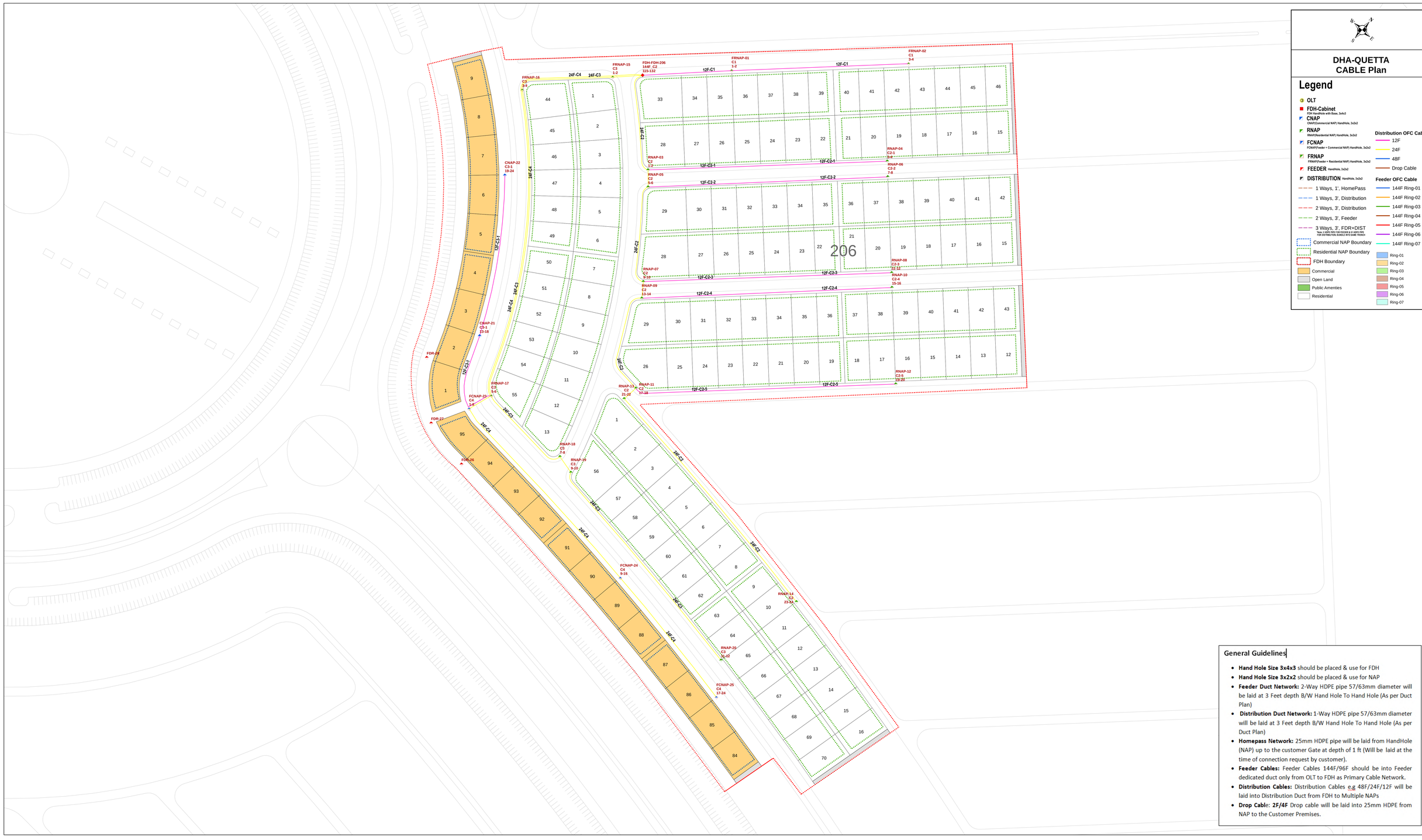
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-206 DUCT PLAN RING-02

SCALE: 1:830

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP/Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP/Residential NAP) Handhole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
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- DISTRIBUTION — Handhole, 1x2x2

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- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note:1 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION. DUNCLE WITH SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-206 CABLE PLAN RING-02

SCALE: 1:770

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

OUTSIDE PLANT OSP

Core Network

Central Office

Feeder Network

Distribution Network

Customer Premises

TELEPHONE

IPTV

INTERNET

Surveillance

Smart Metering

A

B

OLT

FDH-101

144F Feeder Ring

Feeder JC

FDH-102

FDH-103

Splitter

Distribution Cable 12/24/48F

Distribution Cable 12/24/48F

FDH-106

FDH-105

144F Feeder Ring

Feeder JC

FDH-104

Cable 12F

Surveillance Cameras

Pole

Cable 12F

Surveillance Cameras

Pole

R-NAP

Joint Box

ONT

Drop Cable 2F

C-NAP

FAT-1 (2:8)

Drop Cable 2F

FAT-2 (2:8)

FAT-3 (2:8)

Legend

OLT	
FDH	
Splitter	
CNAP	
RNAP	
FAT	
ONT	
Feeder Cable	
Distribution Cable	
Drop Cable	

REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

TITLE: Single Line Diagram (SLD) Plan A

SCALE: N.T.S

DATE: October 2025

DWG. NO.: DHAQ–GPON–PNI–v1.0

SHEET NO.: 01

OUTSIDE PLANT OSP

Core Network | Central Office | Feeder Network | Distribution Network | Customer Premises

TELEPHONE
IPTV
INTERNET
Surveillance
Smart Metering

A
B

OLT

FDH-101
FDH-102
144F Feeder Ring
FDH-103
FDH-104
FDH-105
FDH-106
144F Feeder Ring

Splitter

Distribution Cable
12/24/48F
Distribution Cable
12/24/48F

ONT
Drop Cable 2F
R-NAP
Joint Box
Drop Cable 2F
Surveillance Cameras
Pole

C-NAP
FAT-1
(2:8)
Drop Cable 2F
FAT-2
(2:8)
FAT-3
(2:8)

Legend

OLT	
FDH	
Splitter	
CNAP	
RNAP	
FAT	
ONT	
Feeder Cable	
Distribution Cable	
Drop Cable	

REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

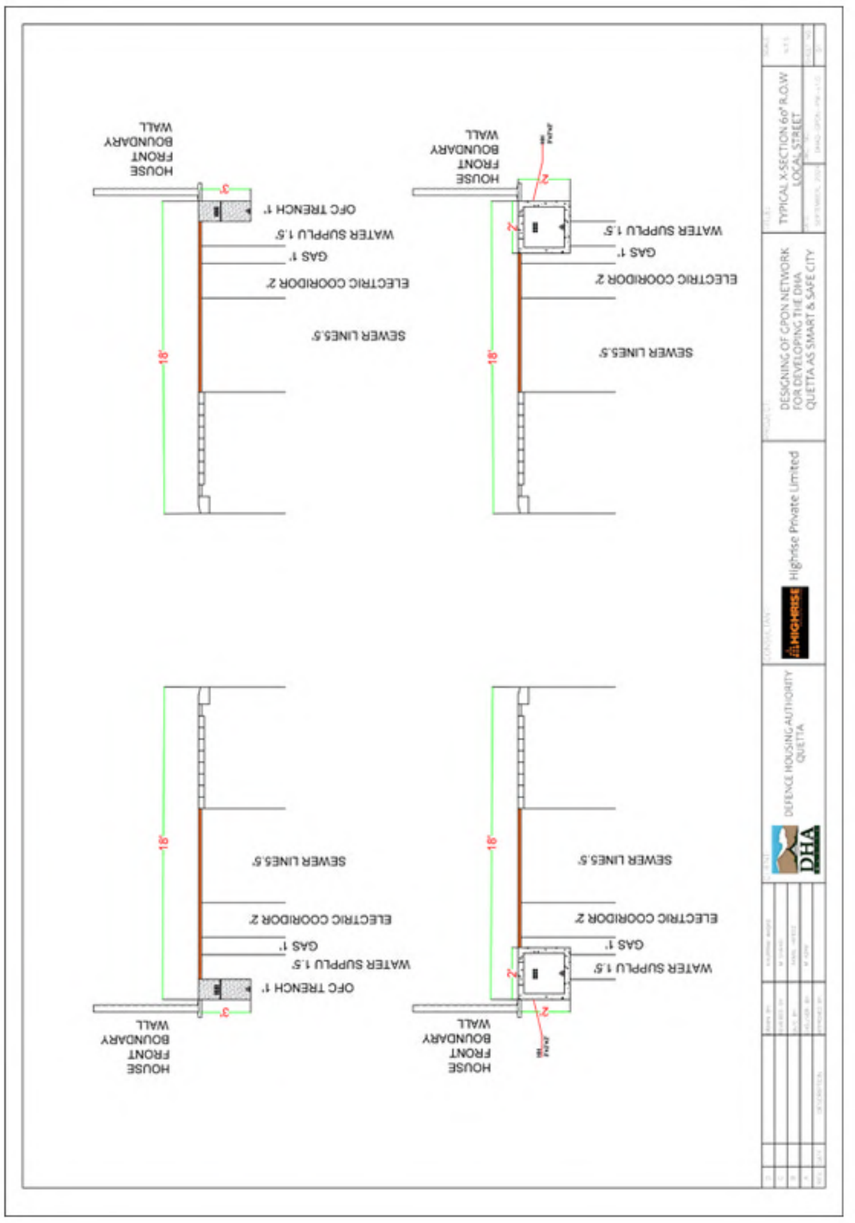
TITLE: Single Line Diagram (SLD) Plan B

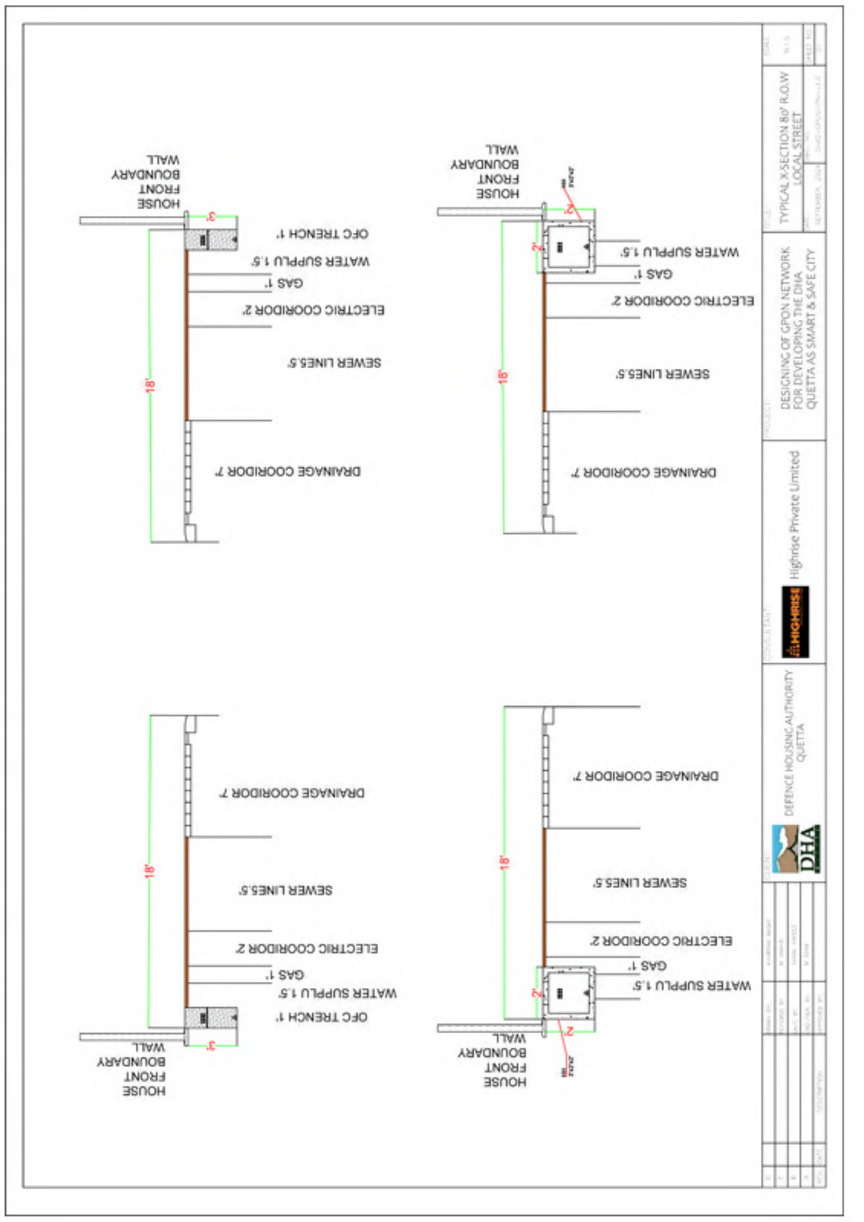
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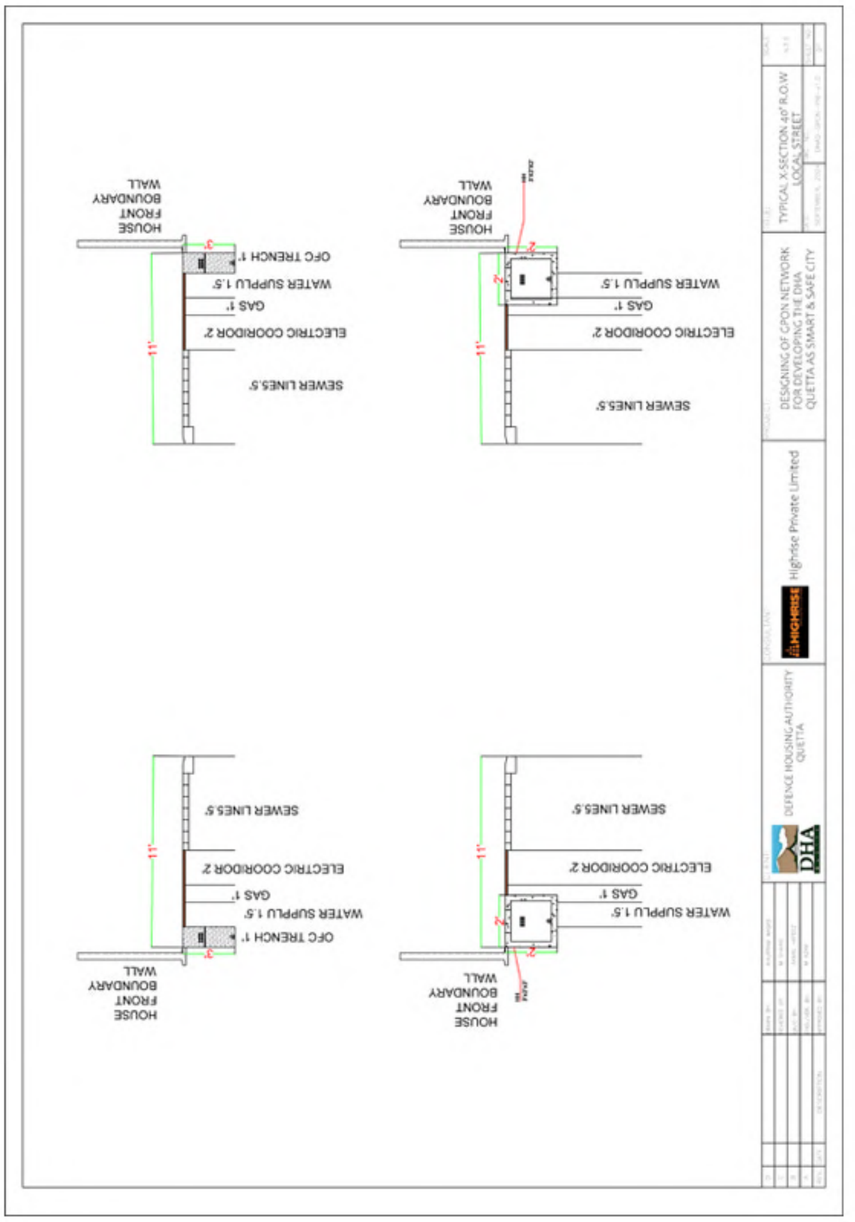
DATE: October 2025

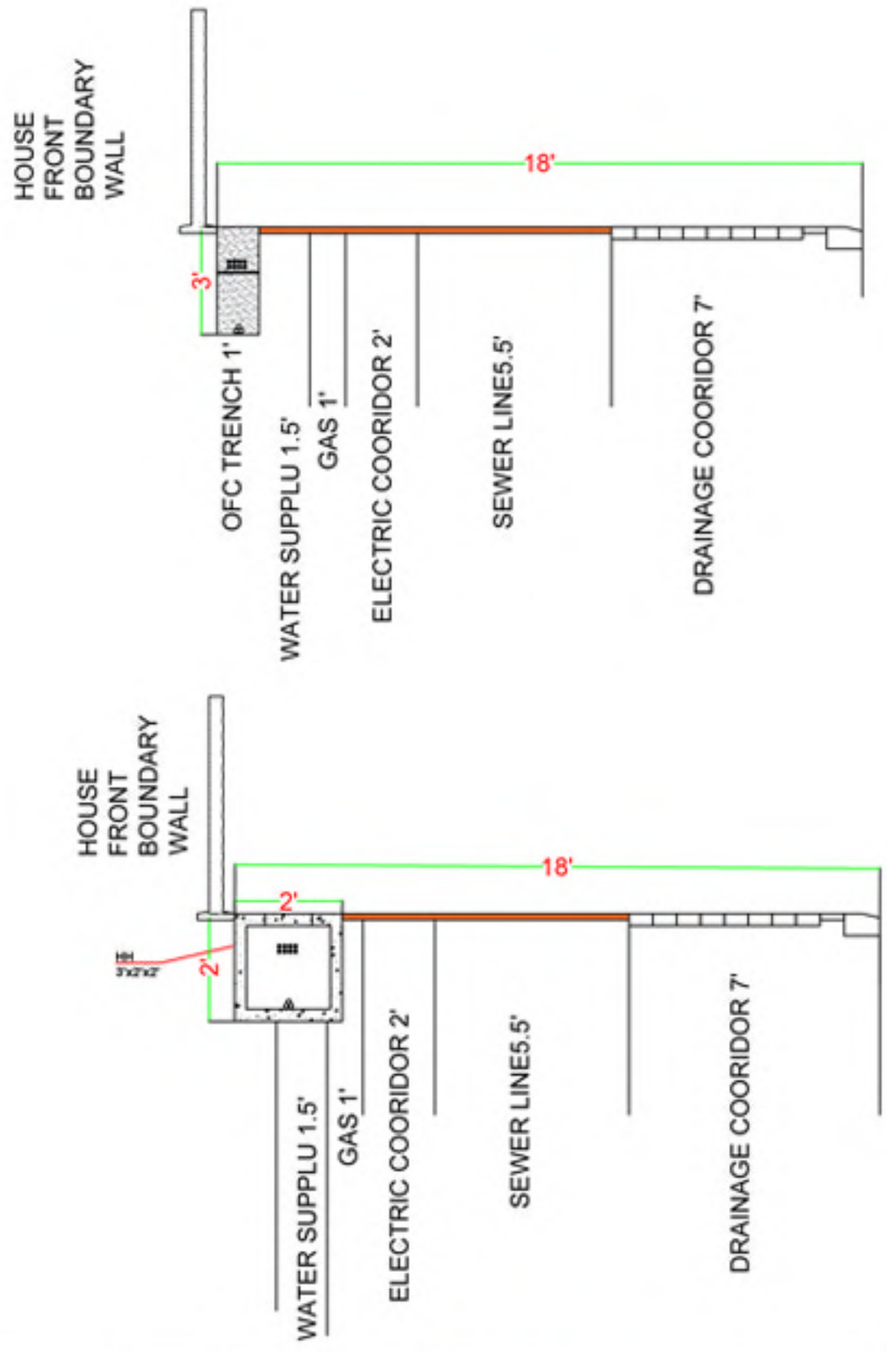
DWG. NO.: DHAQ–GPON–PNI–v1.0

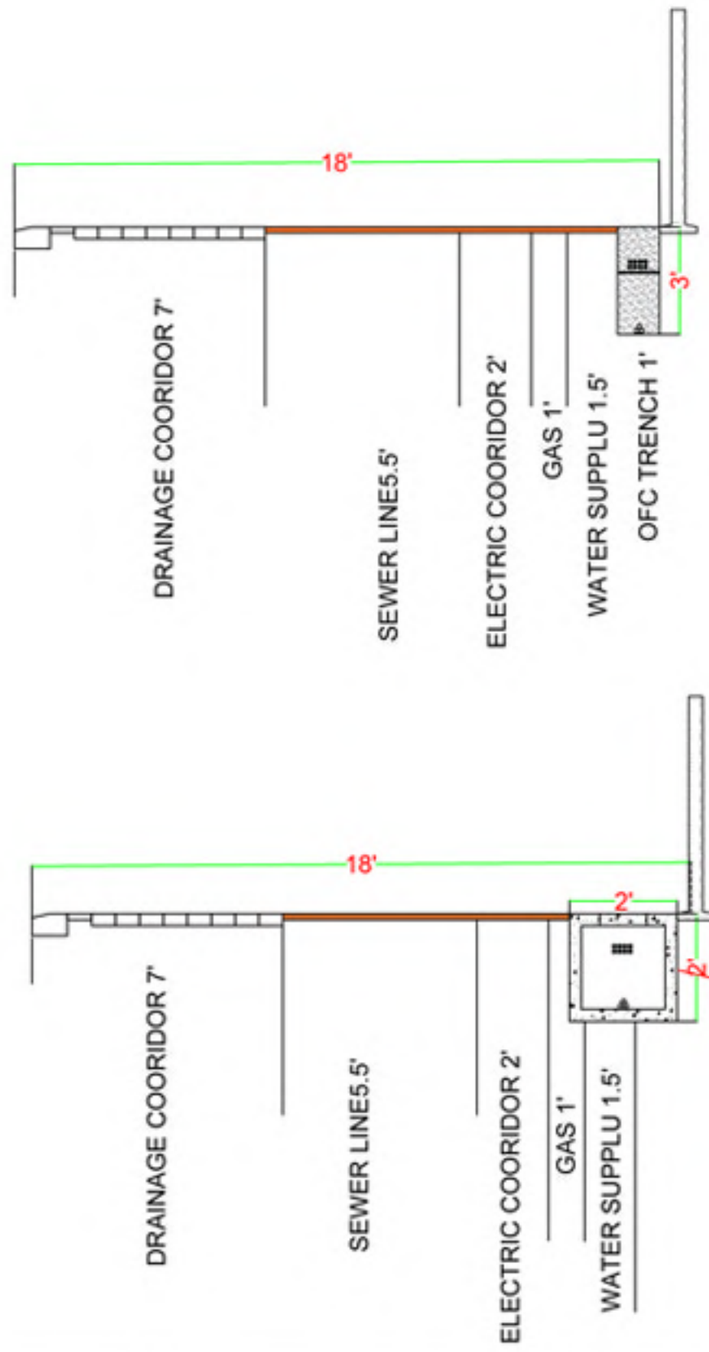
SHEET NO.: 01

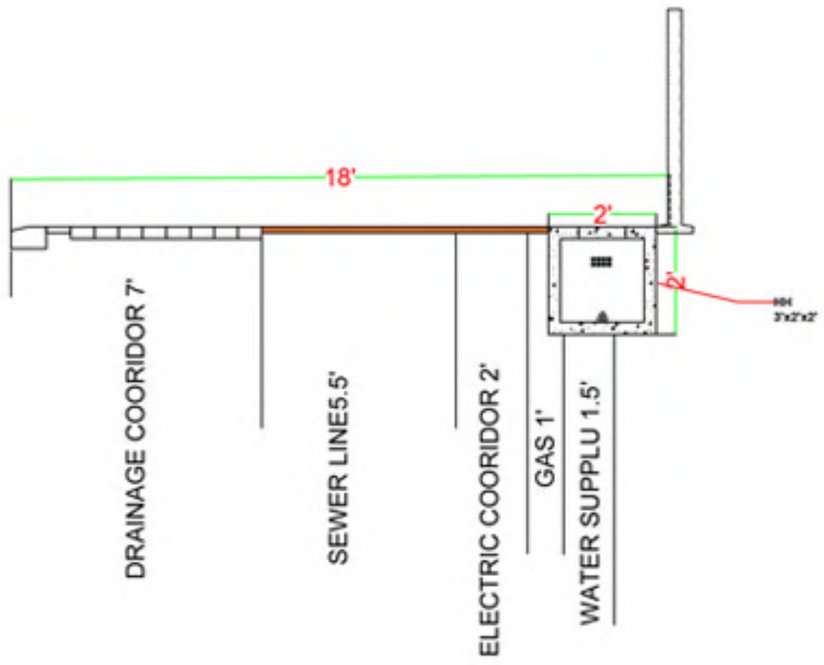

HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
18'
3'
2'
2'
TYPICAL X-SECTION 60' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA


HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
DRAINAGE COORIDOR 7'
18'
3'
2'
2'
TYPICAL X-SECTION 80' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA


HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
11'
3'
2'
2'
TYPICAL X-SECTION 40' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA







REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

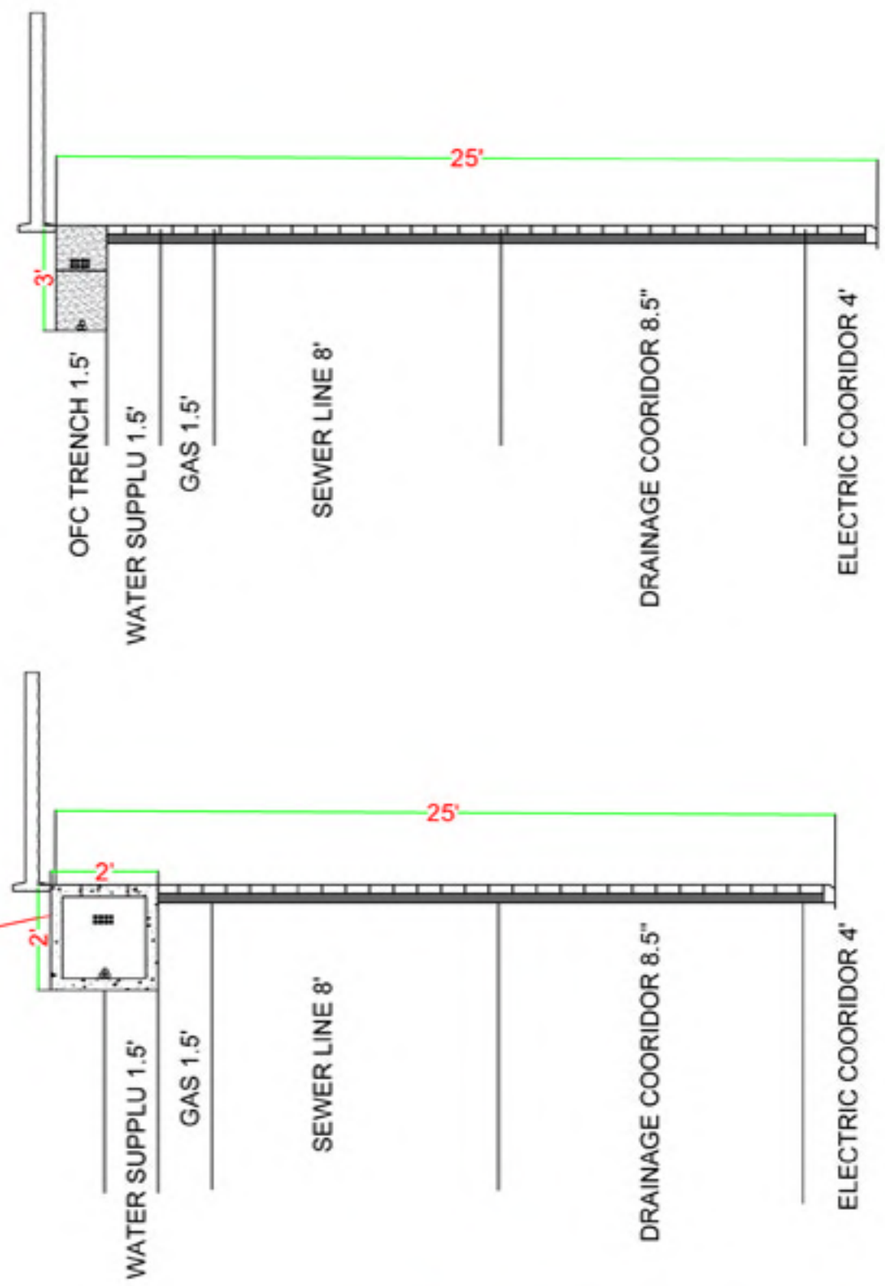
TITLE: TYPICAL X-SECTION 98' R.O.W LOCAL STREET

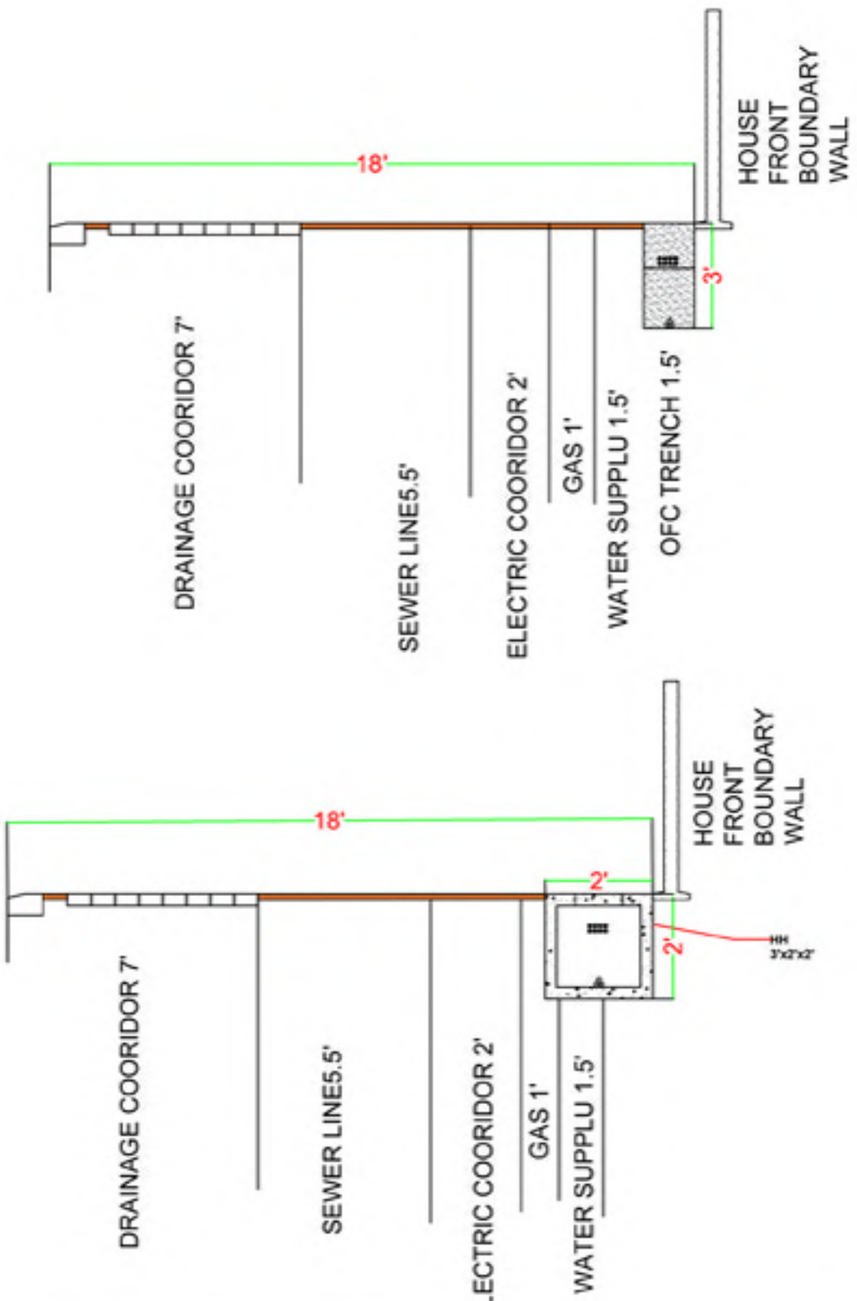
SCALE: N.T.S

DATE: SEPTEMBER, 2024

DWG. NO.: DHAQ-GPON-PN-v1.0

SHEET NO.: 01





REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

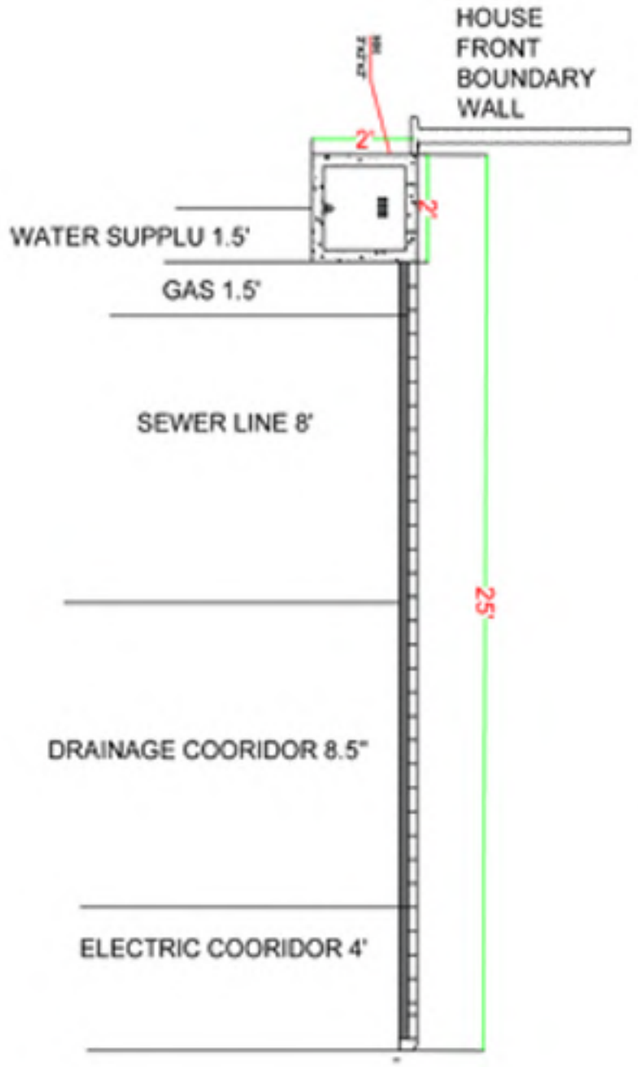
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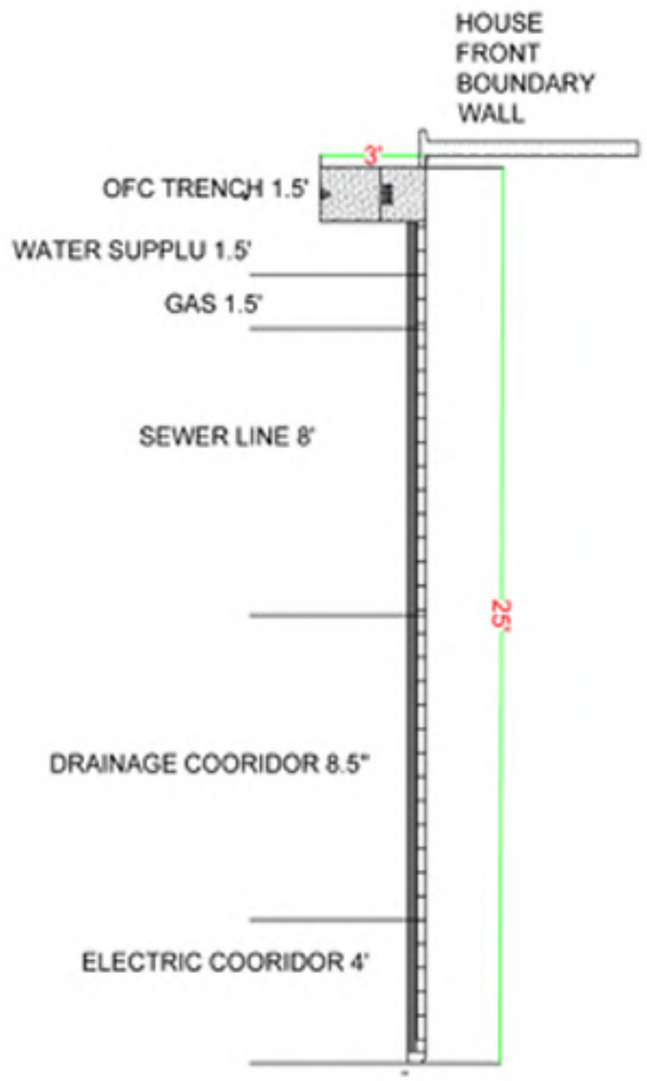
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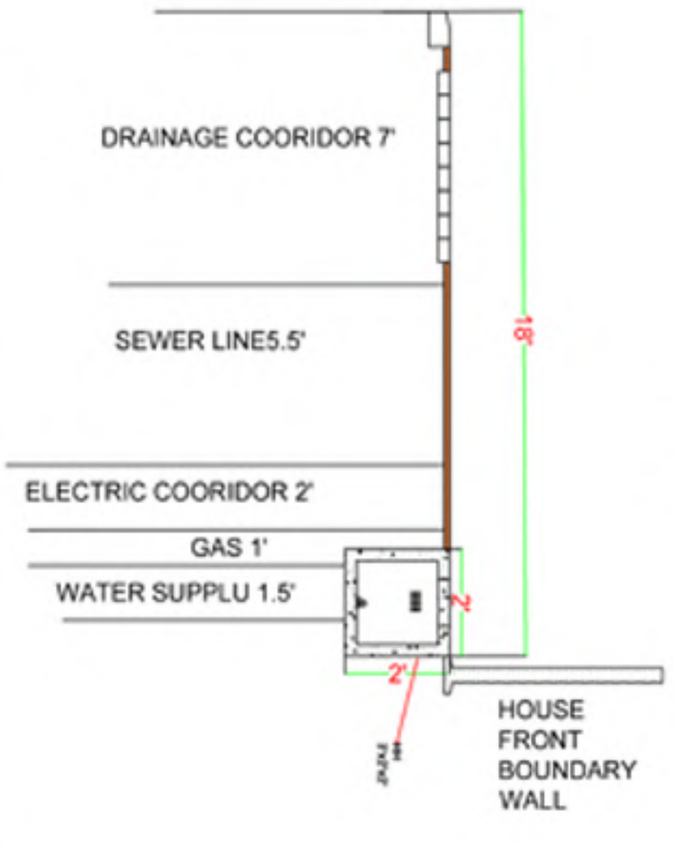
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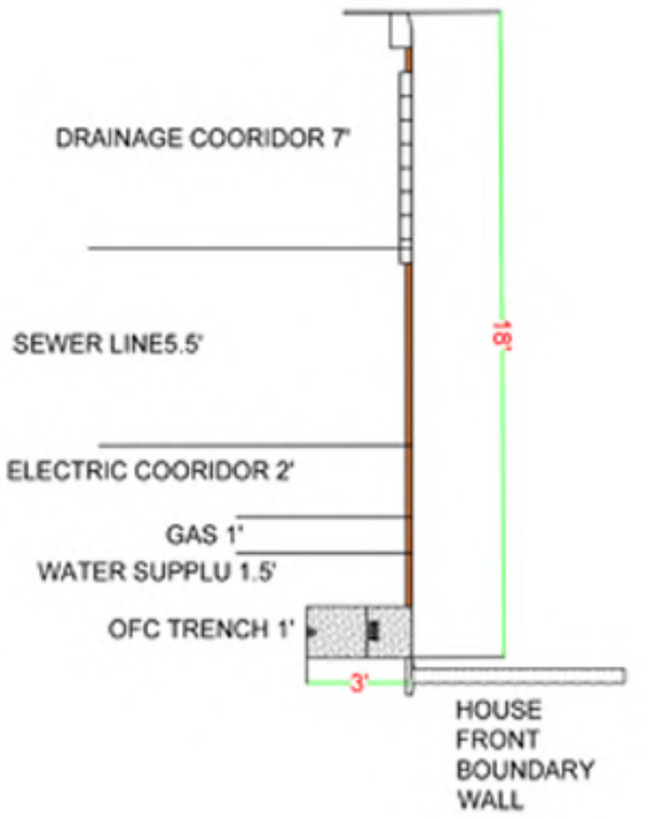
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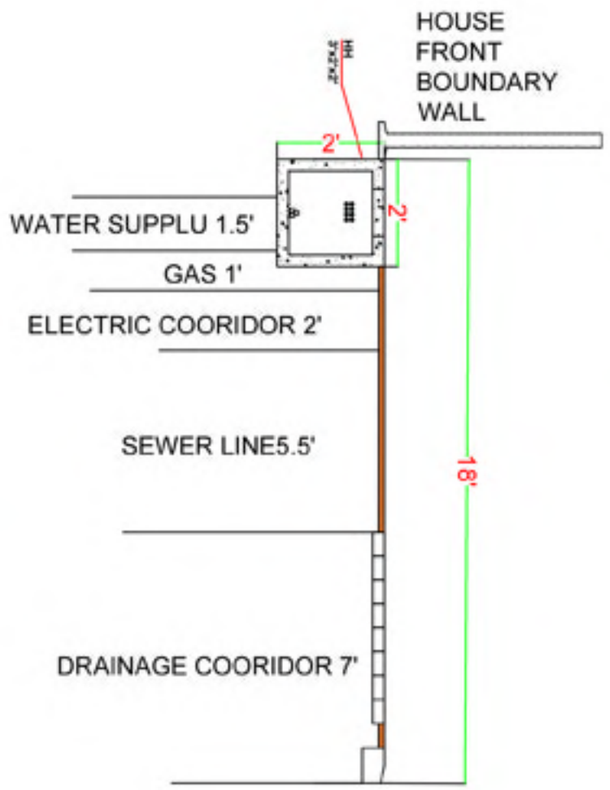
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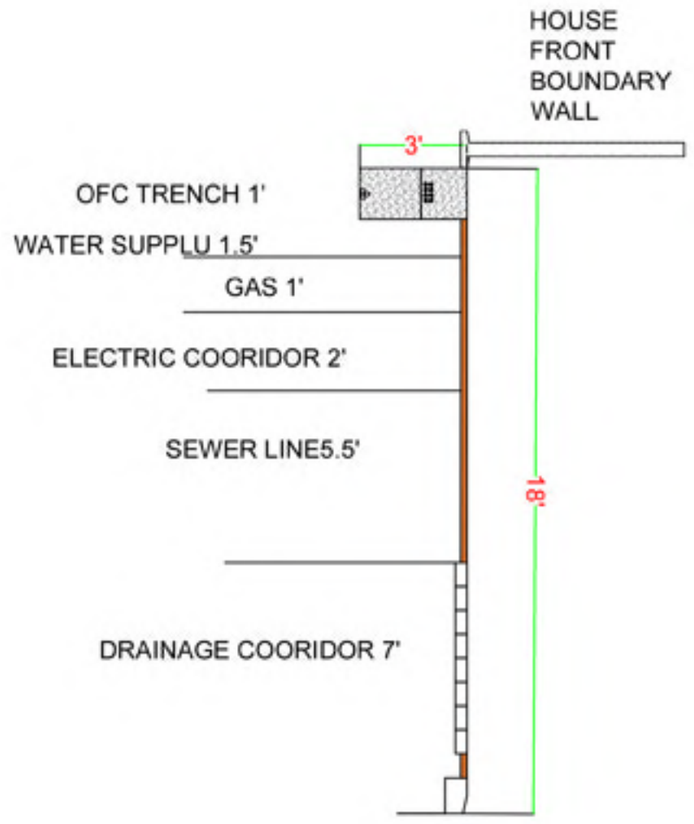


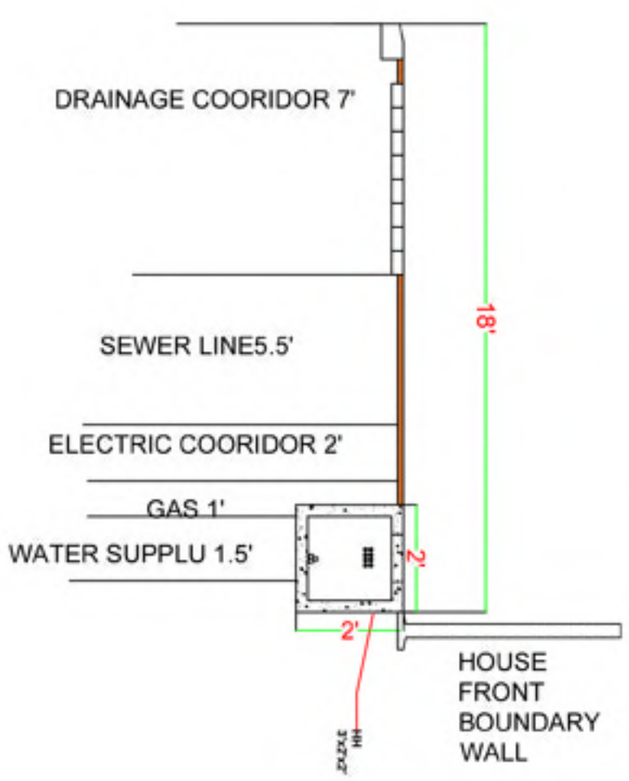


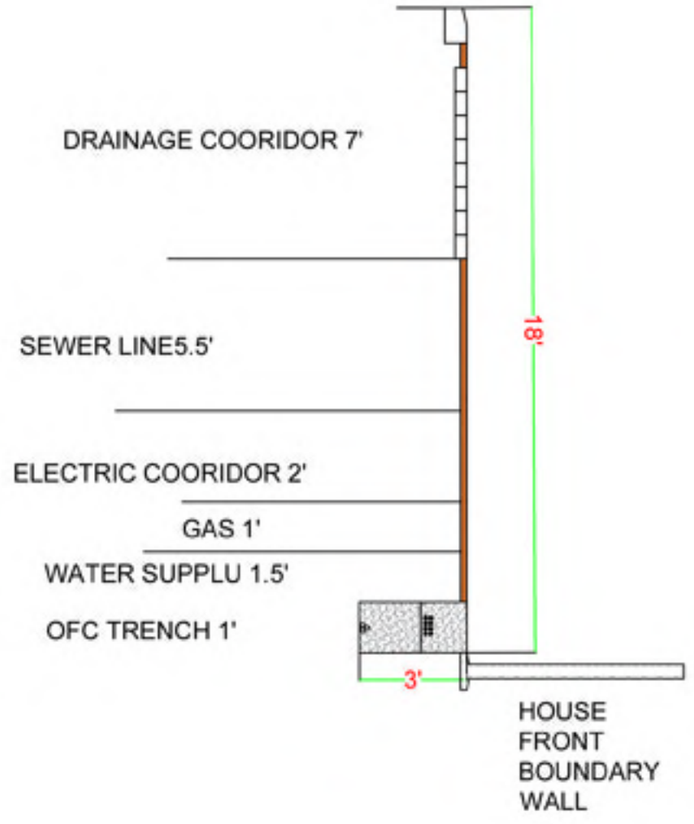












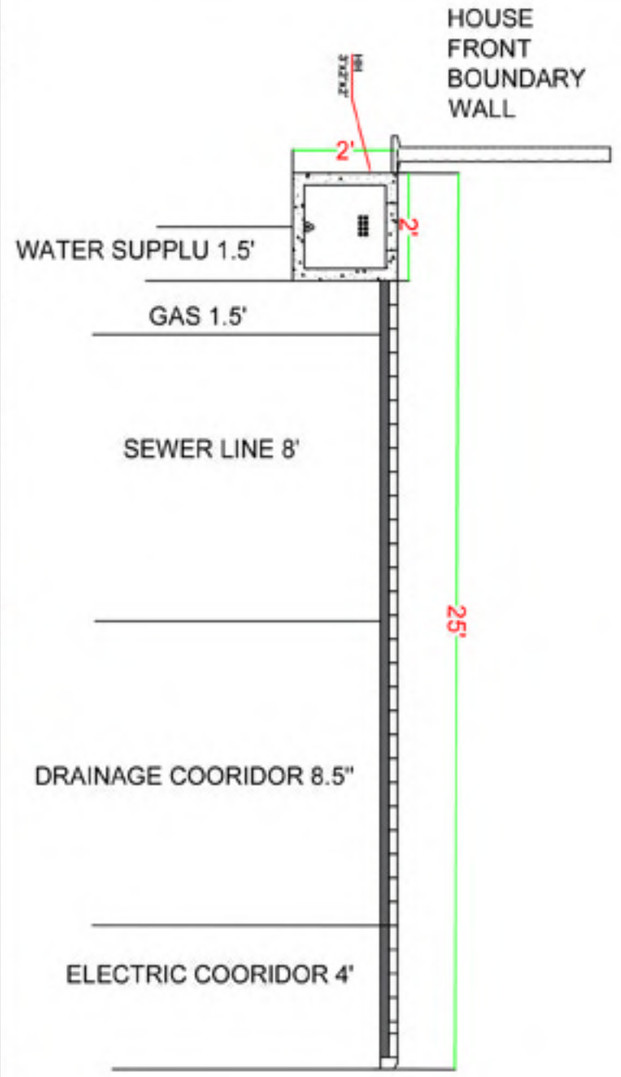
DEFENCE HOUSING AUTHORITY QUETTA

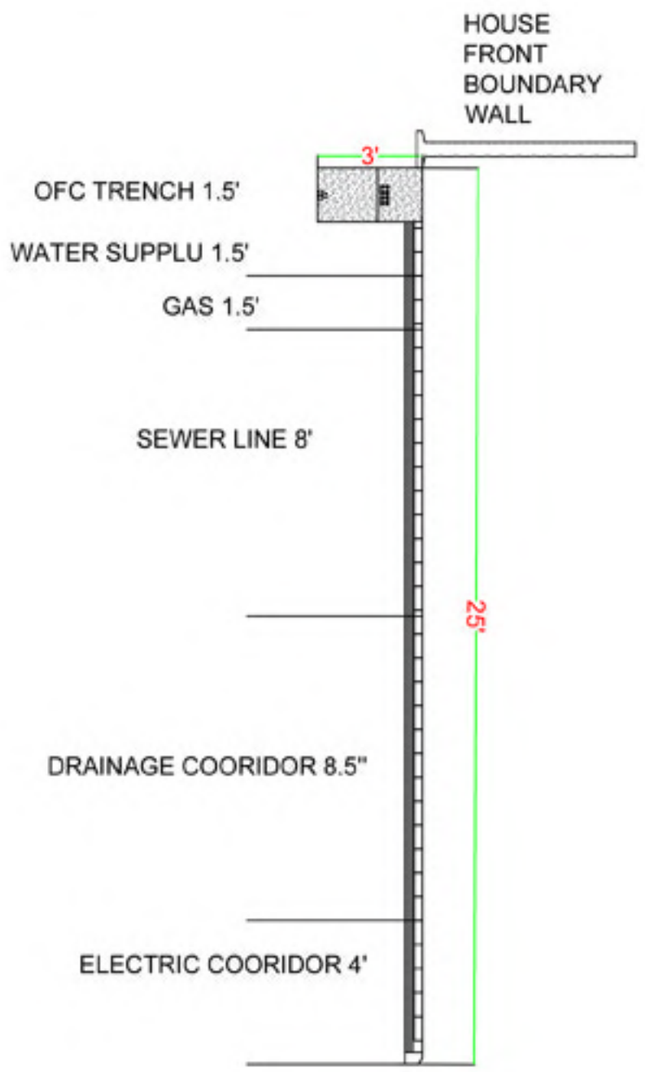
Highrise Private Limited

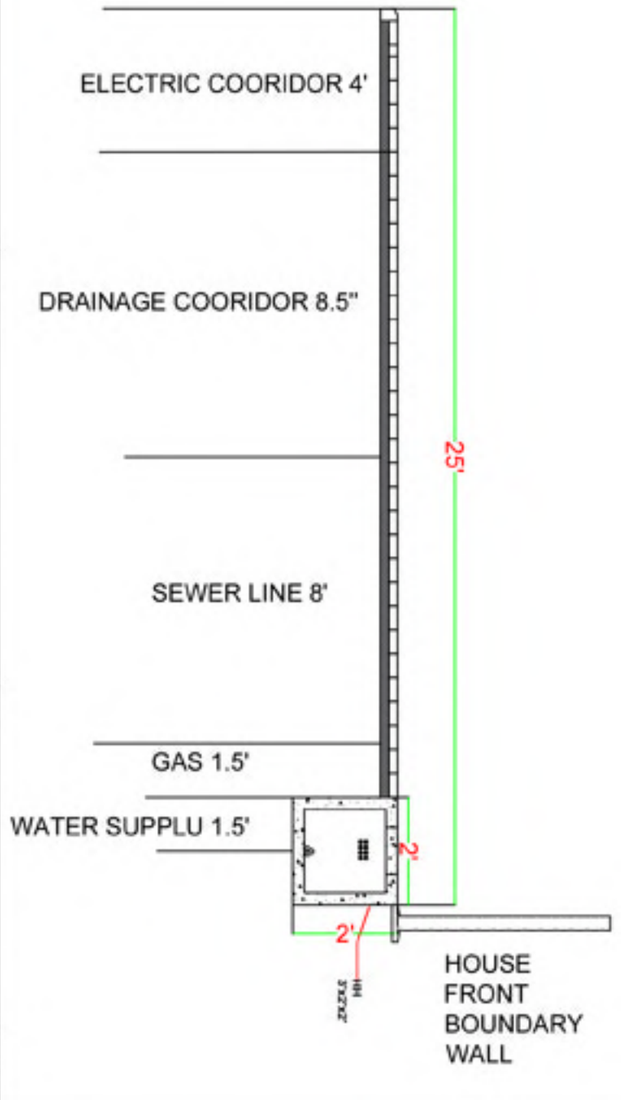
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

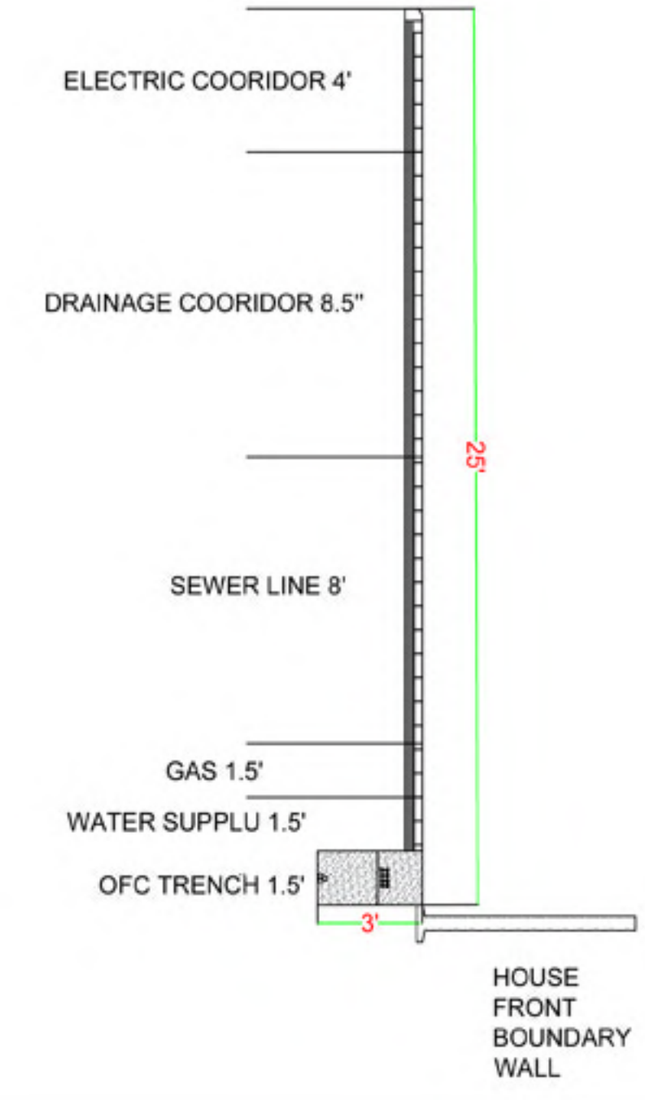
TYPICAL X-SECTION 295' R.O.W LOCAL STREET

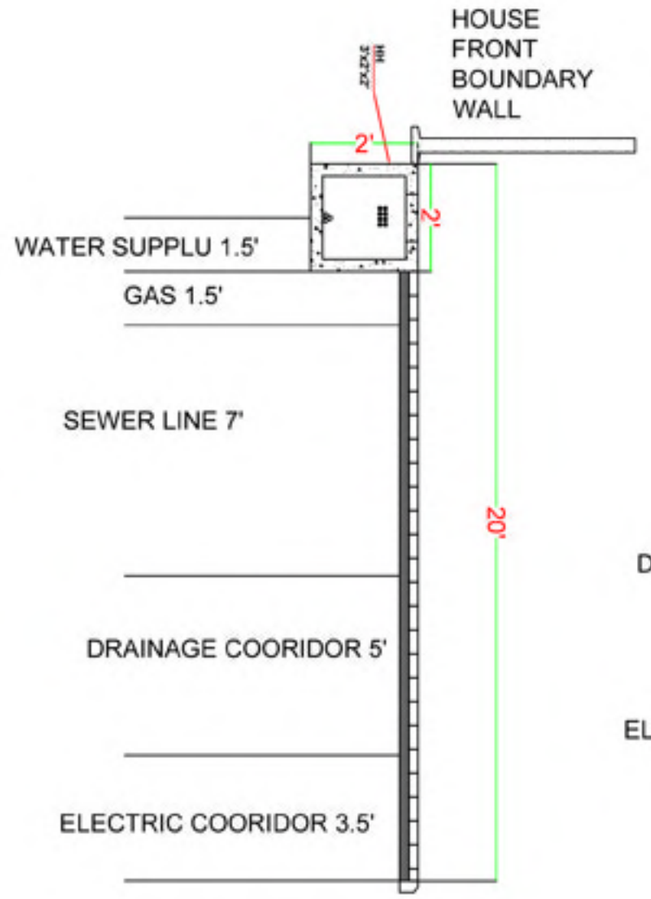
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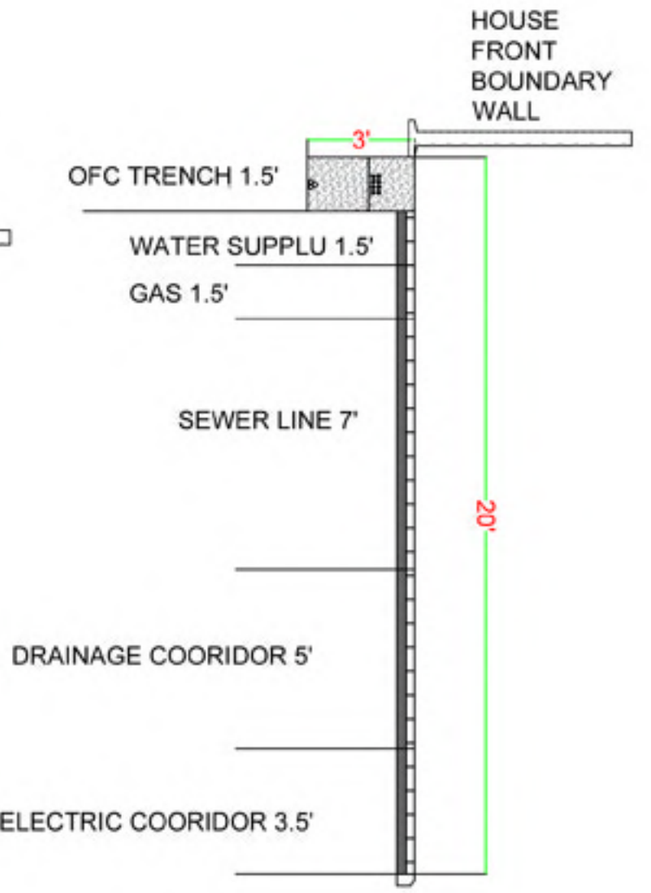


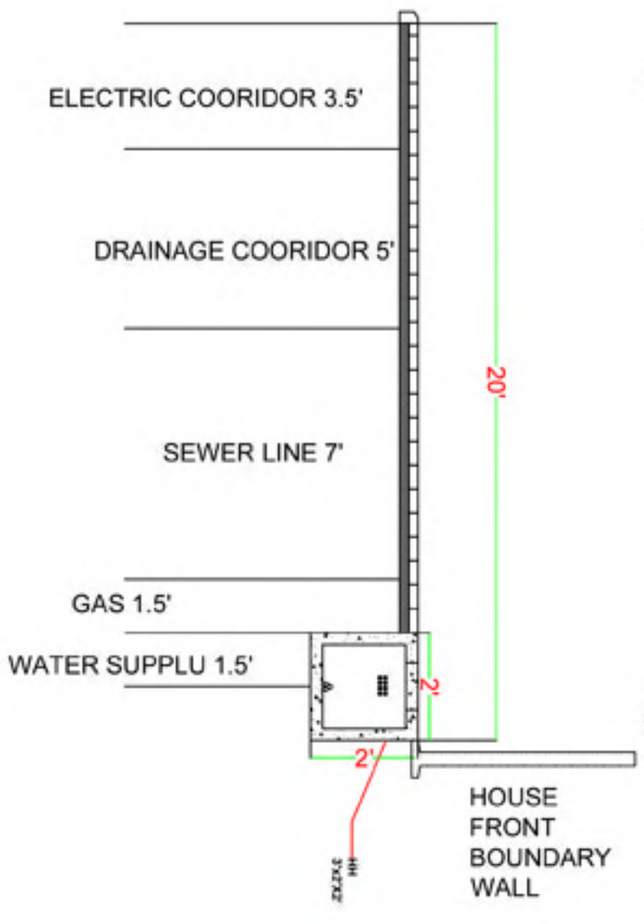


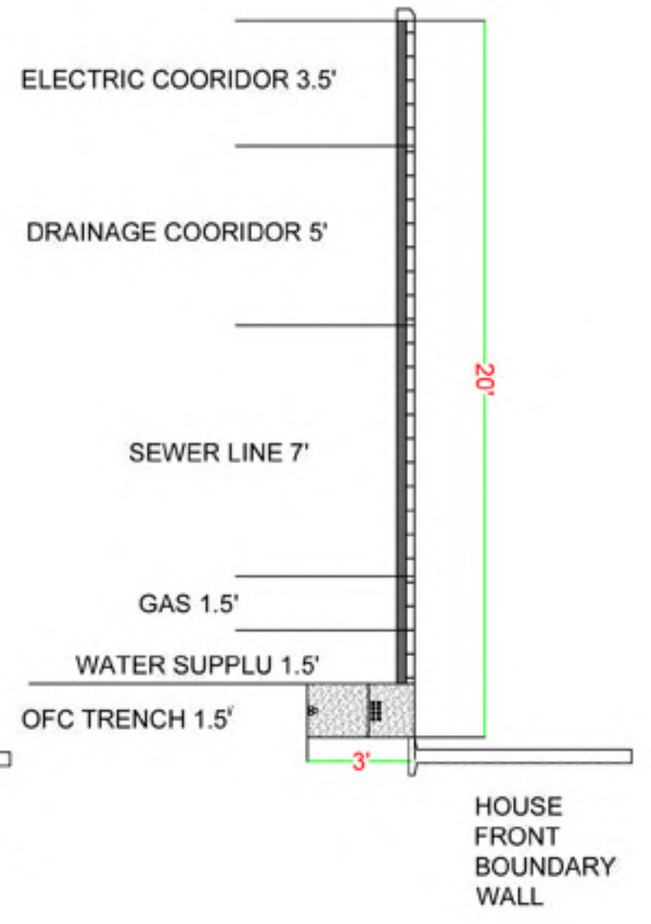












DEFENCE HOUSING AUTHORITY
QUETTA

Highrise Private Limited

DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

TYPICAL X-SECTION 350' R.O.W LOCAL STREET

SEPTEMBER, 2024

N.T.S

OPTICAL FIBER NETWORK PLAN

FOR

DHA QUETTA SMART & SAFE CITY

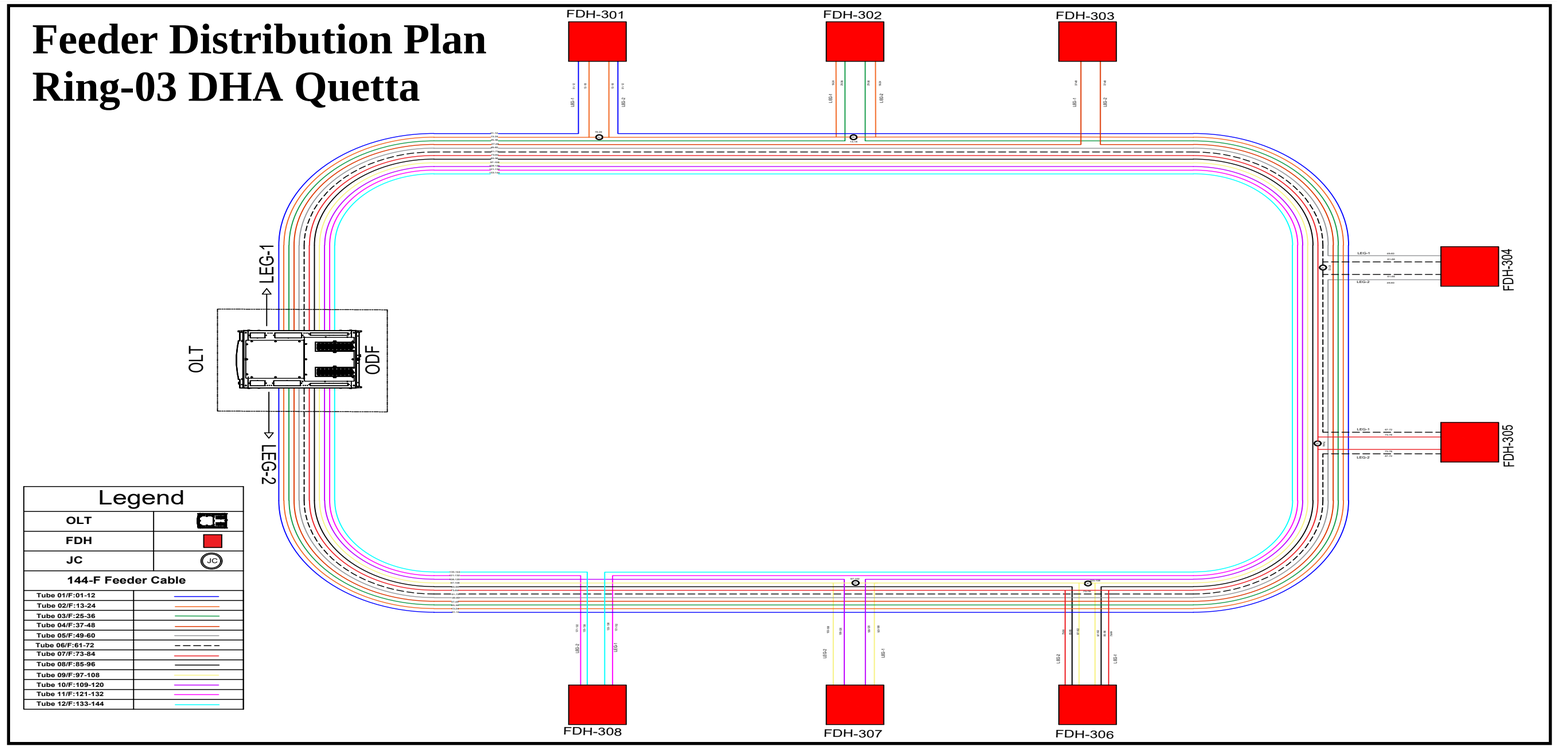
RING-03 SECTOR A2

BOQ Ring-03,Sector A2 DHA Quetta

Connection Summary									ODN Ports			Feeder BOQ										DISTRIBUTION BOQ																					
					Residential		Commercial					Feeder Fiber Length(Meter)			JOINT ENCLOUSURE	Duct Length(HDPE 57/63mm)			Feeder Civil Work (Trench)/Mtr)			HandHole		Distribution Cable (MTR)			Duct HDPE Pipe 57mm/63mm (Meter)		Civil Work (Trench)/Mtr)		RNAP+CNAP						FDH Splitters				
Exchange Ring No/ Route Area	OLT Location	FDH List	FDH 144	Plots	Total Residential Plots	User	Total Commercial Plots	User	Total Users	Design Residential ODN Ports	Design Commercial ODN Ports	Total Design ODN Ports	144F	48F	24F	144F	2 Way Duct (Feeder)	3 Way Duct (Feeder+Dist)	Feeder Common Route Duct (3 Way)	Trench 2 Ways	Trench (3 Way) Feeder+Dist	Feeder Common Trench 3 Way	FDH-Base 3x4x3	HandHole 3x2x2	48F	24F	12F	1 Way 57mm	2 Ways 57mm	Trench (3ft) 1 Way	Trench (3ft) (2 Way)	*JOINT BOX* 48F	*JOINT BOX* 24F	*JOINT BOX* 12F	Total NAP 8P	Total FAT 8P	No Of ISP	Residential Splitter Level 2	Commercial Splitter Level 2	Feeder Core	Used Cores
Ring-03/Sector A2	DHA-Quetta	FDH 301	1	149	121	121	28	28	149	128	256	384	5859	0	800	9	934	8973	1929	467	2991	643	8	212	0	1037	1042	1521	0	1521	0	0	16	0	16	32	1	4	8	18	12
		FDH 302	1	223	223	223	0	0	223	256	0	256													0	1250	1749	2662	36	2662	18	0	32	0	32	0	1	8	0	12	8
		FDH 303	1	187	187	187	0	0	187	192	0	192													0	937	213	791	0	791	0	0	24	0	24	0	1	6	0	12	6
		FDH 304	1	238	238	238	0	0	238	256	0	256													0	901	2096	2855	142	2855	71	0	32	0	32	0	1	8	0	12	8
		FDH 305	1	178	178	178	0	0	178	192	0	192													0	593	884	994	0	994	0	0	24	0	24	0	1	6	0	12	6
		FDH 306	1	246	225	225	21	21	246	256	192	448													0	2143	1466	3208	288	3208	144	0	32	0	32	24	1	8	6	18	14
		FDH 307	1	224	224	224	0	0	224	256	0	256													0	1628	2090	3041	276	3041	138	0	32	0	32	0	1	8	0	12	8
		FDH 308	1	211	211	211	0	0	211	256	0	256													0	1447	1830	2470	0	2470	0	0	32	0	32	0	1	8	0	12	8
			8	1656	1607	1607	49	49	1656	1792	448	2240	5859	0	800	9	9907			467	2991		8	212	0	9936	11370	17542	742	17542	371	0	224	0	224	56	1	56	14	108	70
TOTAL SUMMARY			8	1656	1607	1607	49	49	1656	1792	448	2240	5859	0	800	9	9907			467	2991	643	8	212	0	9936	11370	17542	742	17542	371	0	224	0	224	56	1	56	14	108	70
																					4101			220																		

Loss Budget Ring 03 DHA Quetta

		Feeder Distance(KM)		Attenuation Loss / KM	A side Per Kilometer Attenuation Loss	B side Per Kilometer Attenuation Loss	Splice Loss	Connector Loss	Splitter Loss @ FDH	Total Loss at FDH Side A	Total Loss at FDH Side B	2 Connector + 2splice+Drop Cable Loss	Loss at Customer From A Side	Loss at Customer From B Side
FDH_No	SFP Class B+ Tx Power	A side	B side				0.05*8	4*0.5	Splitter 2:32					
FDH 301	2	0.755	5.093	0.35	0.26	1.78	0.4	2	15.05	17.7	19.2	1	**-16.8**	-18.3
FDH 302	2	0.924	4.924	0.35	0.32	1.72	0.4	2	15.05	17.8	19.2	1	**-16.9**	-18.3
FDH 303	2	1.372	4.476	0.35	0.48	1.57	0.4	2	15.05	17.9	19.0	1	**-17.0**	-18.1
FDH 304	2	1.662	4.186	0.35	0.58	1.47	0.4	2	15.05	18.0	18.9	1	**-17.1**	-18.0
FDH 305	2	2.21	3.638	0.35	0.77	1.27	0.4	2	15.05	18.2	18.7	1	**-17.3**	-17.8
FDH 306	2	2.528	3.32	0.35	0.88	1.16	0.4	2	15.05	18.3	18.6	1	**-17.4**	-17.7
FDH 307	2	3.1	2.748	0.35	1.09	0.96	0.4	2	15.05	18.5	18.4	1	**-17.6**	-17.5
FDH 308	2	3.351	2.497	0.35	1.17	0.87	0.4	2	15.05	18.6	18.3	1	**-17.7**	-17.4



DHA-QUETTA
Feeder Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST
  Note: 2 CORE FIBER FOR FEEDER & 01 MORE FIBE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

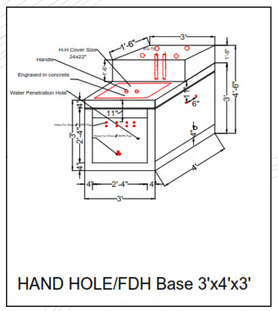
Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

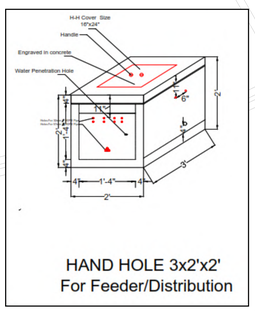
- Ring-01
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- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

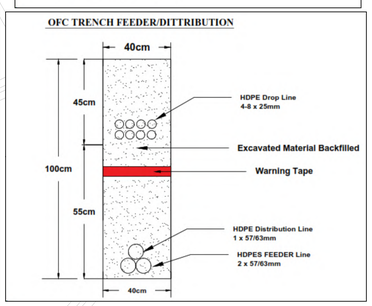
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- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable: 2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.



HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution



REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FEEDER DUCT PLAN RING 03

SCALE: 1:2,231

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



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CONSULTANT:

HIGHRISE PRIVATE LIMITED

PROJECT:

Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE:

DHA QUETTA
GPON FEEDER CABLE PLAN RING-03

SCALE

1:2,614

DATE

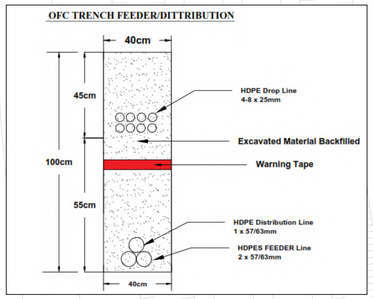
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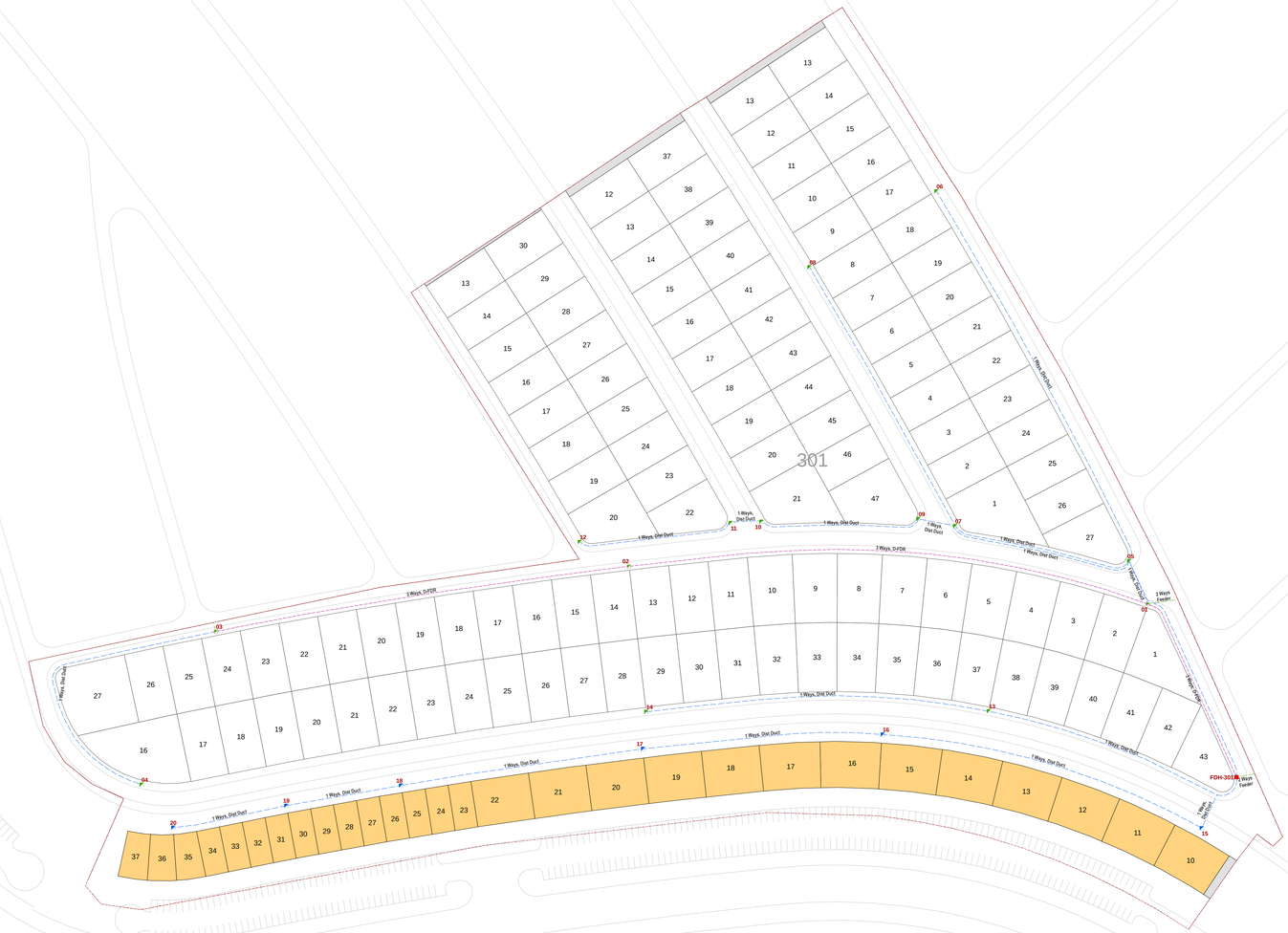
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N
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DHA-QUETTA
Civil/Duct Plan

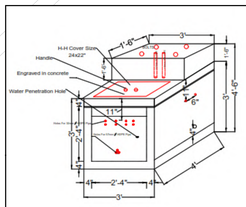
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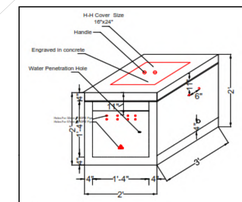
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REV	DATE	DESCRIPTION	APPROVED	APPROVED	
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03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT:
Designing of Optical Fiber Network
For
DHA Quetta Smart & Safe City

TITLE:
DHA QUETTA
GPON FDH-301 DUCT PLAN RING-03

SCALE
1:830

DATE
15.01.25

DWG NO.
DHAQ-GPON-PNI-v1.0

DHA-QUETTA
CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP/Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP(Residential NAP) Handhole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- FEEDER — Handhole, 1x2x2
- DISTRIBUTION — Handhole, 1x2x2

- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST
  Note:1 HDPE PIPE FOR DISTRIBUTION & 01 HDPE PIPE FOR DISTRIBUTION, DUNCLE WITH SAME TRENCH

- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

301

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

REV	DATE	DESCRIPTION	APPROVED	APPROVED
04	15.01.25	FINAL DESIGN		KHURRAM
03	21.11.24	PLAN RE-DESIGN		M SHAHID
02	25.10.24	DESIGN OPTIMIZED		AKMAL HAFIZ
01	11.09.24	1st Submission		M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-301 CABLE PLAN RING-03

SCALE 1:670

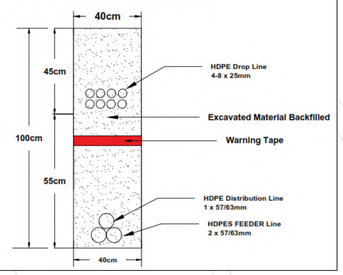
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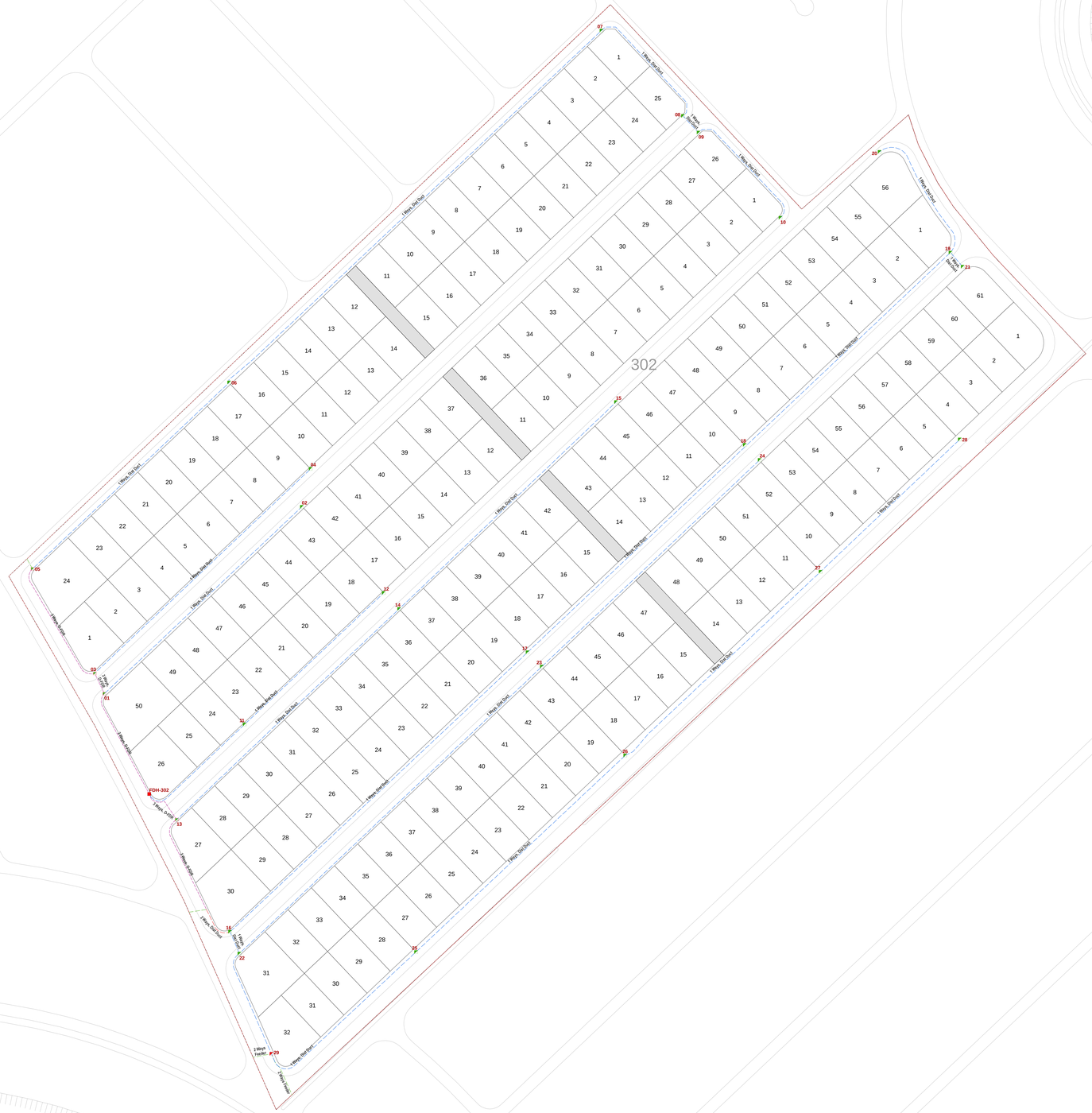
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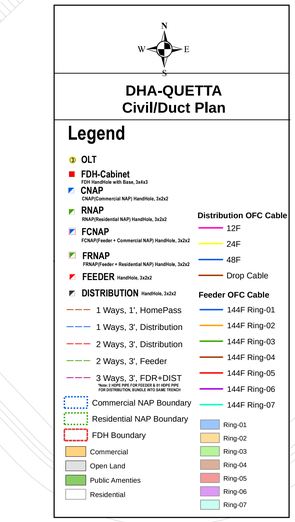
General Guidelines

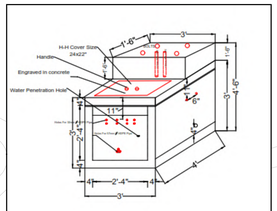
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- **Hand Hole Size 3x2x2** should be placed & use for NAP
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- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

OFC TRENCH FEEDER/DITTRIBUTION

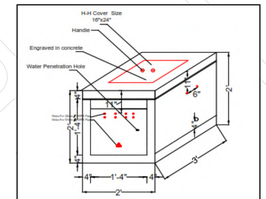








HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution

REV	DATE	DESCRIPTION	APPROVED		
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03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-302 DUCT PLAN RING-03

SCALE: 1:830

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
CABLE Plan

Legend

- OLT
- **FDH-Cabinet** FDH Handhole with Base, 3x4x3
- **CNAP** CNAP(Commercial NAP) Handhole, 3x2x2
- **RNAP** RNAP(Residential NAP) Handhole, 3x2x2
- **FCNAP** FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- **FRNAP** FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- **FEEDER** Handhole, 3x2x2
- **DISTRIBUTION** Handhole, 1x2x2

- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST
  Note:1 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION. BUNDLE WITH SAME TRENCH

- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-302 CABLE PLAN RING-03

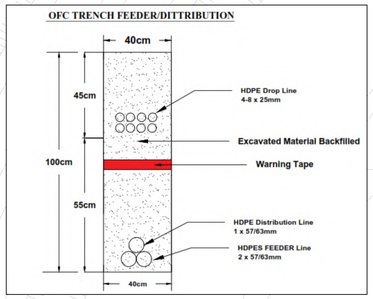
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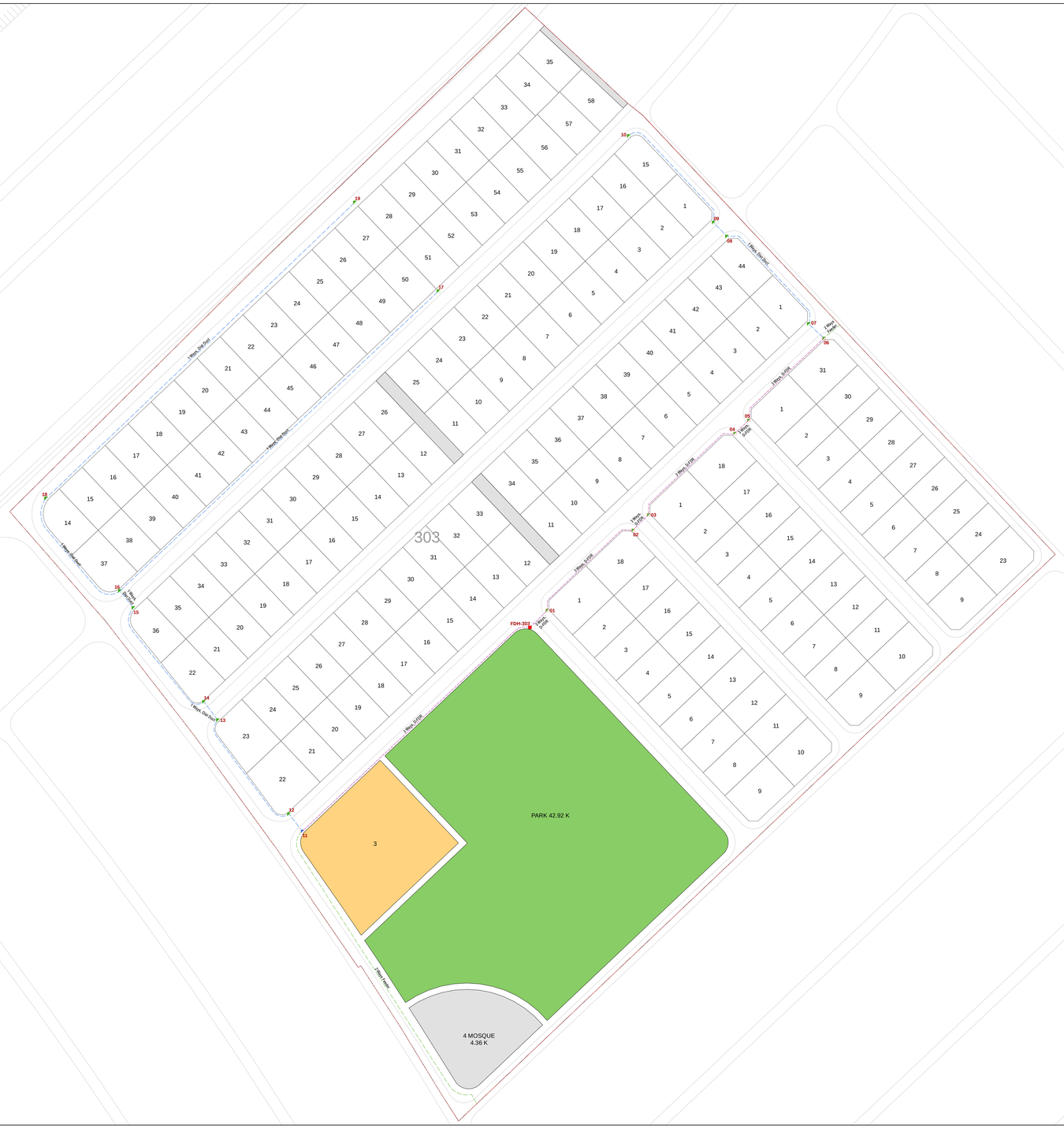
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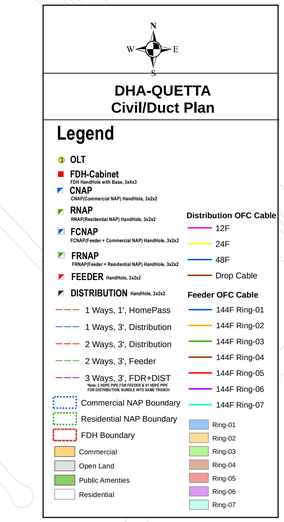
DWG NO.: DHAQ-GPON-PNI-v1.0

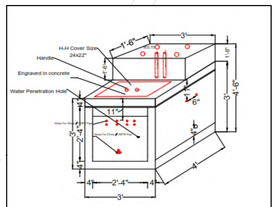
General Guidelines

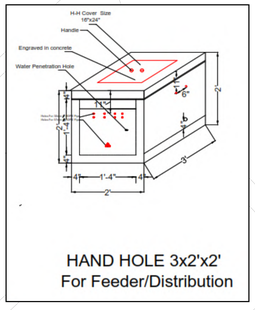
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REV	DATE	DESCRIPTION	APPROVED	APPROVED	
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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-303 DUCT PLAN RING-03

SCALE: 1:830

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP/Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP/Residential NAP) Handhole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- FEEDER — Handhole, 1x2x2
- DISTRIBUTION — Handhole, 1x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note:1 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION. DUNCLE WITH SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-303 CABLE PLAN RING-03

SCALE: 1:650

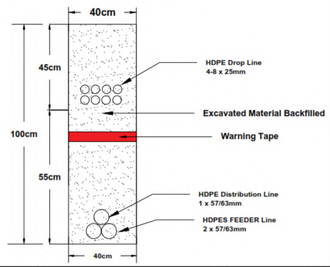
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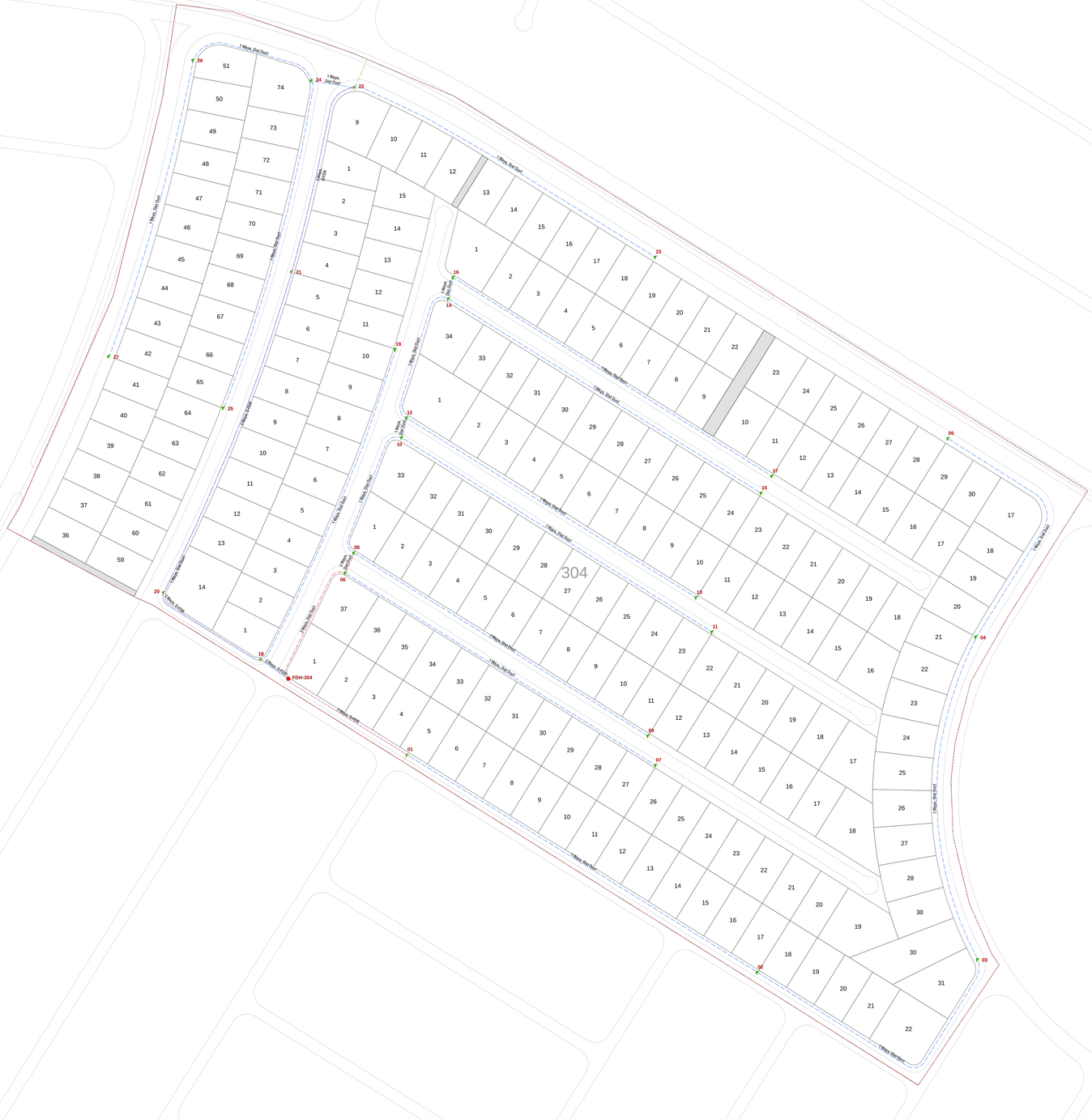
DWG NO.: DHAQ-GPON-PNI-v1.0

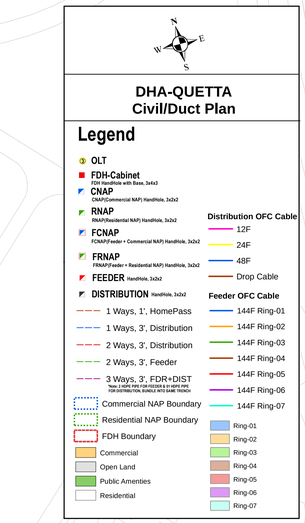
General Guidelines

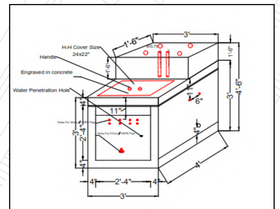
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OFC TRENCH FEEDER/DITTRIBUTION

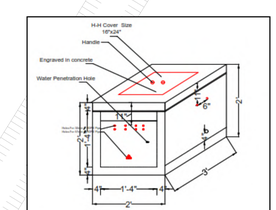








HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution

REV	DATE	DESCRIPTION	APPROVED	APPROVED	
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01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-304 DUCT PLAN RING-03

SCALE: 1:830

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP(Residential NAP) Handhole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- FEEDER — Handhole, 1x2x2
- DISTRIBUTION — Handhole, 1x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note:1 HDPE PIPE FOR DISTRIBUTION & 01 HDPE PIPE FOR DISTRIBUTION, DUCKLE WITH DARK TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

304

General Guidelines

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01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-304 CABLE PLAN RING-03

SCALE: 1:570

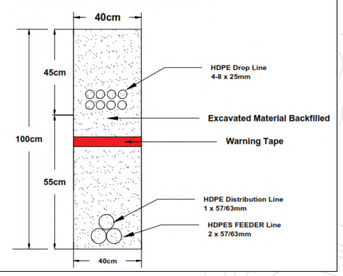
DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

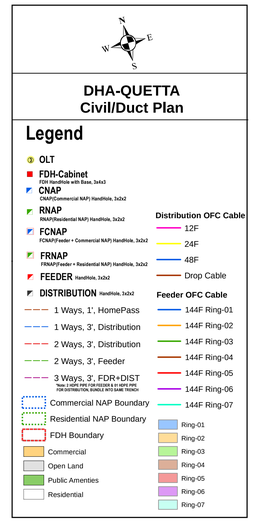
General Guidelines

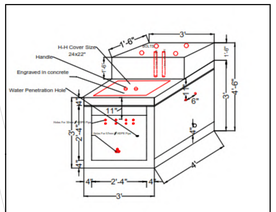
- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

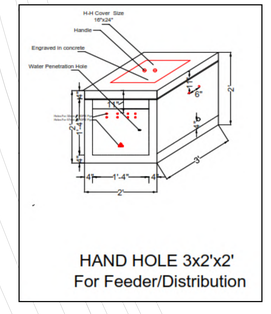
OFC TRENCH FEEDER/DITTRIBUTION











REV	DATE	DESCRIPTION	APPROVED		
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-305 DUCT PLAN RING-03

SCALE: 1:830

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP/Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP/Residential NAP) Handhole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- FEEDER — Handhole, 1x2x2
- DISTRIBUTION — Handhole, 1x2x2

- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note:1 HDPE PIPE FOR DISTRIBUTION & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE WITH SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

PARK 14.57 K

305

General Guidelines

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- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
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- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

REV	DATE	DESCRIPTION	APPROVED		
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03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-305 CABLE PLAN RING-03

SCALE 1:620

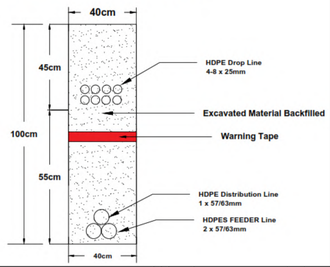
DATE 15.01.25

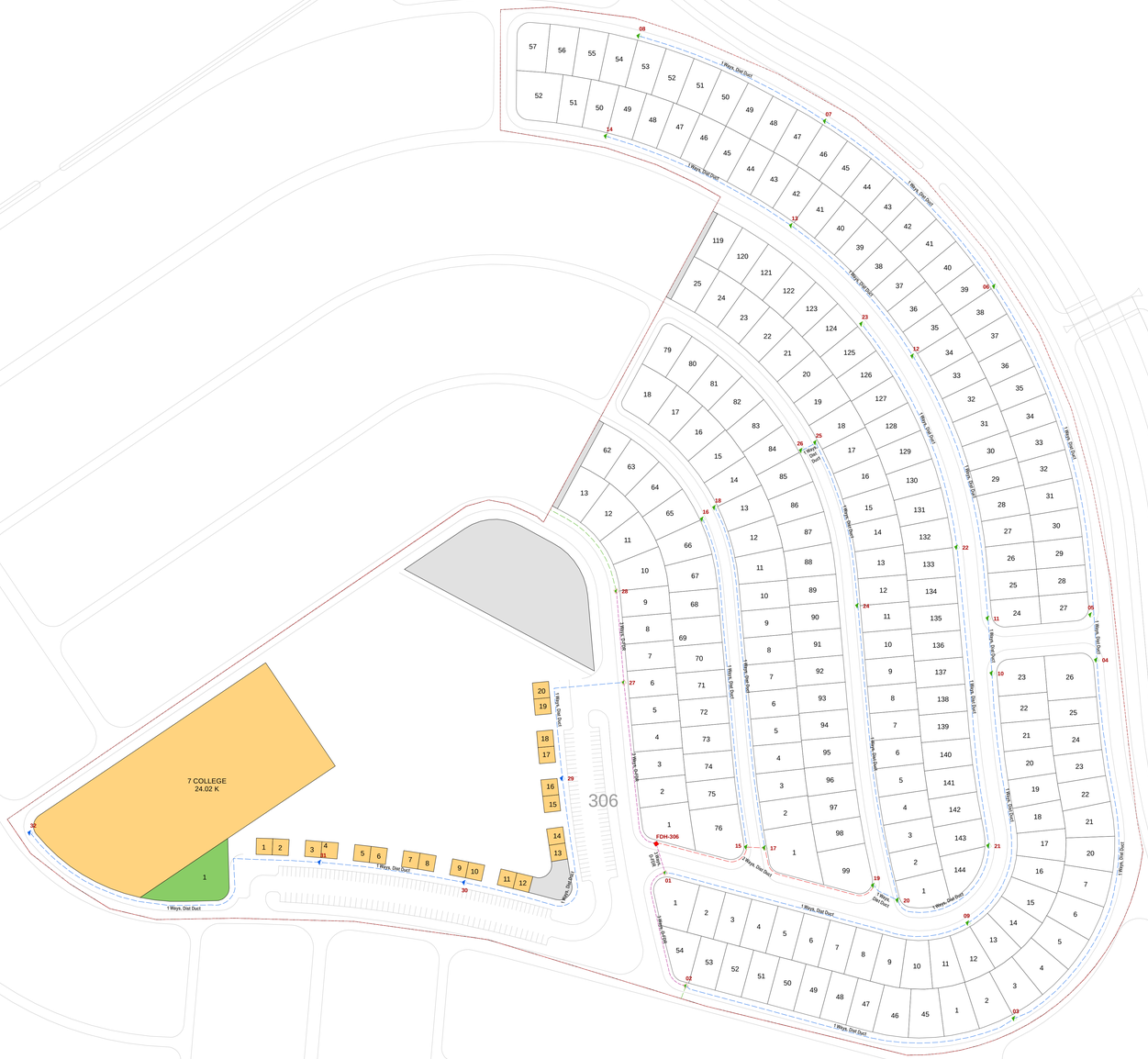
DWG NO. DHAQ-GPON-PNI-v1.0

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
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- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

OFC TRENCH FEEDER/DITTRIBUTION





DHA-QUETTA
Civil/Duct Plan

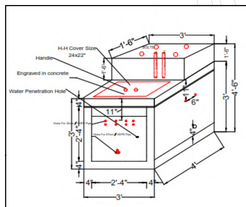
Legend

- OLT
- FDH-Cabinet — FDH HandHole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER HandHole, 3x2x2
- DISTRIBUTION HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST
  Note:2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

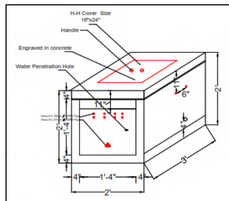
Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07



HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution

REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

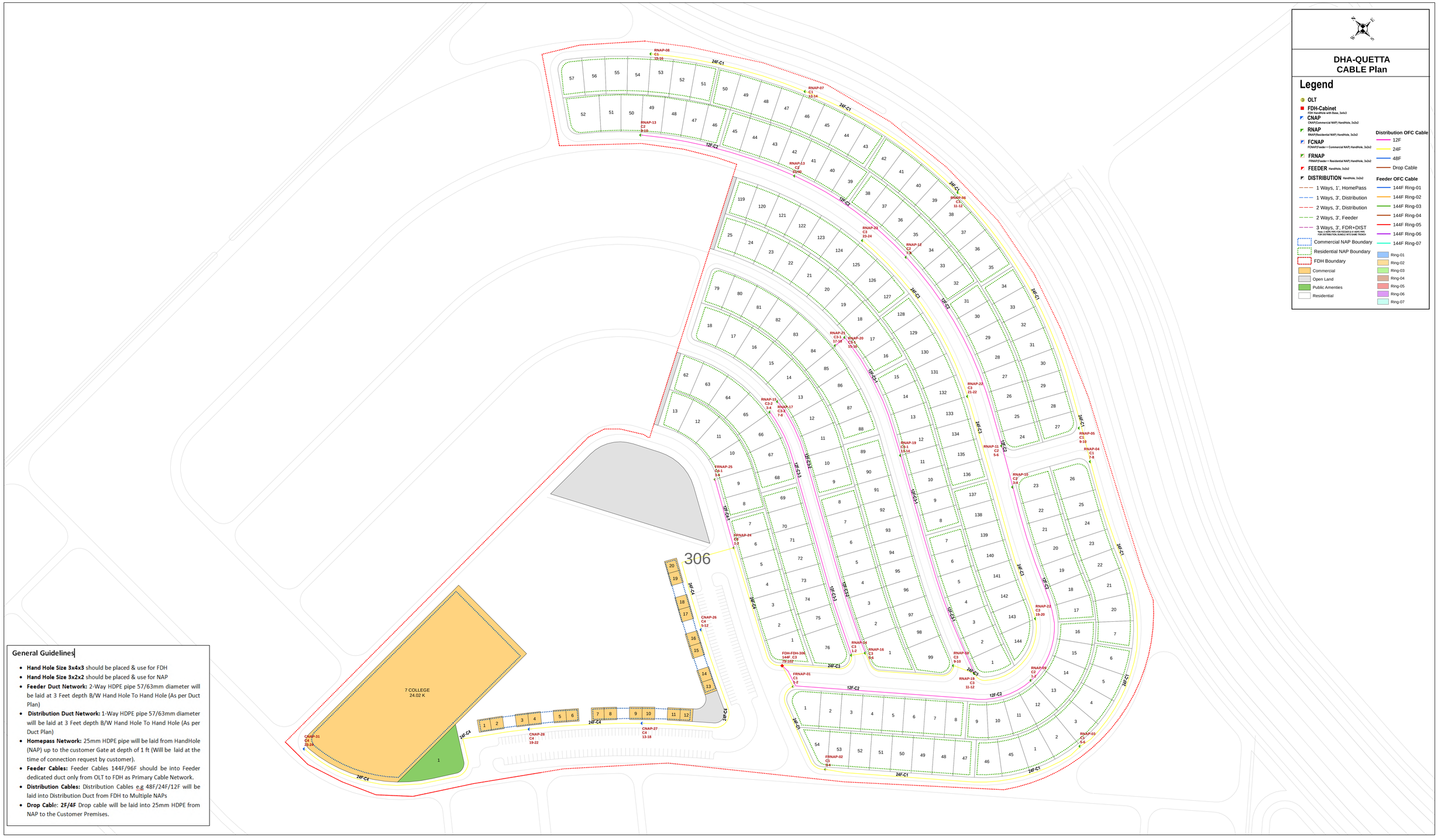
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-306 DUCT PLAN RING-03

SCALE: 1:1,130

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-306 CABLE PLAN RING-03

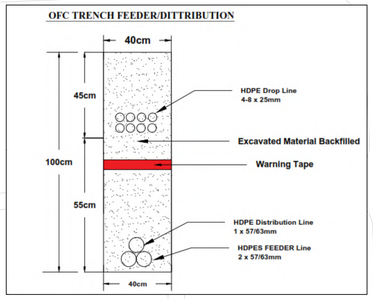
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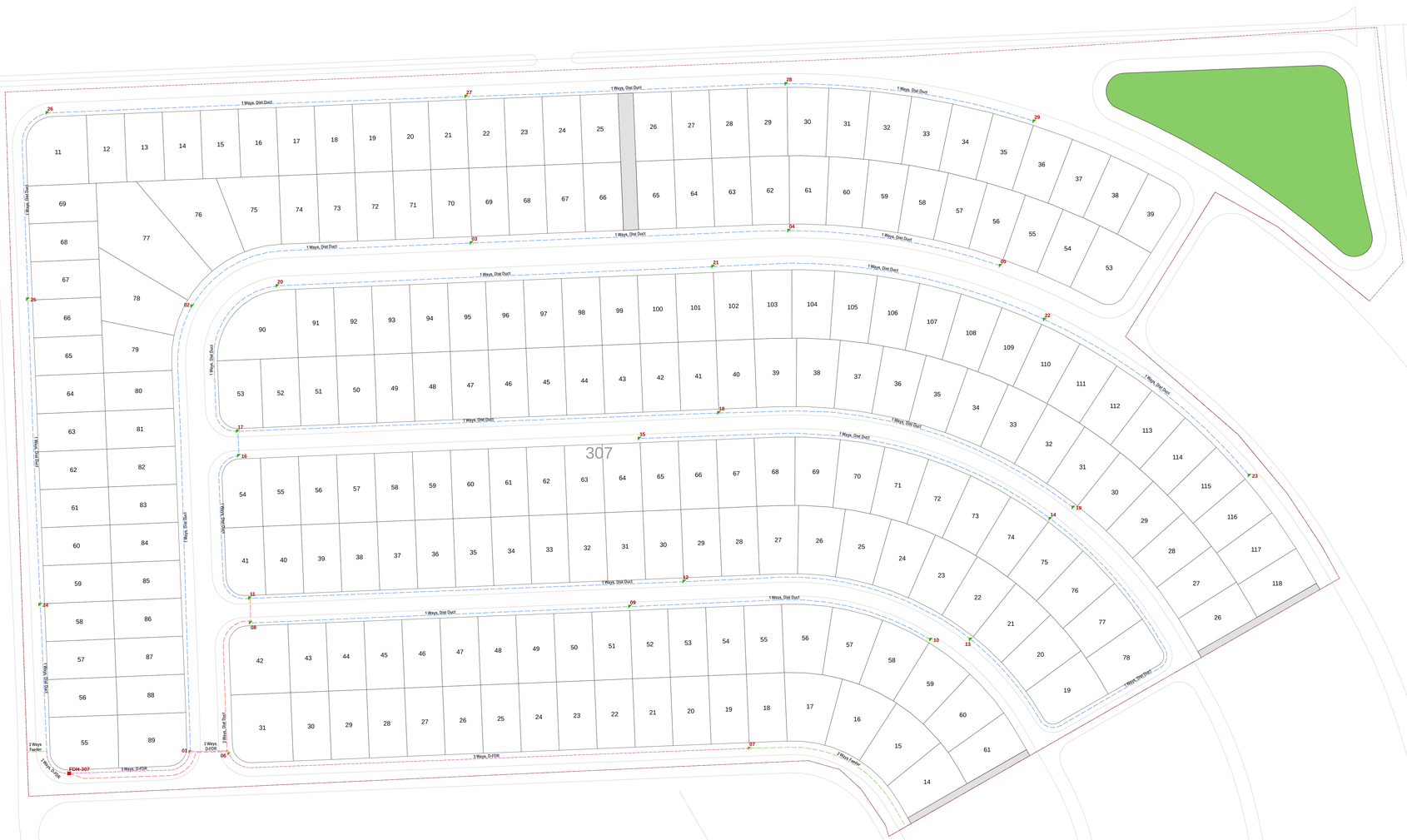
DATE 15.01.25

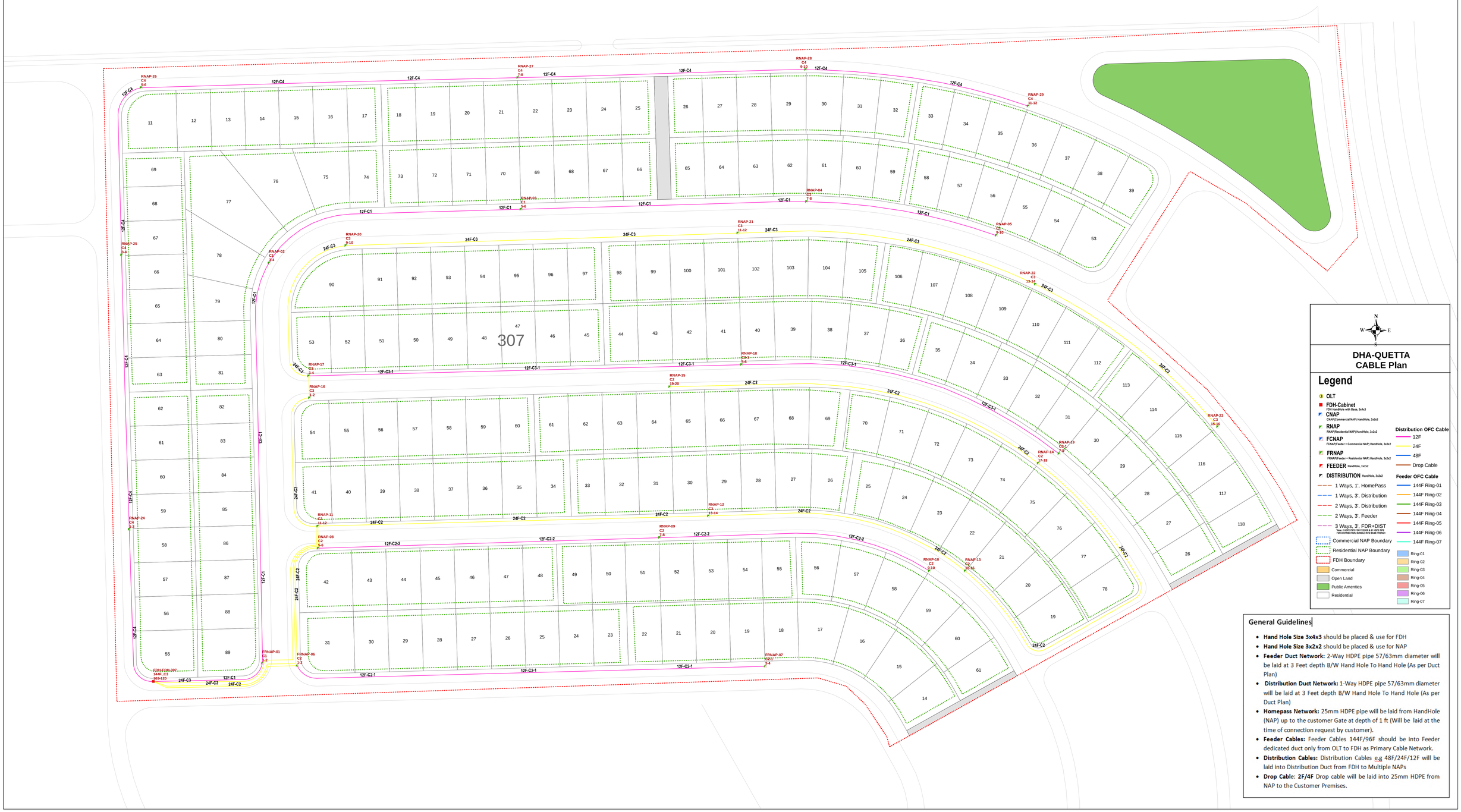
DWG NO. DHAQ-GPON-PNI-v1.0

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.




1 Ways, Dist Duct
1 Ways, Dist Duct
1 Ways, Dist Duct



REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT:

DHA QUETTA

CONSULTANT:

HIGHRISE PRIVATE LIMITED

PROJECT:

Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE:

DHA QUETTA
GPON FDH-307 CABLE PLAN RING-03

SCALE

1:580

DATE

15.01.25

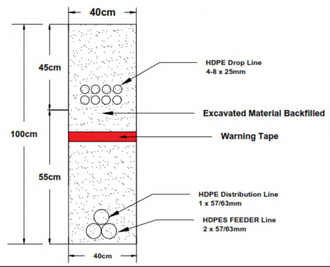
DWG NO.

DHAQ-GPON-PNI-v1.0

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
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- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
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OFC TRENCH FEEDER/DITTRIBUTION





N
W E
S

DHA-QUETTA
Civil/Duct Plan

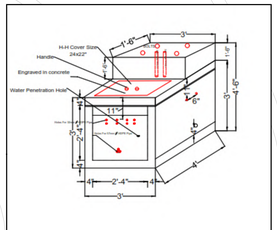
Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
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- FEEDER HandHole, 3x2x2
- DISTRIBUTION HandHole, 3x2x2
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- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note:2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
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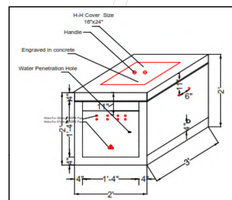
Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

Ring-01
Ring-02
Ring-03
Ring-04
Ring-05
Ring-06
Ring-07



HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution

REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

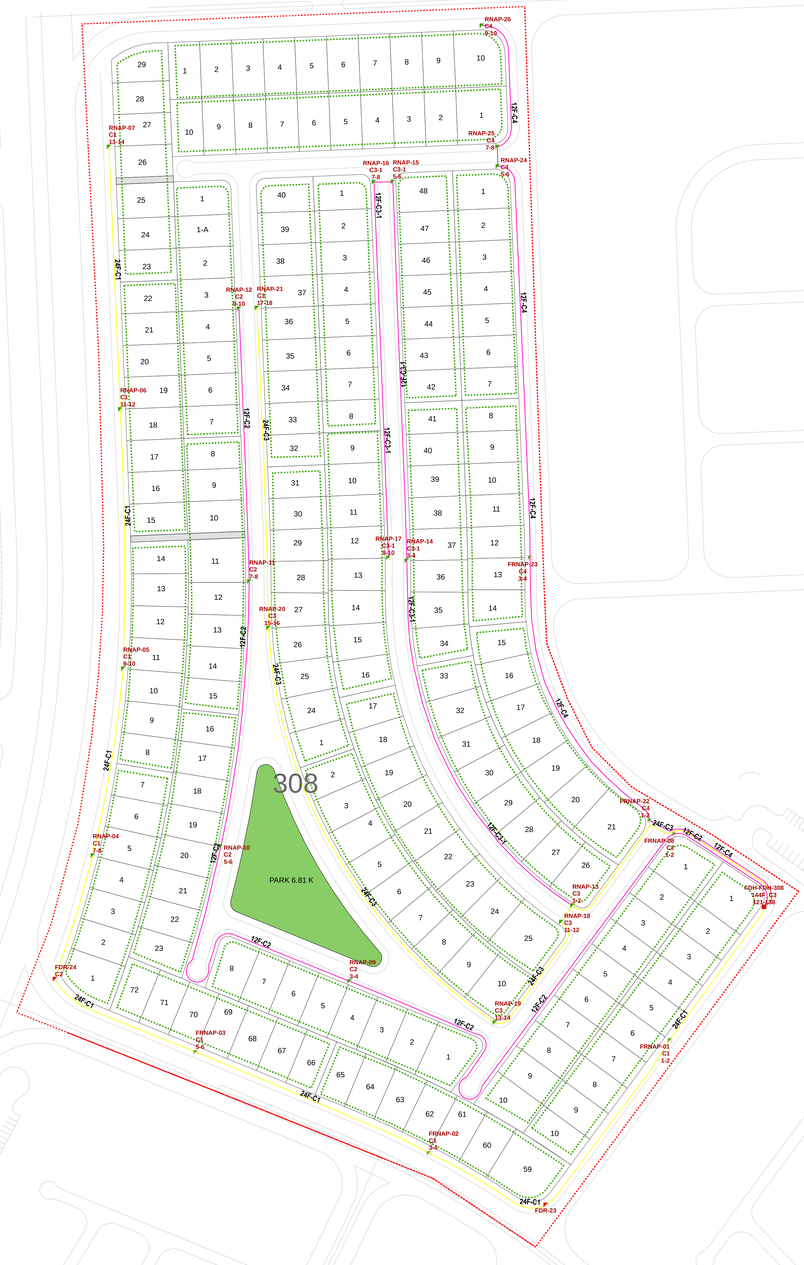
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-308 DUCT PLAN RING-03

SCALE: 1:1,010

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



N

W E

S

DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH HandHole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
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- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 1x2x2
- DISTRIBUTION — HandHole, 1x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — *Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
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- Open Land
- Public Amenties
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Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

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- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
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Ring-01
Ring-02
Ring-03
Ring-04
Ring-05
Ring-06
Ring-07

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01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-308 CABLE PLAN RING-03

SCALE: 1:1,050

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

OUTSIDE PLANT OSP

Core Network

Central Office

Feeder Network

Distribution Network

Customer Premises

TELEPHONE

IPTV

INTERNET

Surveillance

Smart Metering

A

B

OLT

FDH-101

144F Feeder Ring

Feeder JC

FDH-102

FDH-103

Splitter

Distribution Cable 12/24/48F

Distribution Cable 12/24/48F

FDH-106

FDH-105

144F Feeder Ring

Feeder JC

FDH-104

Cable 12F

Surveillance Cameras

Pole

Cable 12F

Surveillance Cameras

Pole

R-NAP

Joint Box

ONT

Drop Cable 2F

C-NAP

FAT-1 (2:8)

Drop Cable 2F

FAT-2 (2:8)

FAT-3 (2:8)

Legend

OLT	
FDH	
Splitter	
CNAP	
RNAP	
FAT	
ONT	
Feeder Cable	
Distribution Cable	
Drop Cable	

REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

TITLE: Single Line Diagram (SLD) Plan A

SCALE: N.T.S

DATE: October 2025

DWG. NO.: DHAQ–GPON–PNI–v1.0

SHEET NO.: 01

OUTSIDE PLANT OSP

Core Network | Central Office | Feeder Network | Distribution Network | Customer Premises

TELEPHONE
IPTV
INTERNET
Surveillance
Smart Metering

A
B

OLT

FDH-101
FDH-102
144F Feeder Ring
FDH-103
FDH-104
FDH-105
FDH-106
144F Feeder Ring

Splitter

Distribution Cable
12/24/48F
Distribution Cable
12/24/48F

ONT
Drop Cable 2F
R-NAP
Joint Box
Drop Cable 2F
Surveillance Cameras
Pole

C-NAP
FAT-1
(2:8)
Drop Cable 2F
FAT-2
(2:8)
FAT-3
(2:8)

Legend

OLT	
FDH	
Splitter	
CNAP	
RNAP	
FAT	
ONT	
Feeder Cable	
Distribution Cable	
Drop Cable	

REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

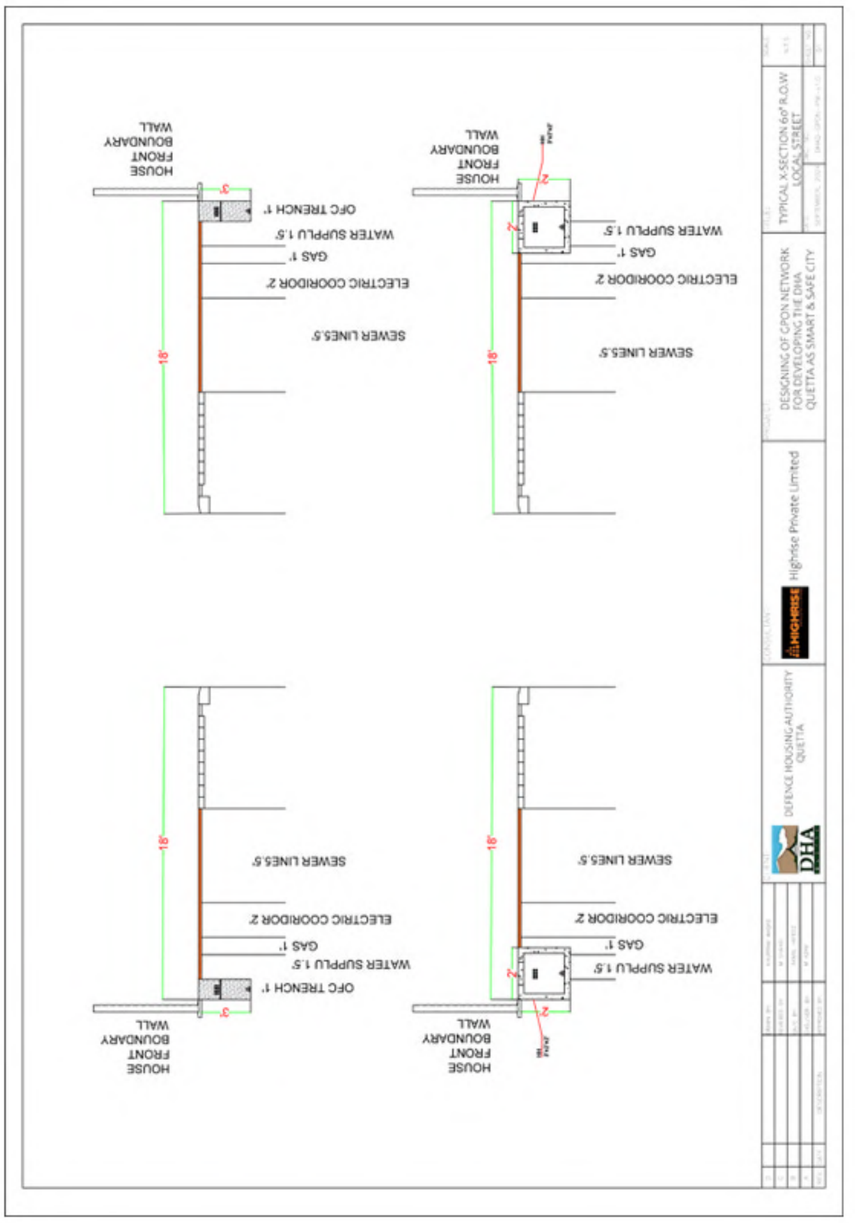
TITLE: Single Line Diagram (SLD) Plan B

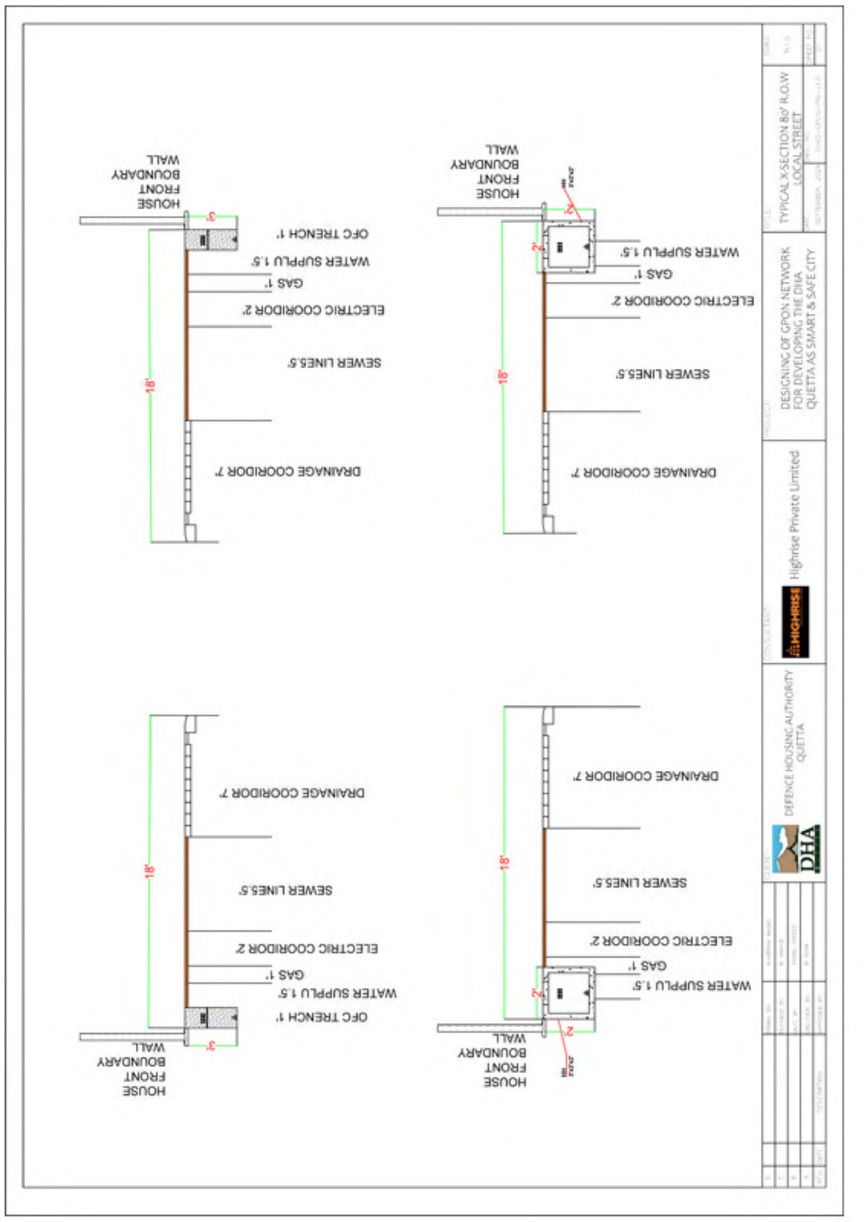
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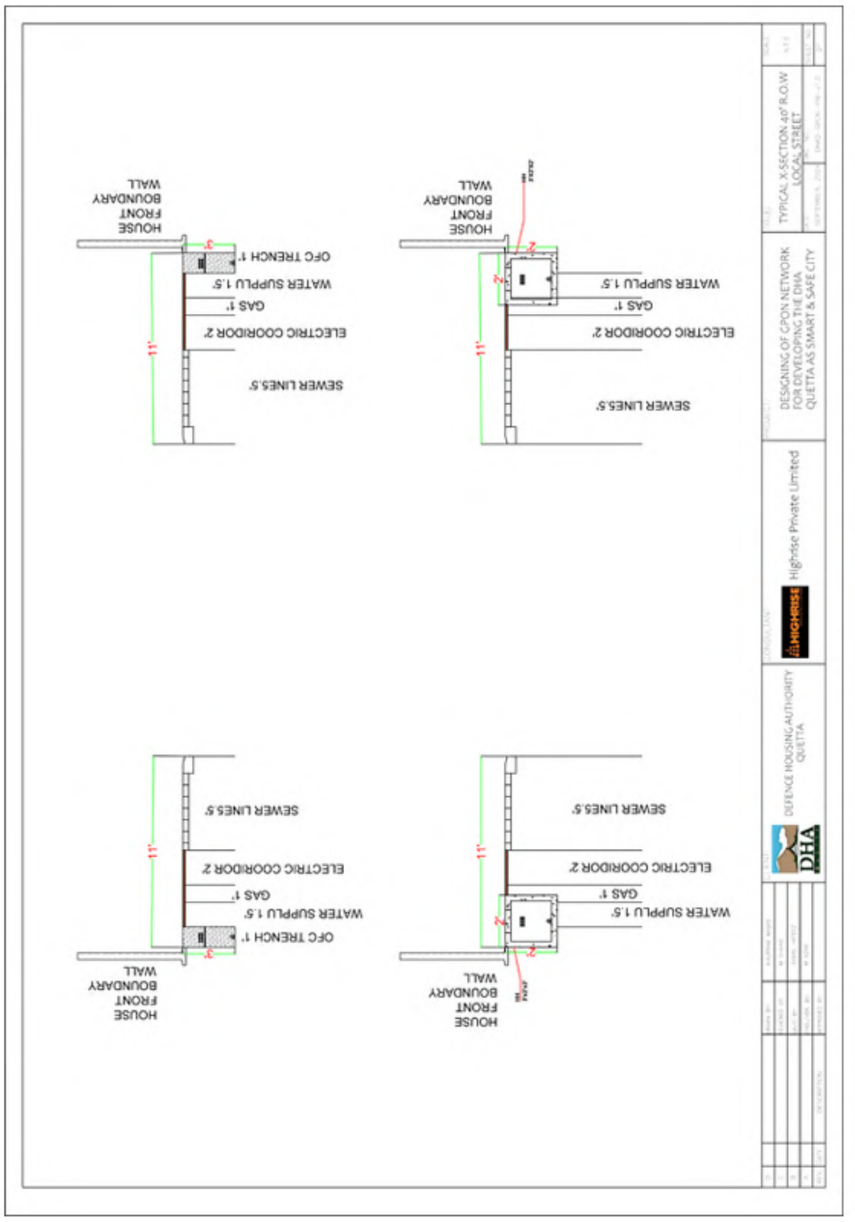
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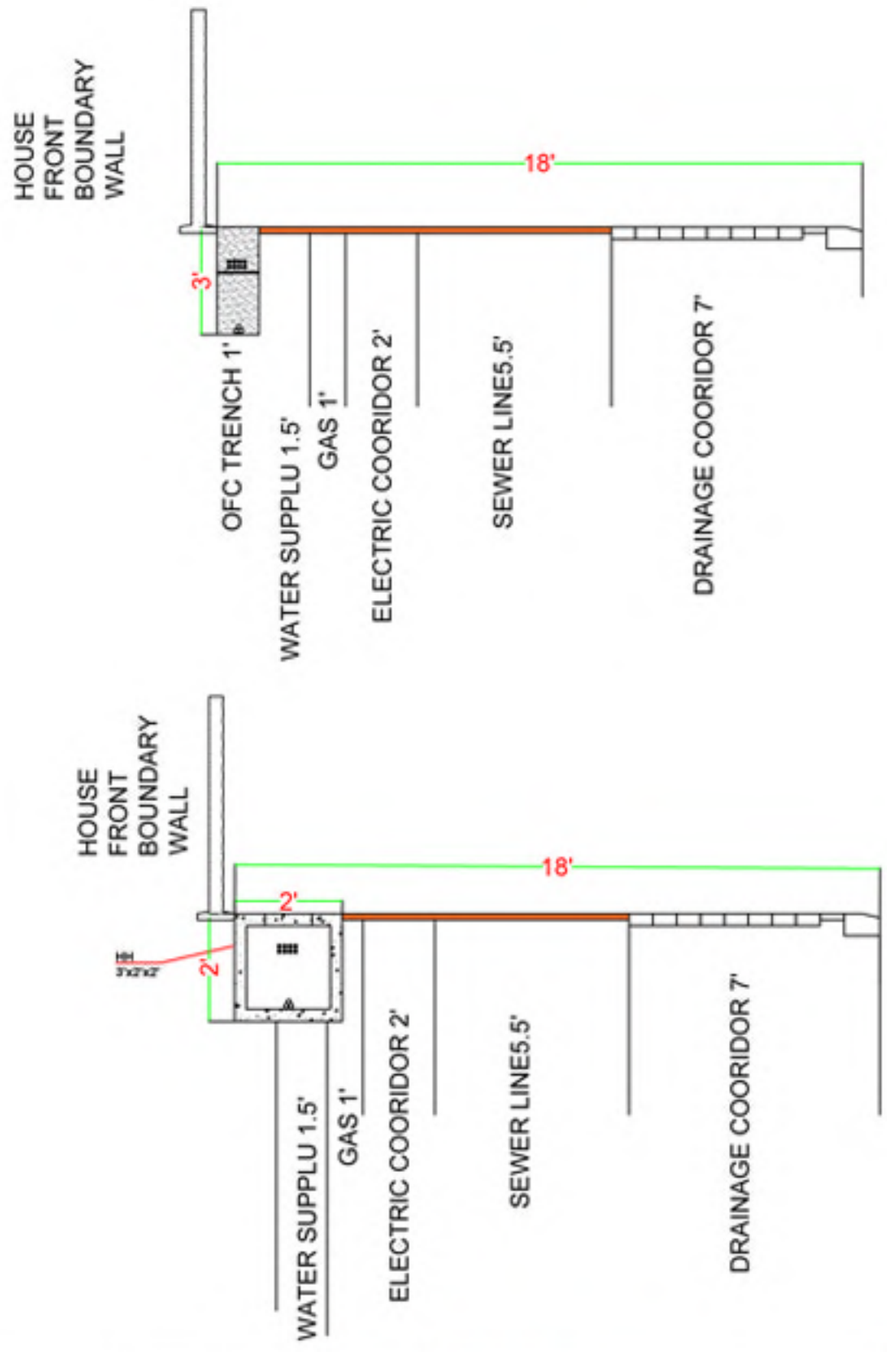
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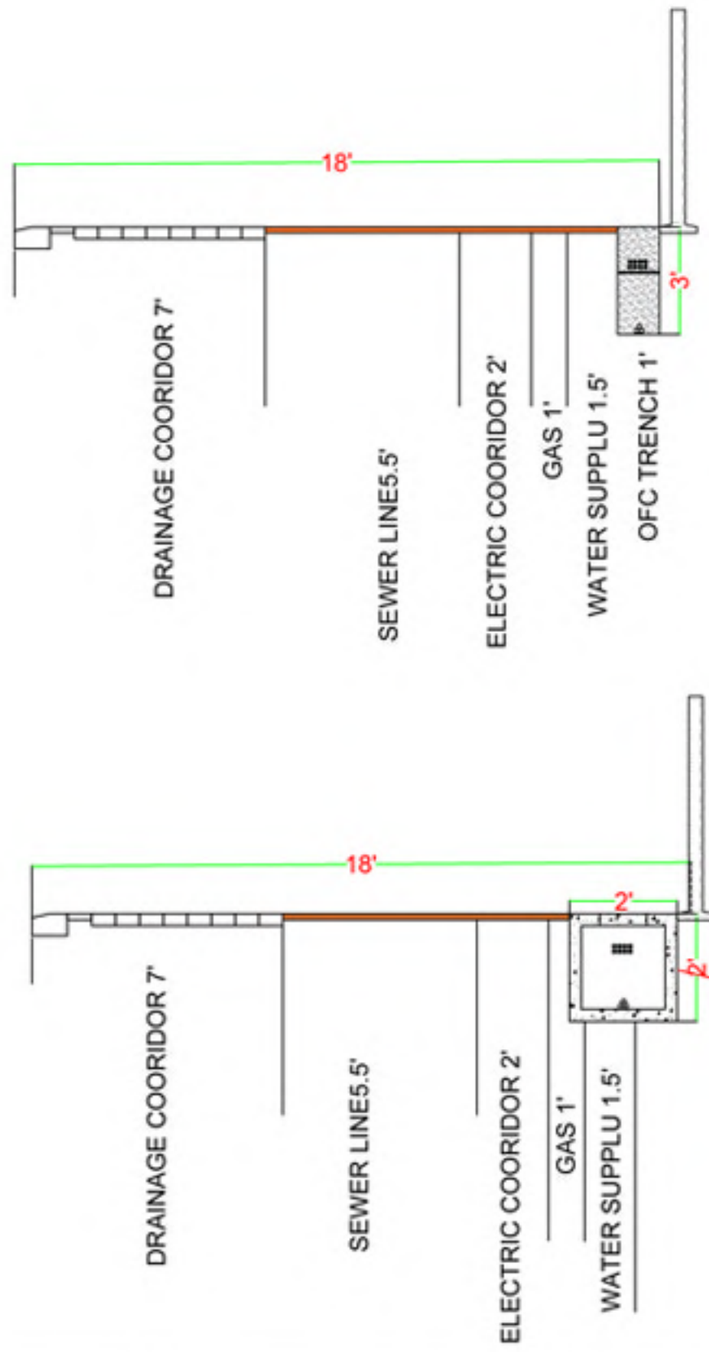
SHEET NO.: 01

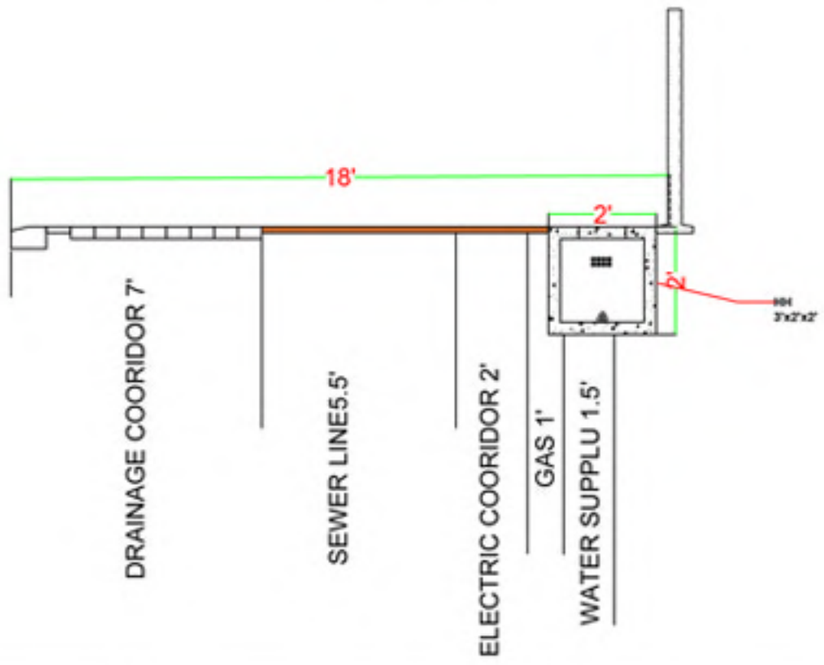

HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
18'
3'
2'
2'
TYPICAL X-SECTION 60' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA


HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
DRAINAGE COORIDOR 7'
18'
3'
2'
2'
TYPICAL X-SECTION 80' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA


HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
11'
3'
2'
2'
TYPICAL X-SECTION 40' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA







REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

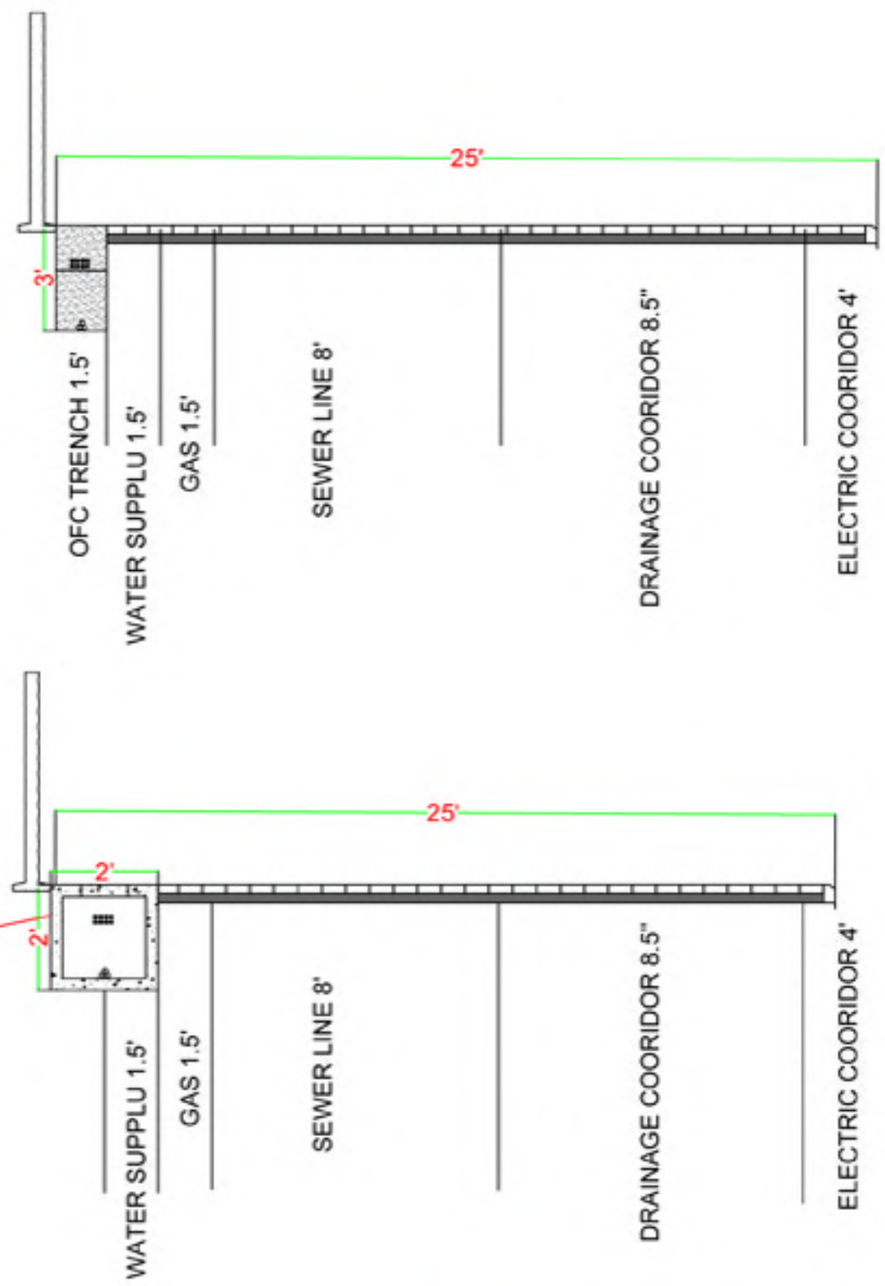
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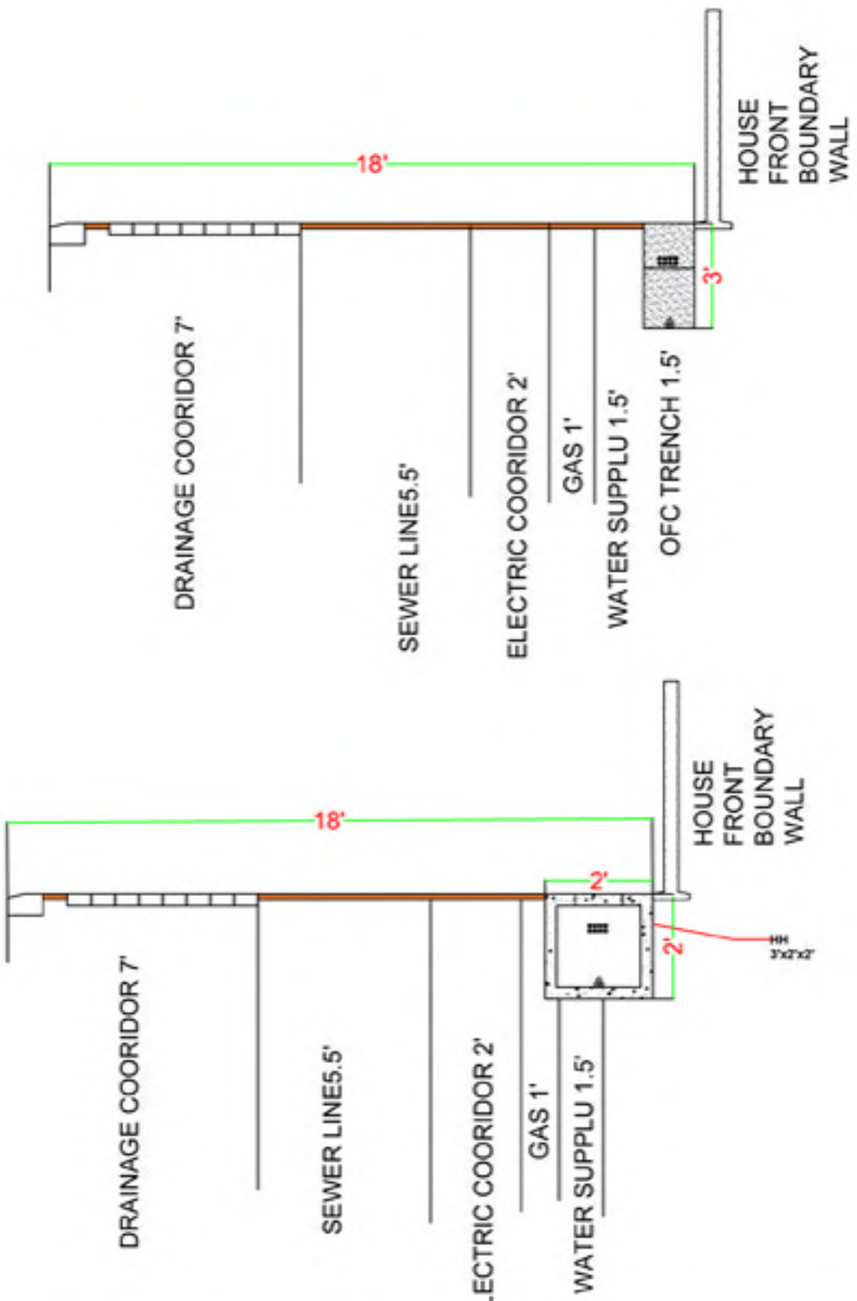
SCALE: N.T.S

DATE: SEPTEMBER, 2024

DWG. NO.: DHAQ-GPON-PN-v1.0

SHEET NO.: 01





REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

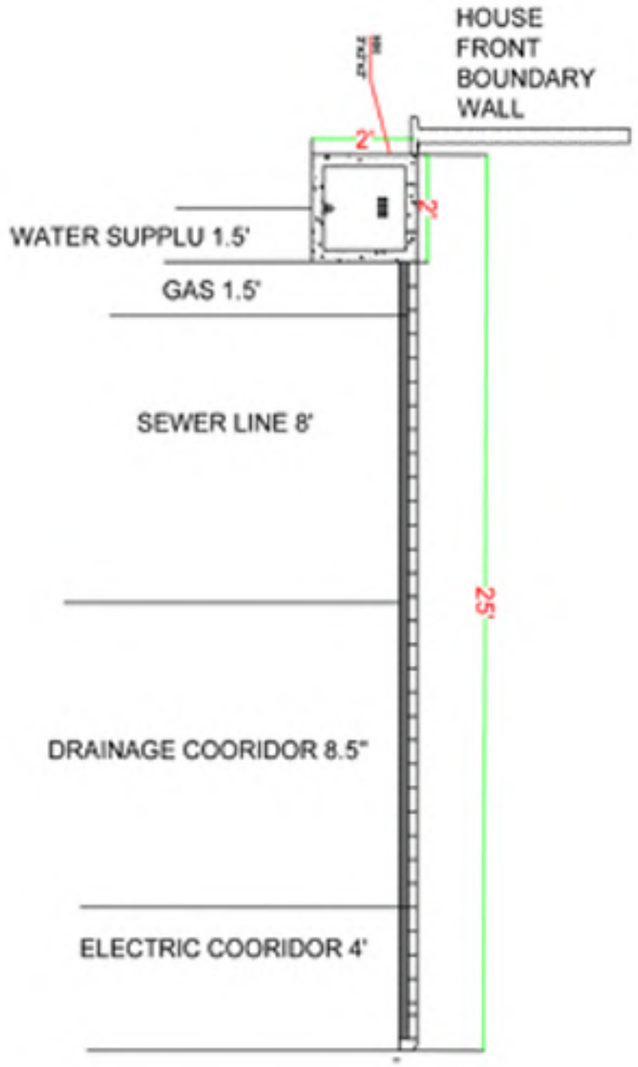
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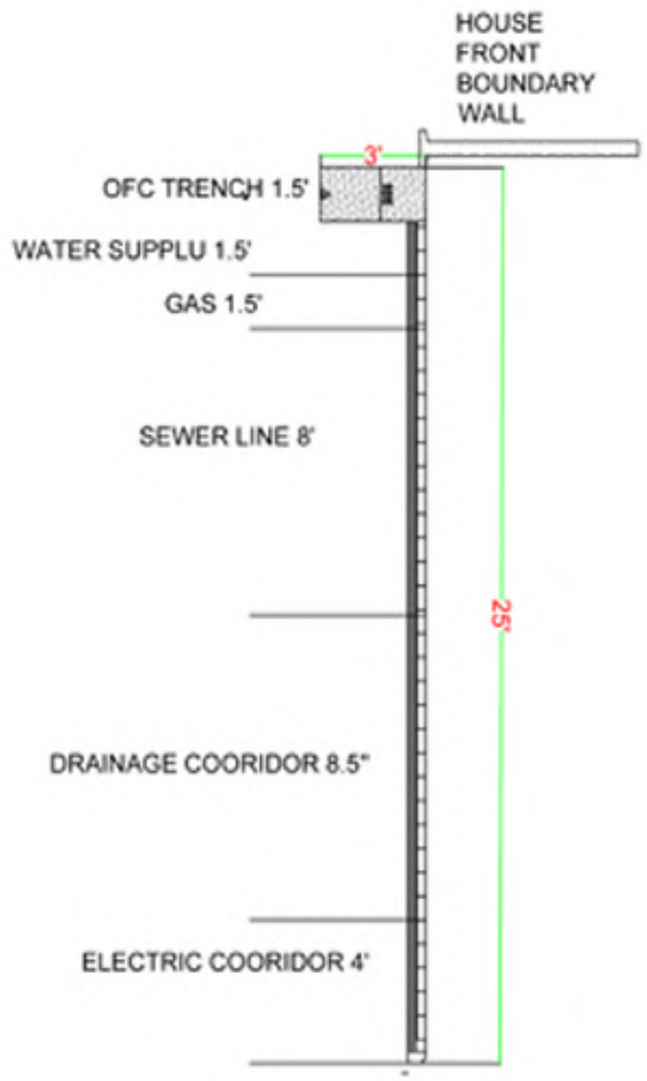
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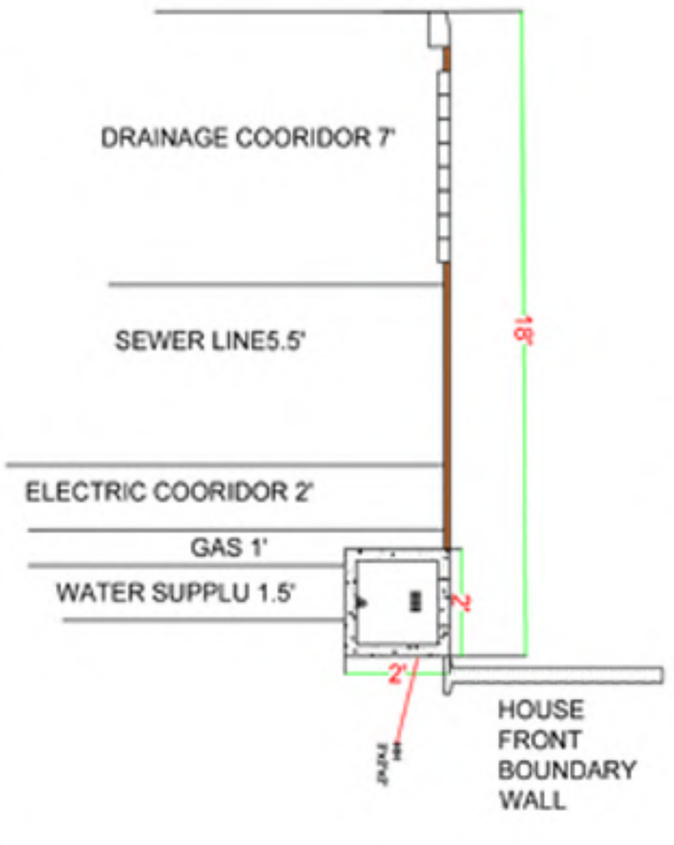
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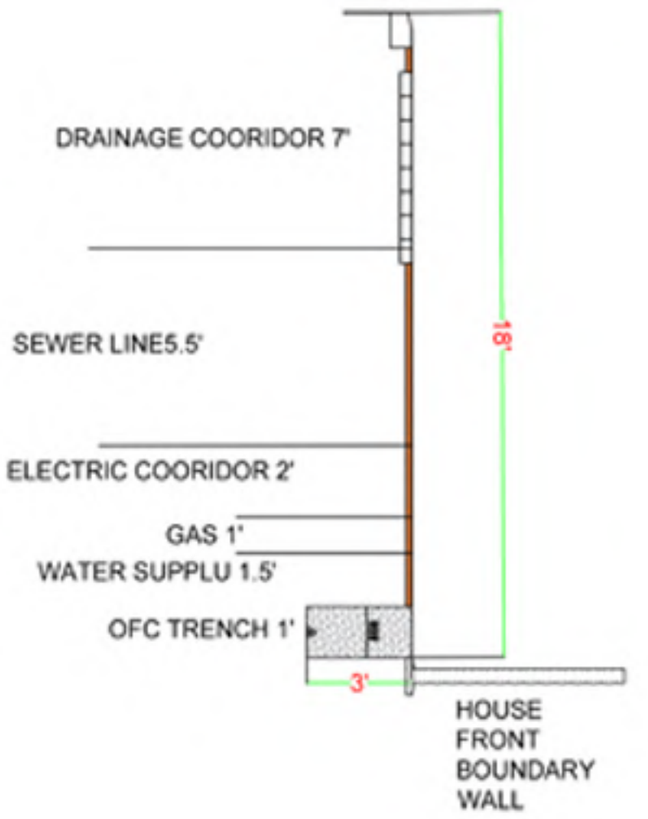
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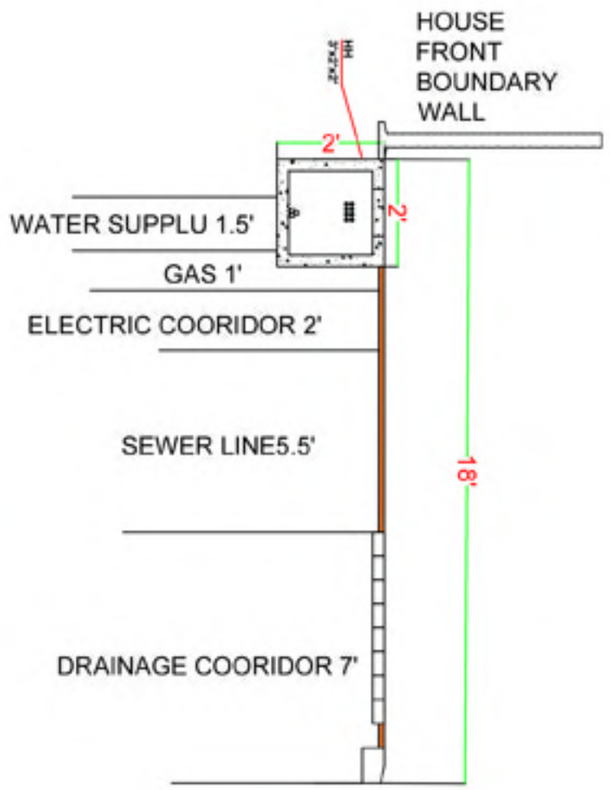
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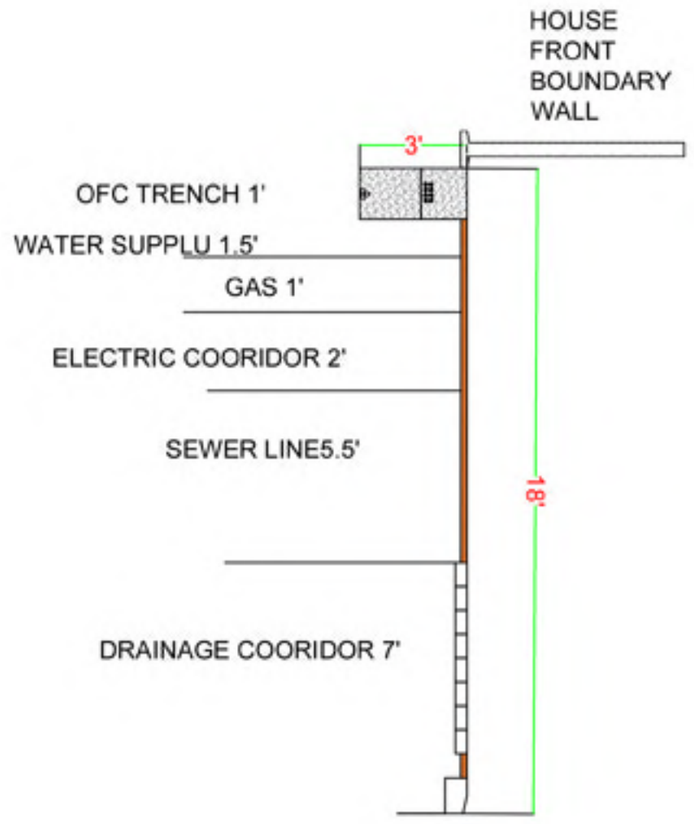


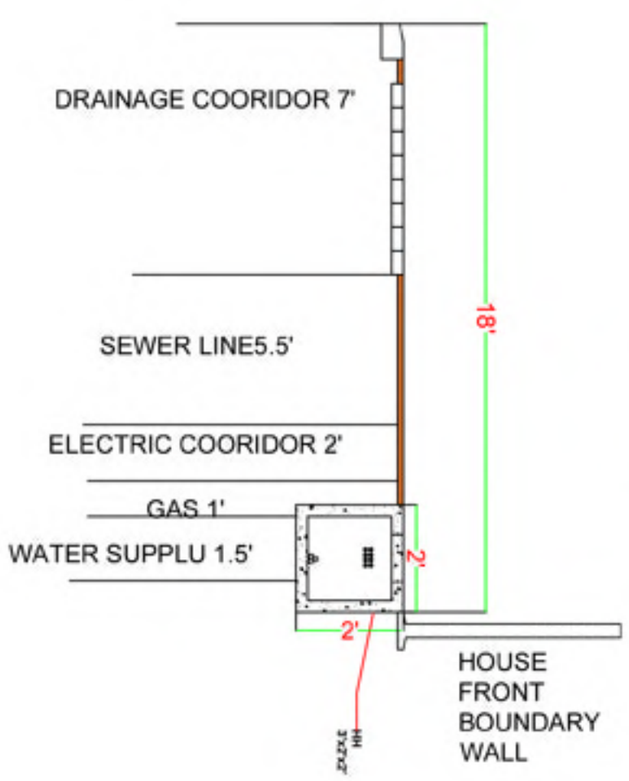


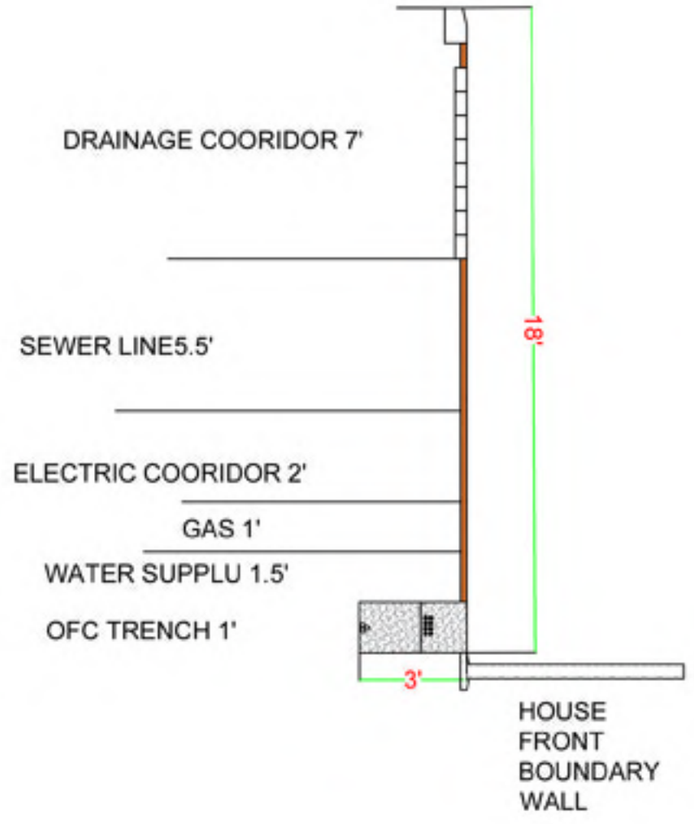












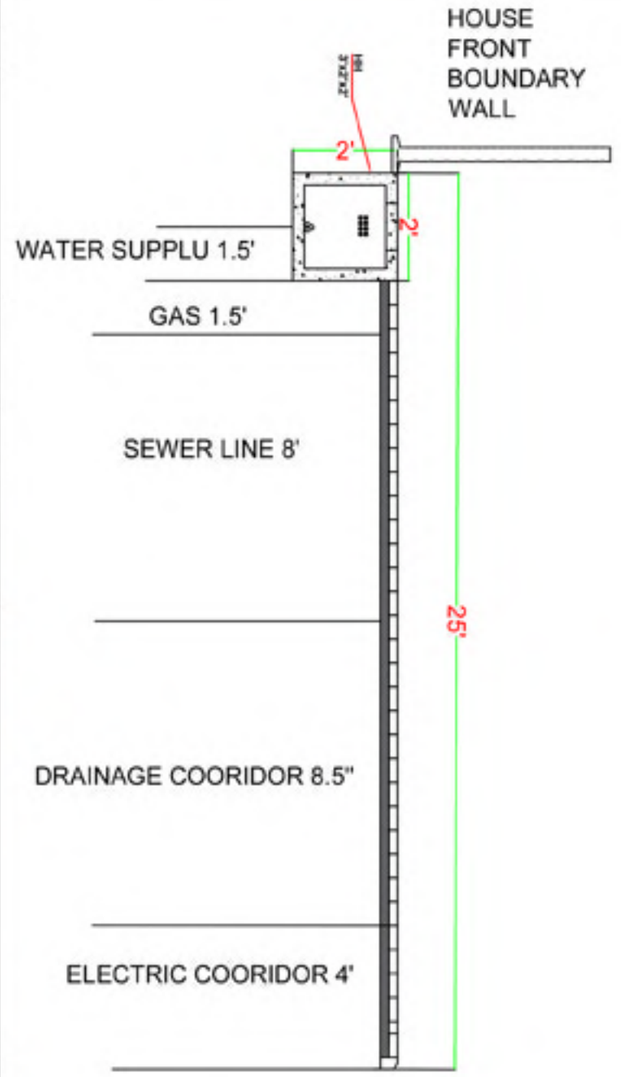
DEFENCE HOUSING AUTHORITY QUETTA

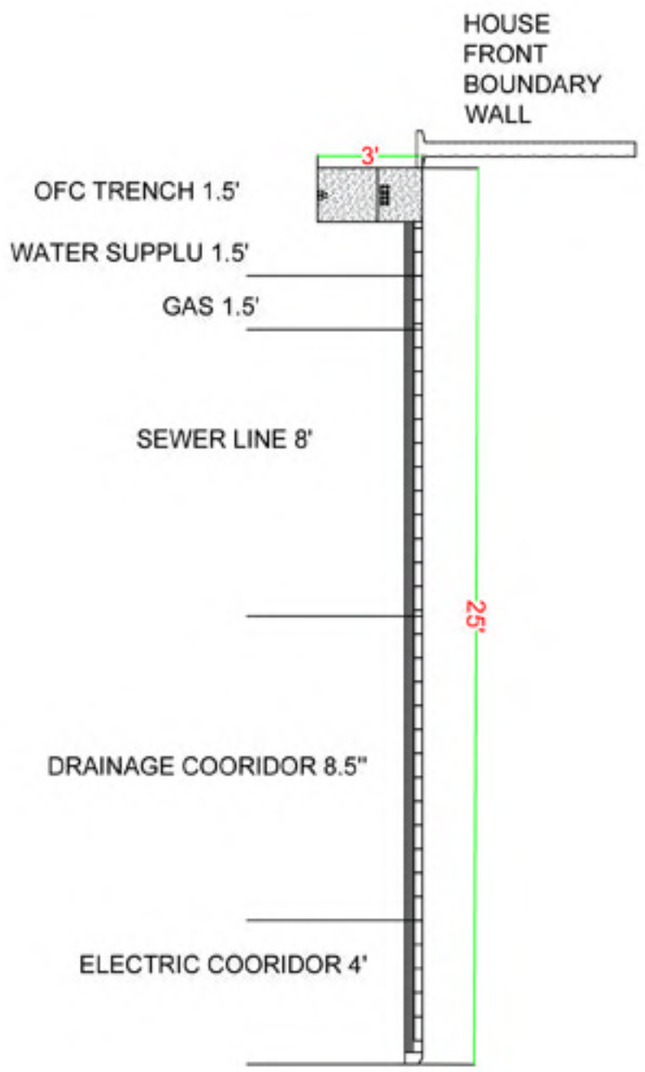
Highrise Private Limited

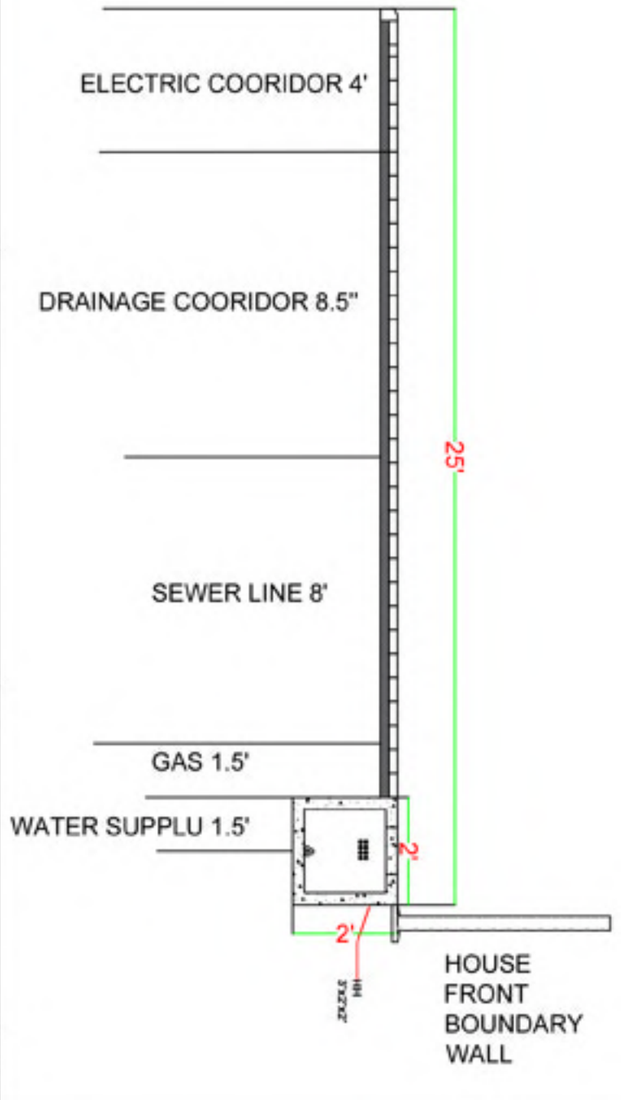
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

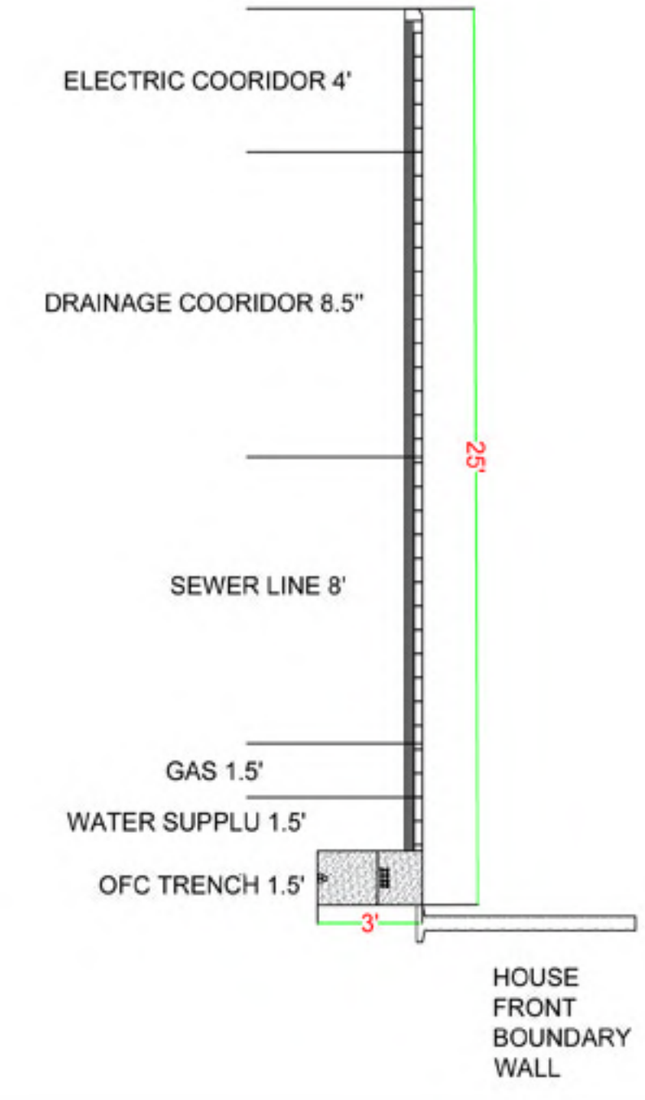
TYPICAL X-SECTION 295' R.O.W LOCAL STREET

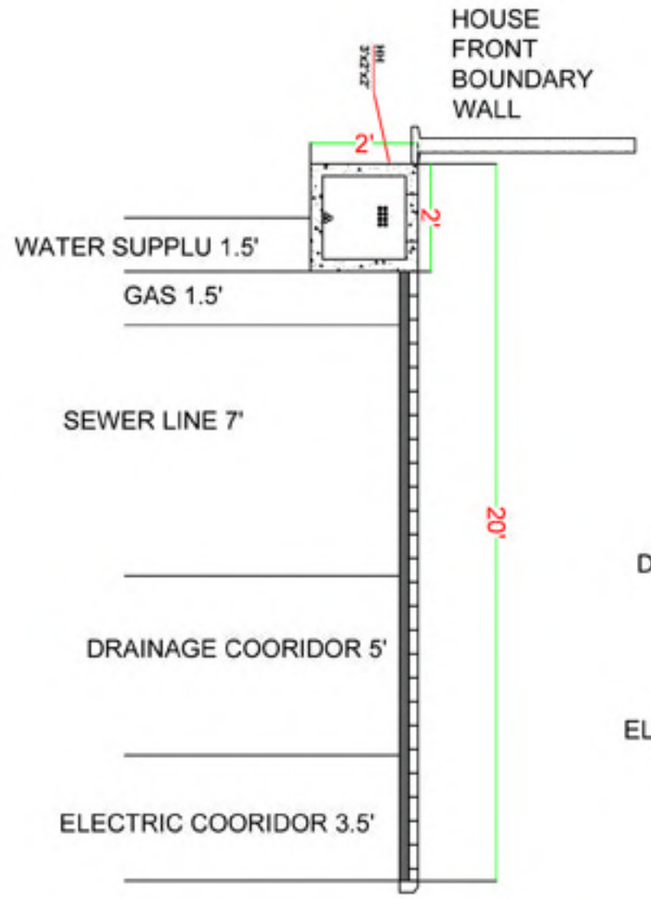
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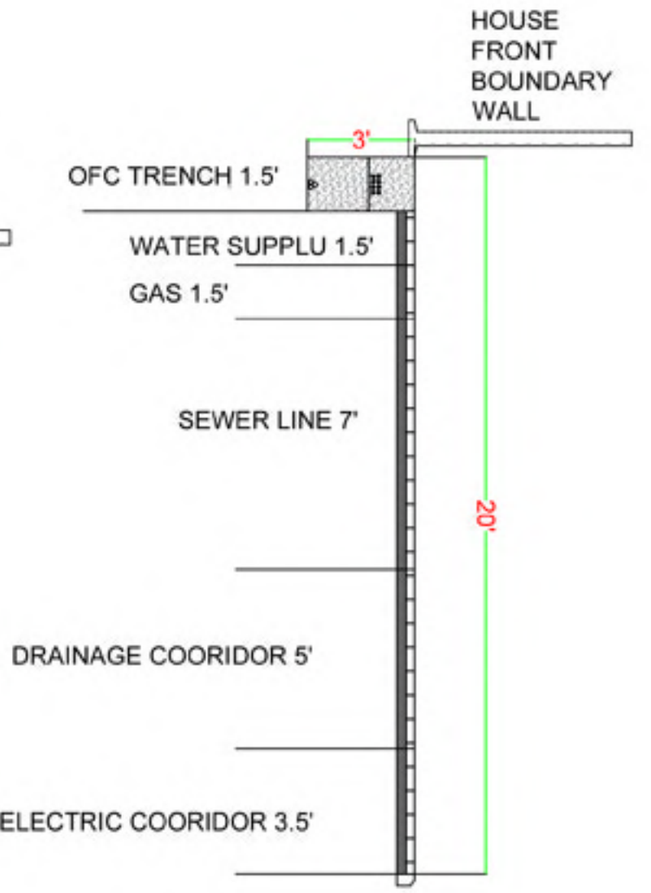


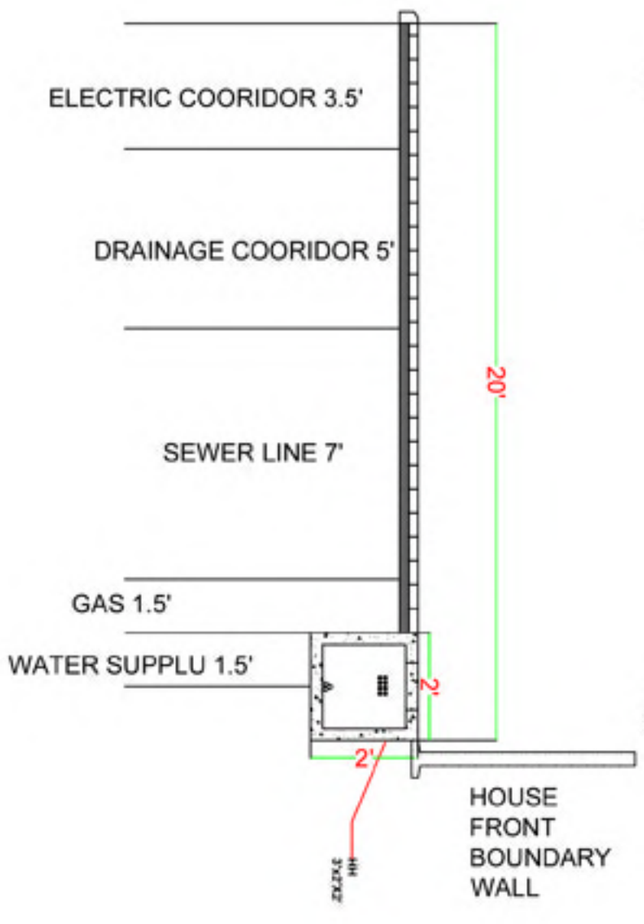


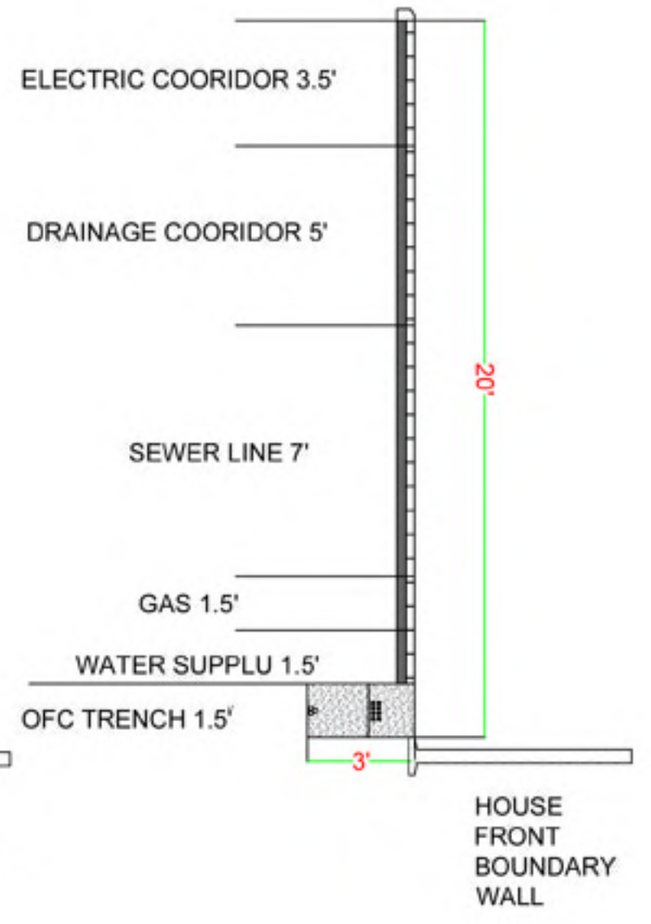












DEFENCE HOUSING AUTHORITY
QUETTA

Highrise Private Limited

DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

TYPICAL X-SECTION 350' R.O.W LOCAL STREET

SEPTEMBER, 2024

N.T.S

OPTICAL FIBER NETWORK PLAN

FOR

DHA QUETTA SMART & SAFE CITY

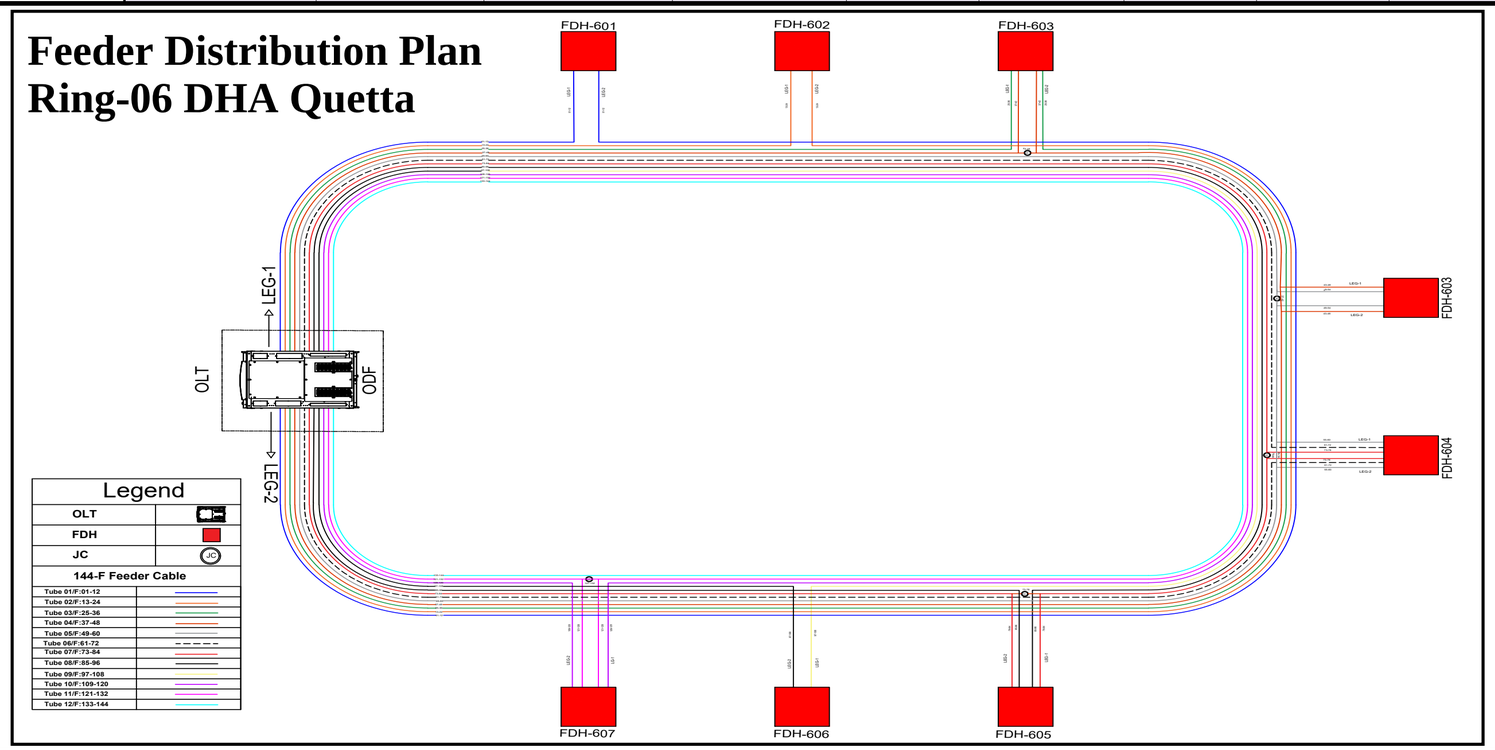
RING-06 SECTOR A3

BOQ Ring-06,Sector A3 DHA Quetta

Connection Summary									ODN Ports			Feeder BOQ										DISTRIBUTION BOQ																									
Exchange Ring No/ Route Area	OLT Location	FDH List	FDH 144	Plots	Residential		Commercial		Total Users	Design Residential ODN Ports	Design Commercial ODN Ports	Total Design ODN Ports	Feeder Fiber Length(Meter)			JOINT ENCLOSURE	Duct Length(HDPE 57/63mm)			Feeder Civil Work (Trench)/Mtr)			HandHole		Distribution Cable (MTR)			Duct HDPE Pipe 57mm/63mm (Meter)		Civil Work (Trench)/Mtr)		RNAP+CNAP				Total FAT 8P	FDH Spiltters												
					Total Residential Plots	User	Total Commercial Plots	User					144F	48F	24F	144F	2 Way Duct (Feeder)	3 Way Duct (Feeder+Dist)	Feeder Common Route Duct (3 Way)	Trench 2 Ways	Trench (3 Way) Feeder+Dist	Feeder Common Trench 3 Way	FDH-Base 3x4x3	HandHole 3x2x2	48F	24F	12F	1 Way 57mm	2 Ways 57mm	Trench (3ft) 1 Way	Trench (3ft) (2 Way)	*JOINT BOX*			Total NAP 8P		No Of ISP	Residential Splitter Level 2	Commercial Splitter Level 2	Feeder Core	Used Cores												
																															48F	24F	12F				2x4	2x4												
Ring-06/Sector A3	DHA-Quetta	FDH601	1	168	168	168	0	0	168	192	0	192	7618	0	800	10	1542	7962	1929	771	2654	643	8	205	0	390	2202	1703	196	1703	98	0	24	0	24	0	1	6	0	12	6												
		FDH602	1	181	181	181	0	0	181	192	0	192													0	482	2303	2562	156	2562	78	0	24	0	24	0	1	6	0	12	6												
		FDH603	1	206	206	206	0	0	206	256	0	256													0	1042	826	1817	668	1817	334	0	32	0	32	0	1	8	0	12	8												
		FDH604	1	123	123	123		0	123	128	0	128													0	417	891	1084	0	1084	0	0	16	0	16	0	1	4	0	12	4												
		FDH605	1	193	153	153	40	40	193	192	320	512													0	804	1883	1086	104	1086	52	0	24	0	24	40	1	6	10	18	16												
		FDH606	1	242	242	242	0	0	242	256	0	256													0	893	1825	2464	246	2464	123	0	32	0	32	0	1	8	0	12	8												
		FDH607	1	142	142	142	0	0	142	192	0	192													0	156	1669	1744	0	1744	0	0	24	0	24	0	1	6	0	12	6												
		FDH608	1	196	195	195	1	1	196	256	64	320													0	1211	1087	2005	158	2005	79	0	32	0	32	8	1	8	2	18	10												
			8	1451	1410	1410	41	41	1451	1664	384	2048	7618	0	800	10	9504			771	2654		8	205	0	5395	12686	14465	1528	14465	764	0	208	0	208	48	1	52	12	108	64												
TOTAL SUMMARY			8	1451	1410	1410	41	41	1451	1664	384	2048	7618	0	800	10	9504			771	2654	643	8	205	0	5395	12686	14465	1528	14465	764	0	208	0	208	48	1	52	12	108	64												
																				4068			213																									

Loss Budget Ring 06 DHA Quetta

		Feeder Distance(KM)		Attenuation Loss / KM	A side Per Kilometer Attenuation Loss	B side Per Kilometer Attenuation Loss	Splice Loss	Connector Loss	Splitter Loss @ FDH	Total Loss at FDH Side A	Total Loss at FDH Side B	2 Connector + 2splice+Drop Cable Loss	Loss at Customer From A Side	Loss at Customer From B Side
FDH_No	SFP Class B+ Tx Power	A side	B side				0.05*8	4*0.5	Splitter 2:32					
FDH 601	2	2.663	4.950	0.35	0.93	1.73	0.4	2	15.05	18.4	19.2	1	**-17.5**	-18.3
FDH 602	2	2.673	4.940	0.35	0.94	1.73	0.4	2	15.05	18.4	19.2	1	**-17.5**	-18.3
FDH 603	2	3.825	3.788	0.35	1.34	1.33	0.4	2	15.05	18.8	18.8	1	**-17.9**	-17.9
FDH 604	2	4.056	3.557	0.35	1.42	1.24	0.4	2	15.05	18.9	18.7	1	**-18.0**	-17.8
FDH 605	2	4.434	3.179	0.35	1.55	1.11	0.4	2	15.05	19.0	18.6	1	**-18.1**	-17.7
FDH 606	2	4.622	2.991	0.35	1.62	1.05	0.4	2	15.05	19.1	18.5	1	**-18.2**	-17.6
FDH 607	2	4.814	2.799	0.35	1.68	0.98	0.4	2	15.05	19.1	18.4	1	**-18.2**	-17.5
FDH 608	2	4.926	2.687	0.35	1.72	0.94	0.4	2	15.05	19.2	18.4	1	**-18.3**	-17.5



DHA-QUETTA
Feeder Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 1 CORE FOR FEEDER & 01 WITE WIRE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

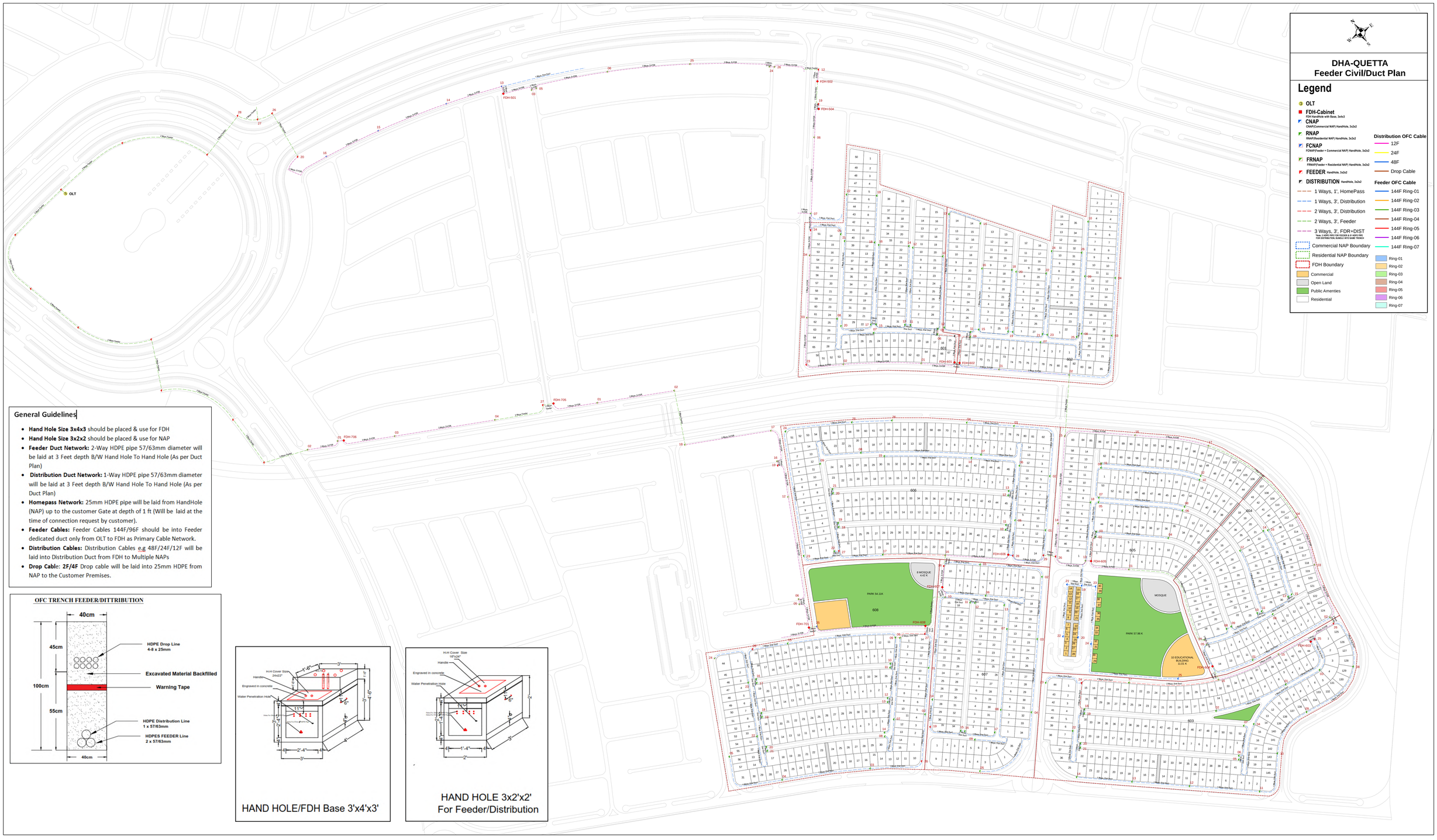
Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.



REV	DATE	DESCRIPTION	APPROVED		
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

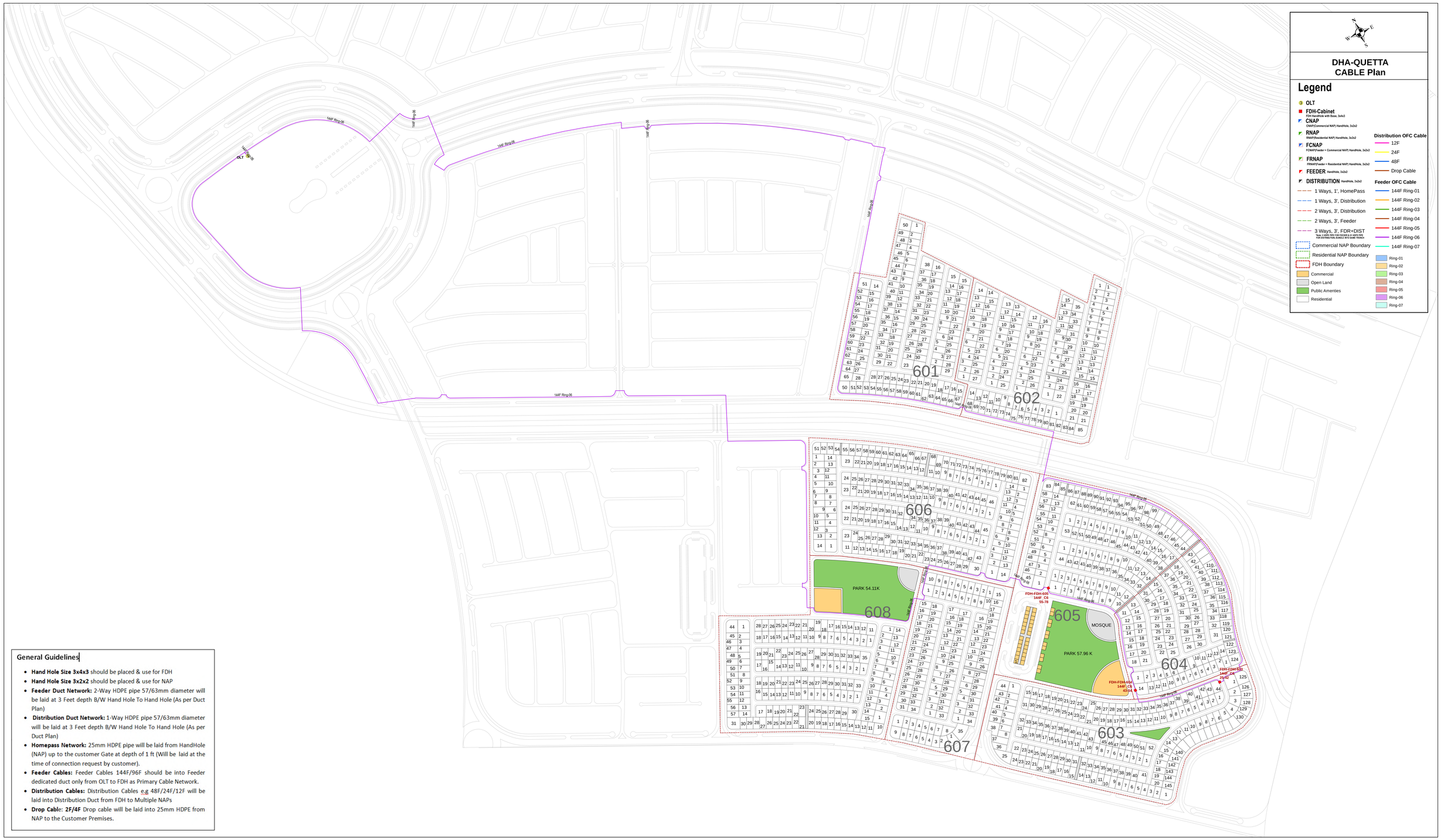
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FEEDER DUCT PLAN RING 06

SCALE: 1:2,500

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



DHA-QUETTA
CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH HandHole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 1 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

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- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FEEDER CABLE PLAN RING-06

SCALE: 1:3,000

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
Civil/Duct Plan

Legend

- **OLT**
- **FDH-Cabinet** FDH Handhole with Base, 3x4x3
- **CNAP** CNAP(Commercial NAP) HandHole, 3x2x2
- **RNAP** RNAP(Residential NAP) HandHole, 3x2x2
- **FCNAP** FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- **FRNAP** FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- **FEEDER** HandHole, 3x2x2
- **DISTRIBUTION** HandHole, 1x2x2

- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST
  Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH

- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

601

1 Ways, 1'x96

1 Ways, 3'x96

1 Ways, Dist Duct

FDH-601

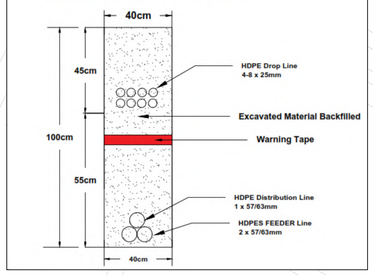
HAND HOLE/FDH Base 3'x4'x3'

HAND HOLE 3x2'x2'
For Feeder/Distribution

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
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- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

OFC TRENCH FEEDER/DITTRIBUTION



REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
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01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

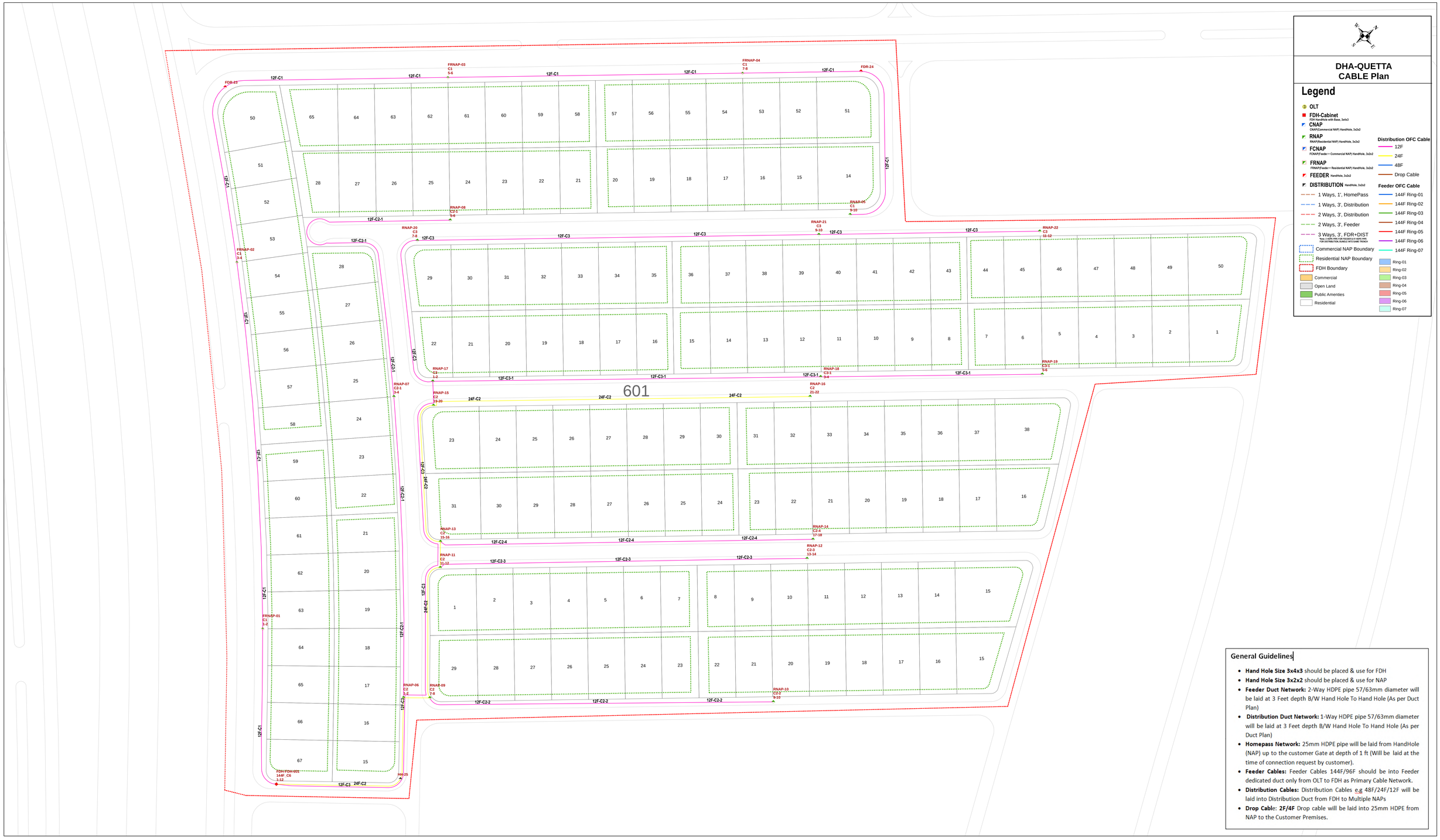
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA
GPON FDH-601 DUCT PLAN RING-06

SCALE 1:830

DATE 15.01.25

DWG NO. DHAQ-GPON-PNI-v1.0



DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP(Residential NAP) Handhole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- FEEDER — Handhole, 3x2x2
- DISTRIBUTION — Handhole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

Ring-01
Ring-02
Ring-03
Ring-04
Ring-05
Ring-06
Ring-07

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
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- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable: 2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-601 CABLE PLAN RING-06

SCALE: 1:530

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 1x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note:2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

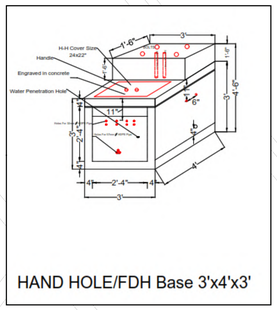
Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

Ring-01
Ring-02
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Ring-04
Ring-05
Ring-06
Ring-07

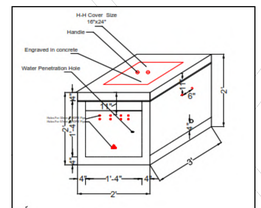
602

FDH-602

1 Ways, 3x1Dist
1 Ways, 3x2Dist
2 Ways, 3x1Dist
2 Ways, 3x2Dist
3 Ways, 3x1Dist
1 Ways, 3x1Dist
1 Ways, 3x2Dist
2 Ways, 3x2Dist
1 Ways, 3x1Dist
1 Ways, 3x2Dist
2 Ways, 3x1Dist
2 Ways, 3x2Dist
1 Ways, 3x1Dist
1 Ways, 3x2Dist
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2 Ways, 3x1Dist
2 Ways, 3x2Dist



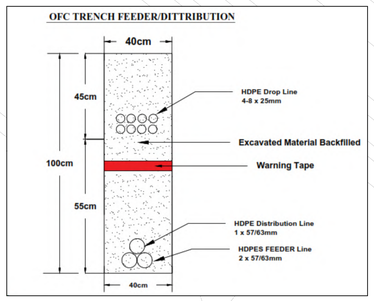
HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.



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04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

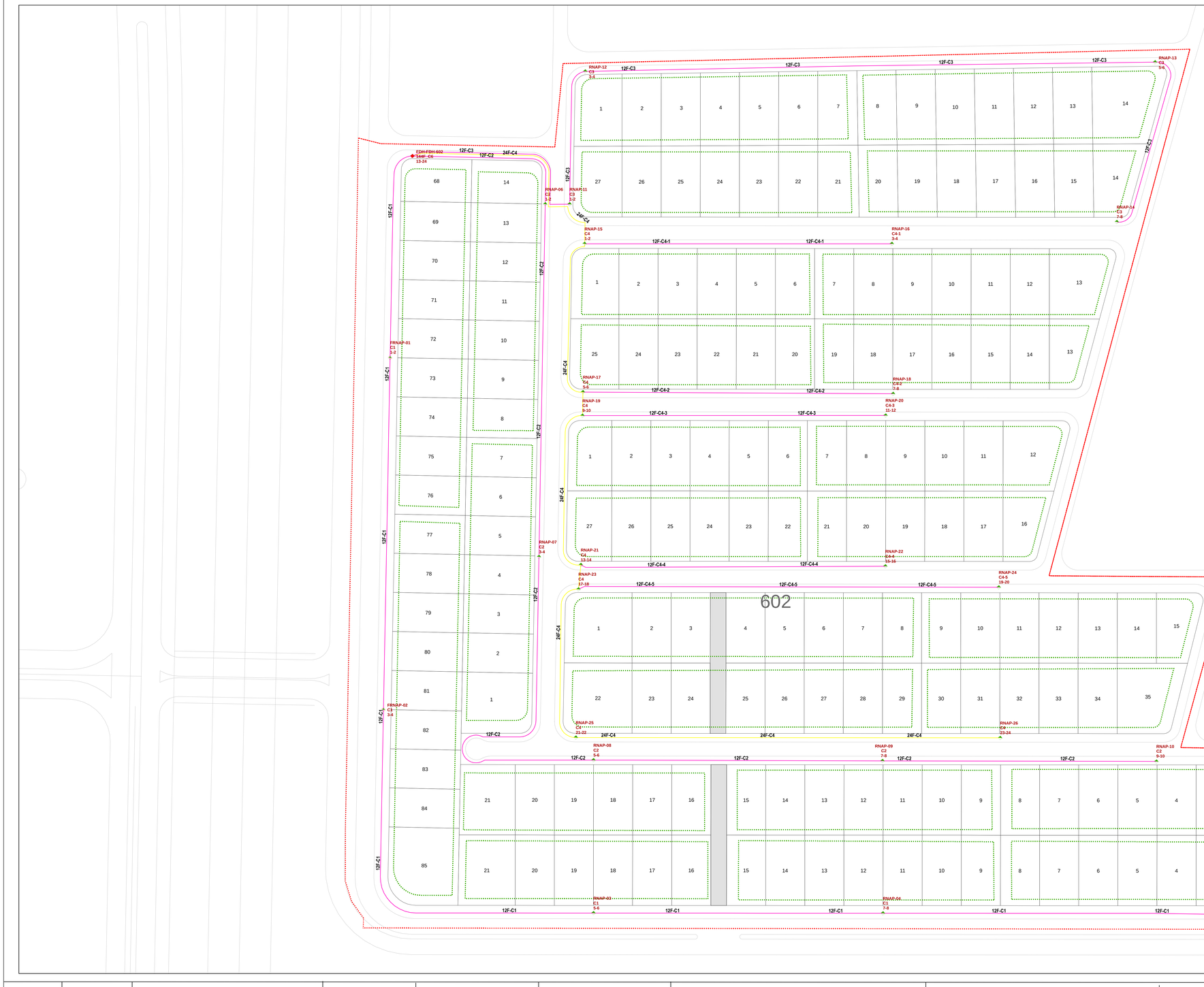
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-602 DUCT PLAN RING-06

SCALE: 1:790

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



DHA-QUETTA CABLE Plan

Legend

- **OLT**
- **FDH-Cabinet** FDH Handhole with Base, 3x4x3
- **CNAP** CNAP(Commercial NAP) Handhole, 3x2x2
- **RNAP** RNAP(Residential NAP) Handhole, 3x2x2
- **FCNAP** FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- **FRNAP** FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- **FEEDER** Handhole, 3x2x2
- **DISTRIBUTION** Handhole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST
  Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

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- **Hand Hole Size 3x2x2** should be placed & use for NAP
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REV	DATE	DESCRIPTION	APPROVED	APPROVED	
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03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-602 CABLE PLAN RING-06

SCALE: 1:580

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note:3 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

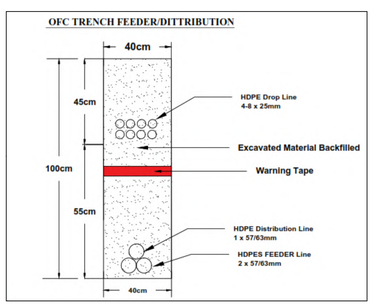
Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

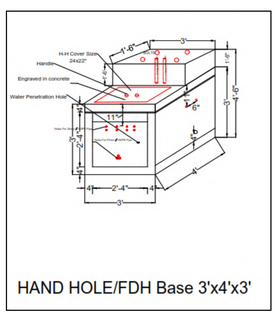
Ring-01
Ring-02
Ring-03
Ring-04
Ring-05
Ring-06
Ring-07

603

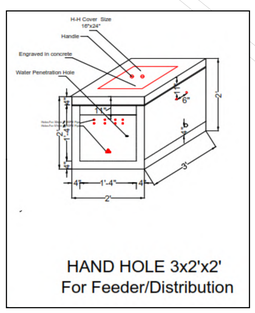
General Guidelines

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- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.





HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution

REV	DATE	DESCRIPTION	APPROVED		
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03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-603 DUCT PLAN RING-06

SCALE: 1:770

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



General Guidelines

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- **Hand Hole Size 3x2x2** should be placed & use for NAP
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04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
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01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-603 CABLE PLAN RING-06

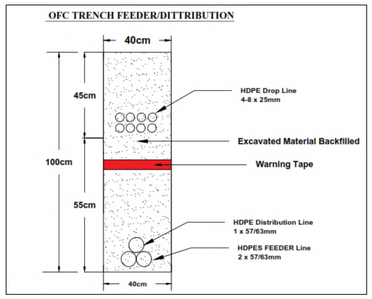
SCALE 1:770

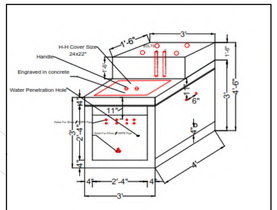
DATE 15.01.25

DWG NO. DHAQ-GPON-PNI-v1.0

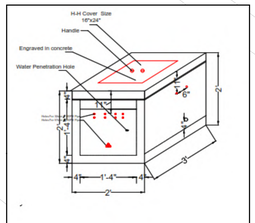
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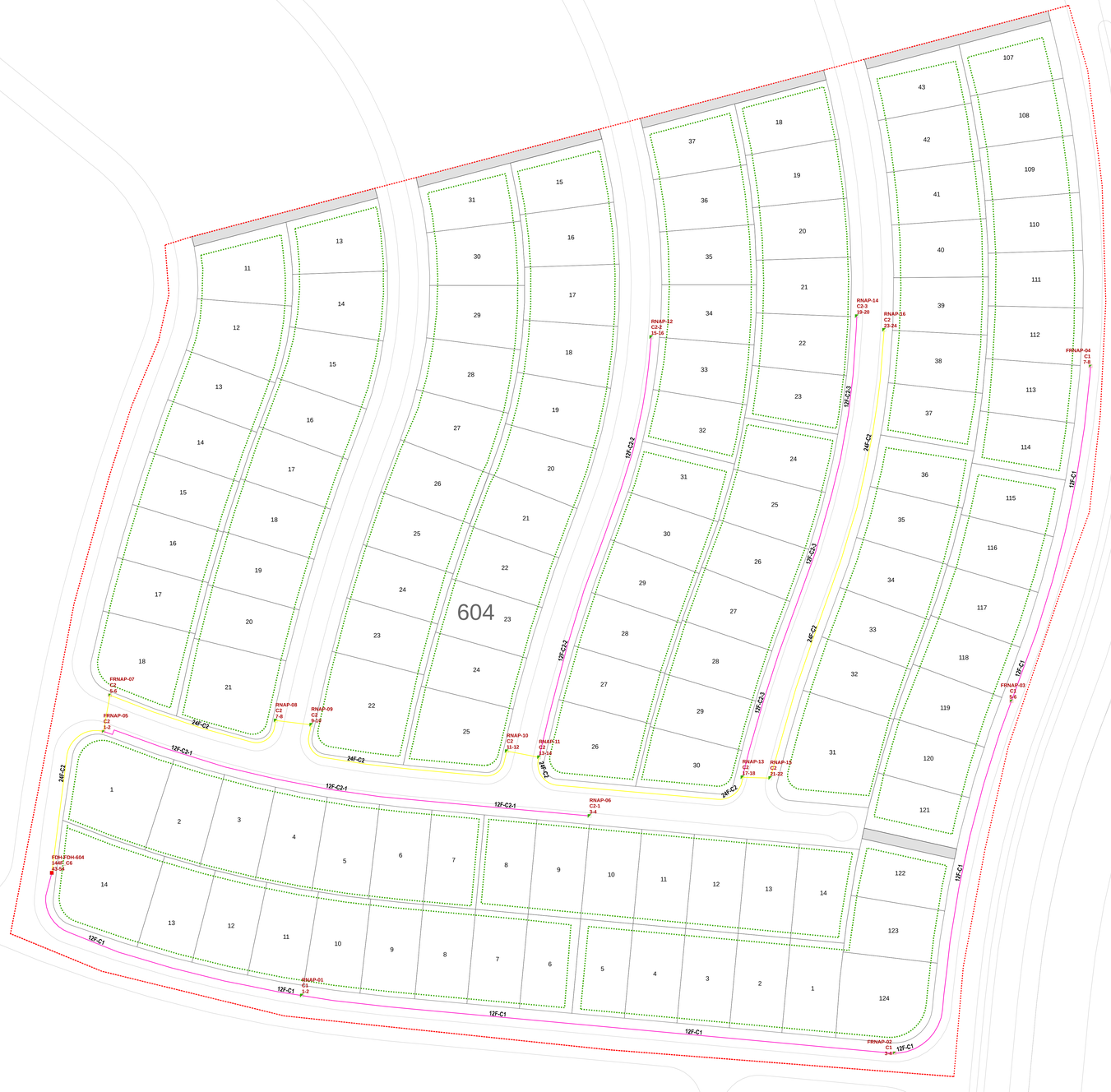


HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution


604
FDH-604
1 Ways, Feeder
1 Ways, Dist Duct
1 Ways, D-Drop
1 Ways, F-Drop
1 Ways, Dist Duct
1 Ways, Dist Duct
1 Ways, Dist Duct



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DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST
  Note: 3 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
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- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable: 2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

REV	DATE	DESCRIPTION	APPROVED		
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-604 CABLE PLAN RING-06

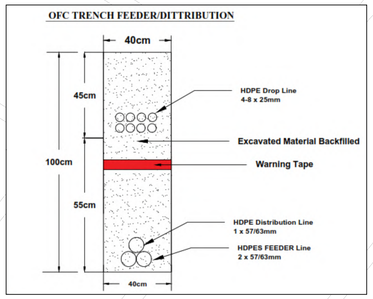
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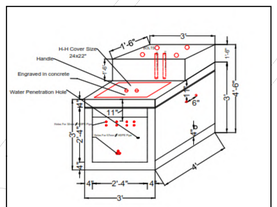
DATE 15.01.25

DWG NO. DHAQ-GPON-PNI-v1.0

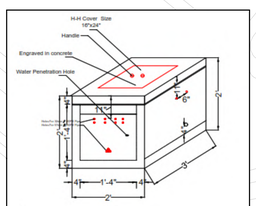
General Guidelines

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- **Drop Cabl**e: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

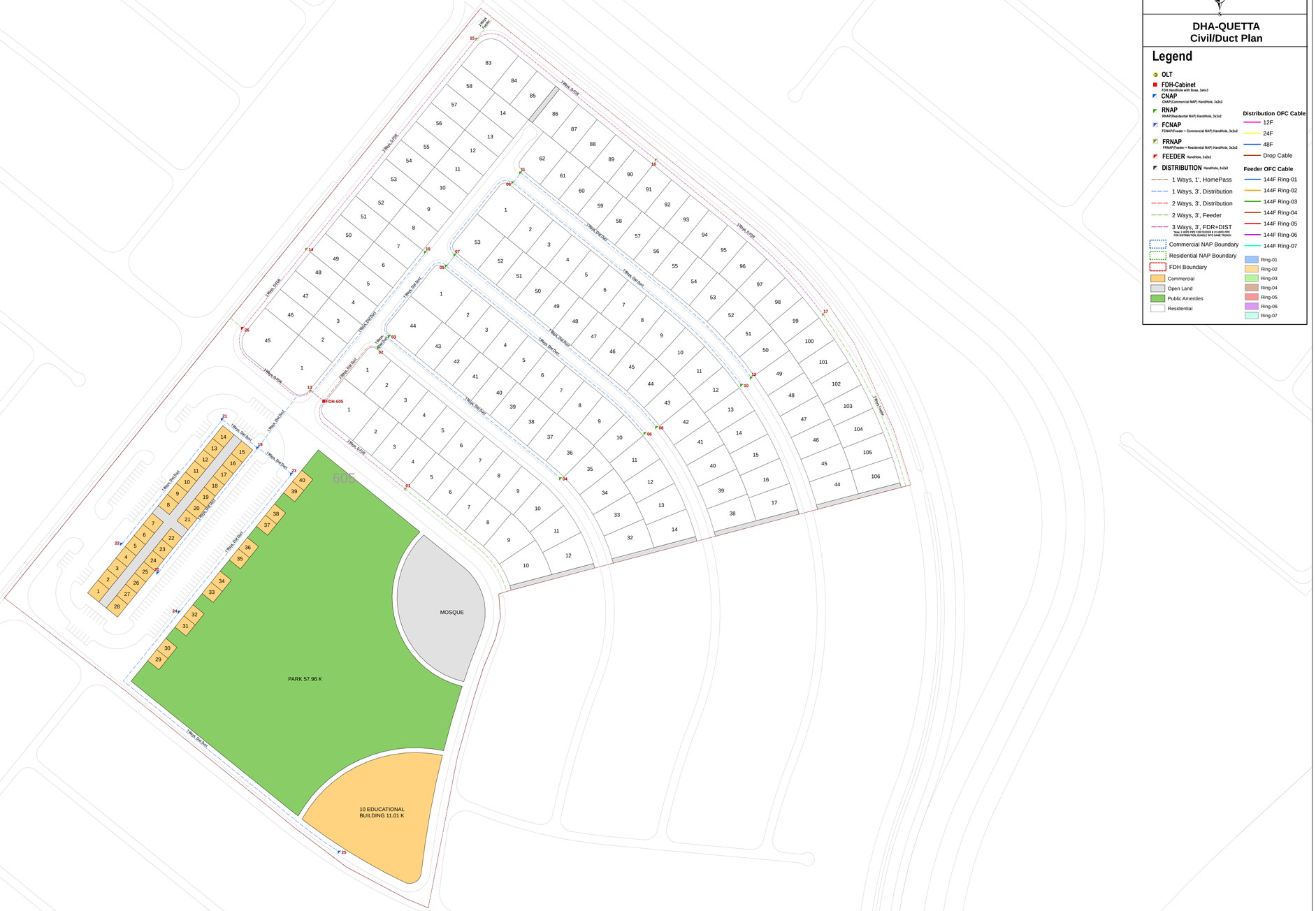




HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution



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DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — *Note:2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

Ring
- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

REV	DATE	DESCRIPTION	APPROVED		
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

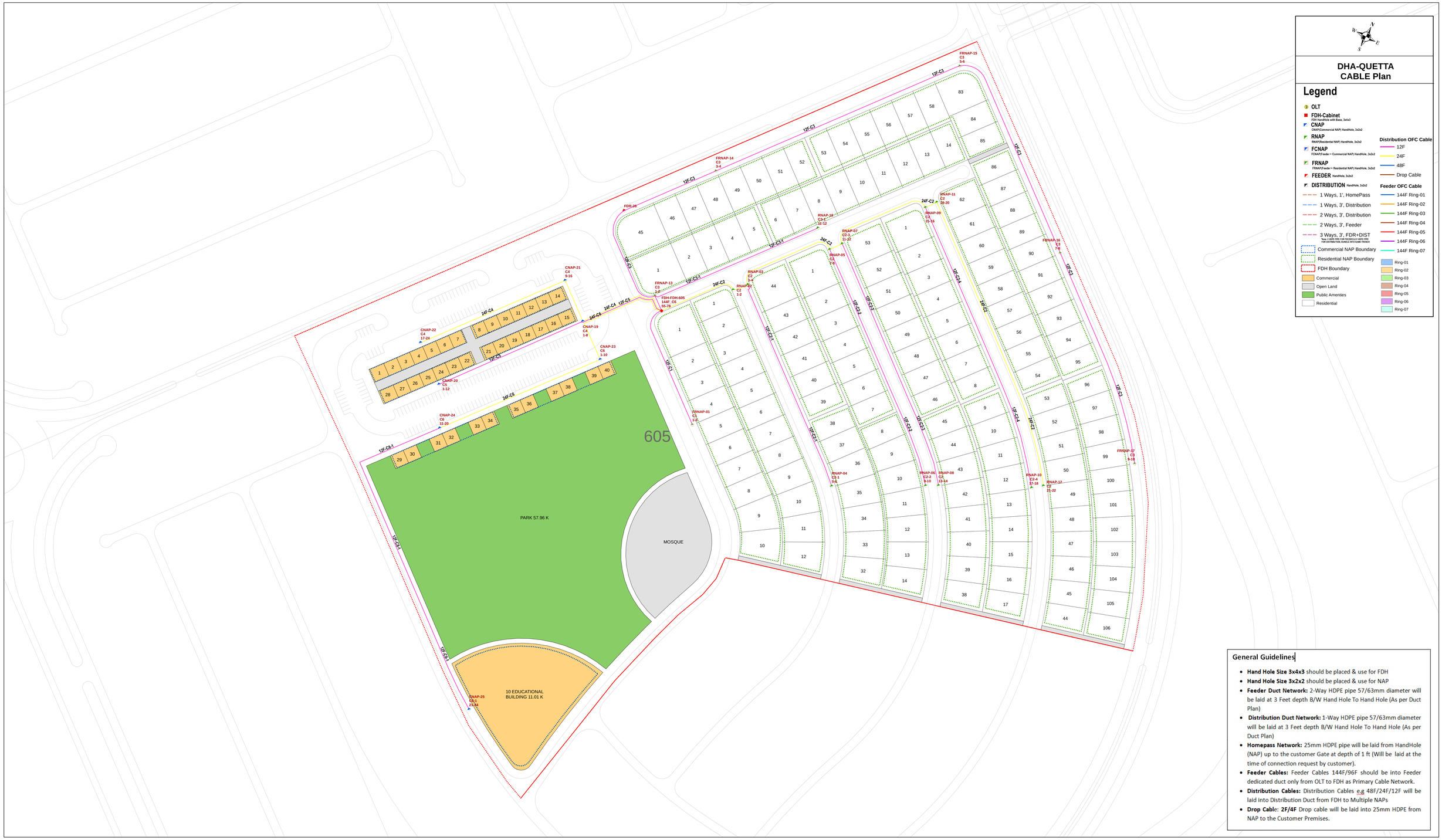
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-605 DUCT PLAN RING-06

SCALE: 1:970

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-605 CABLE PLAN RING-06

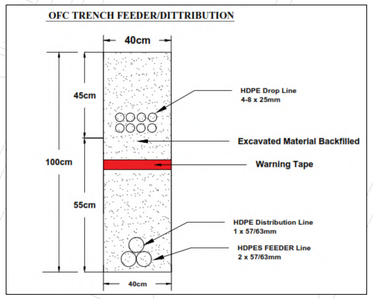
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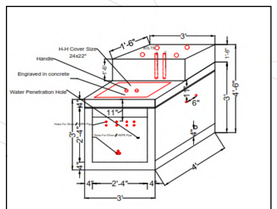
DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

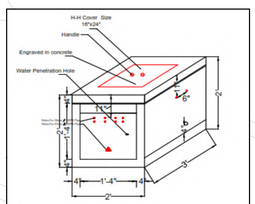
General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
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- **Drop Cable: 2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.



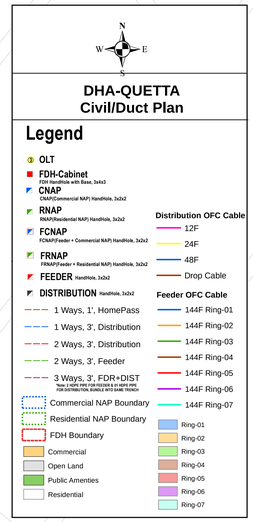


HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution





REV	DATE	DESCRIPTION	APPROVED	APPROVED	
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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-606 DUCT PLAN RING-06

SCALE: 1:890

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP(Residential NAP) Handhole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- FEEDER — Handhole, 3x2x2
- DISTRIBUTION — Handhole, 1x2x2
  - 1 Ways, 1', HomePass
  - 1 Ways, 3', Distribution
  - 2 Ways, 3', Distribution
  - 2 Ways, 3', Feeder
  - 3 Ways, 3', FDR+DIST — Note: 3 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

Ring-01 Ring-02 Ring-03 Ring-04 Ring-05 Ring-06 Ring-07

606

General Guidelines

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- **Hand Hole Size 3x2x2** should be placed & use for NAP
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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-606 CABLE PLAN RING-06

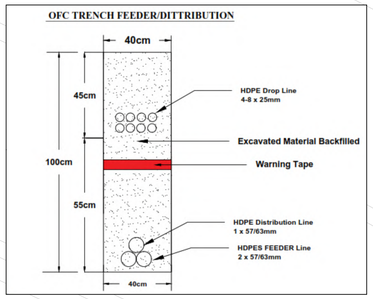
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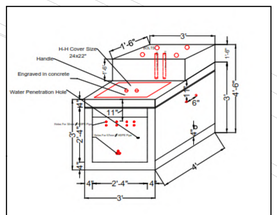
DATE 15.01.25

DWG NO. DHAQ-GPON-PNI-v1.0

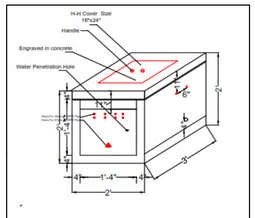
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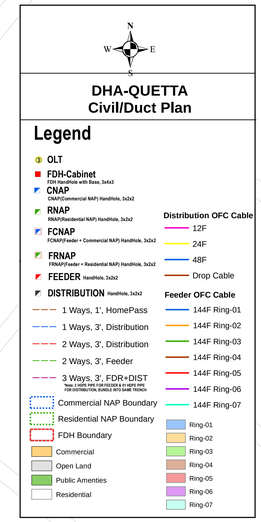


HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution





REV	DATE	DESCRIPTION	APPROVED	APPROVED	
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CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

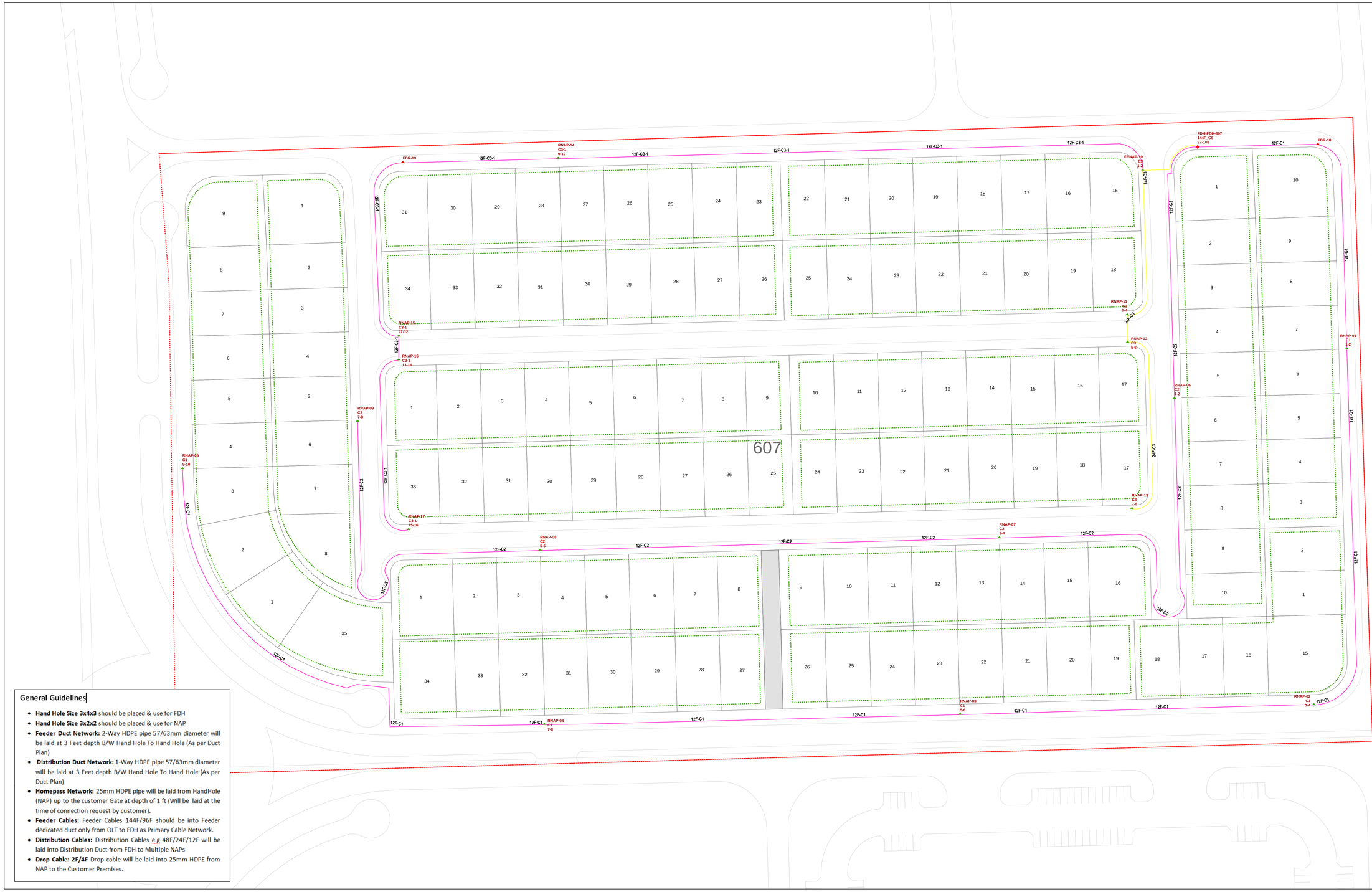
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-607 DUCT PLAN RING-06

SCALE: 1:770

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



General Guidelines

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- **Hand Hole Size 3x2x2** should be placed & use for NAP
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DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP(Residential NAP) Handhole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- FEEDER Handhole, 3x2x2
- DISTRIBUTION Handhole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
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Ring-01 Ring-02 Ring-03 Ring-04 Ring-05 Ring-06 Ring-07

REV	DATE	DESCRIPTION	APPROVED		
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-607 CABLE PLAN RING-06

SCALE: 1:470

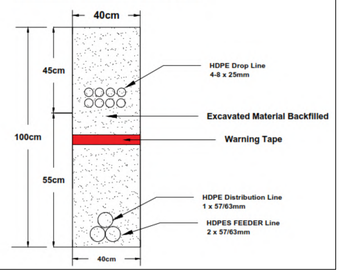
DATE: 15.01.25

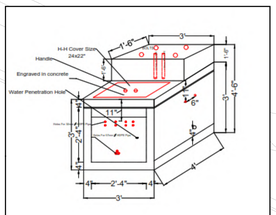
DWG NO.: DHAQ-GPON-PNI-v1.0

General Guidelines

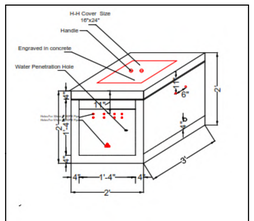
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OFC TRENCH FEEDER/DITTRIBUTION

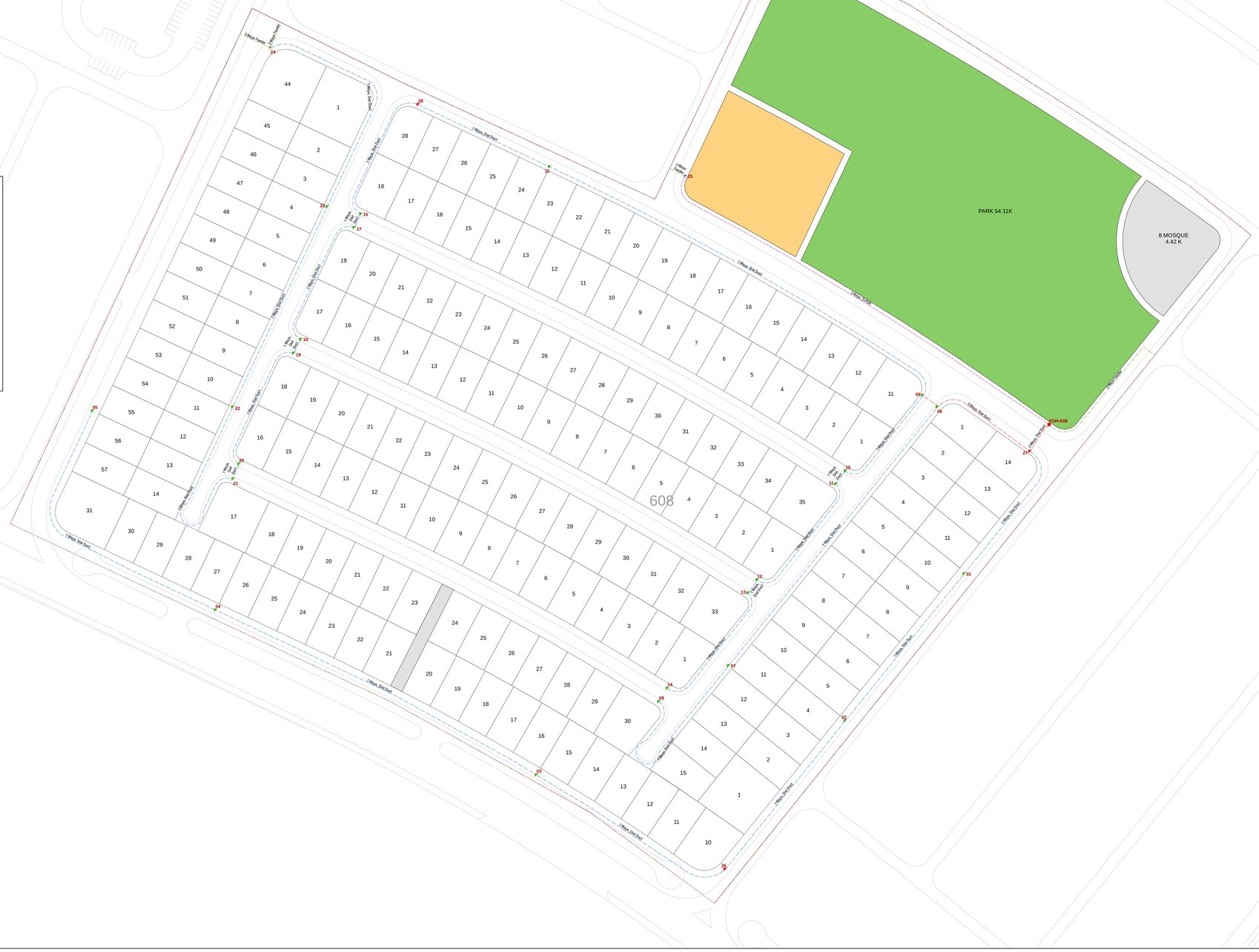




HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution


PARK 54.11K
8 MOSQUE
4.42 K
608
FDH-608
1 Ways, Dist Duct
2 Ways Feeder + 1 Ways Feeder
1 Ways, Dist Duct
1 Ways, Dist Duct
1 Ways, Dist Duct



DHA-QUETTA CABLE Plan

Legend

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- CNAP — CNAP(Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST
  Note: 3 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable: 2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-608 CABLE PLAN RING-06

SCALE: 1:760

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

OUTSIDE PLANT OSP

Core Network

Central Office

Feeder Network

Distribution Network

Customer Premises

TELEPHONE

IPTV

INTERNET

Surveillance

Smart Metering

A

B

OLT

FDH-101

144F Feeder Ring

Feeder JC

FDH-102

FDH-103

Splitter

Distribution Cable 12/24/48F

Distribution Cable 12/24/48F

FDH-106

FDH-105

144F Feeder Ring

Feeder JC

FDH-104

Cable 12F

Surveillance Cameras

Pole

Cable 12F

Surveillance Cameras

Pole

R-NAP

Joint Box

ONT

Drop Cable 2F

C-NAP

FAT-1 (2:8)

Drop Cable 2F

FAT-2 (2:8)

FAT-3 (2:8)

Legend

OLT	
FDH	
Splitter	
CNAP	
RNAP	
FAT	
ONT	
Feeder Cable	
Distribution Cable	
Drop Cable	

REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

TITLE: Single Line Diagram (SLD) Plan A

SCALE: N.T.S

DATE: October 2025

DWG. NO.: DHAQ–GPON–PNI–v1.0

SHEET NO.: 01

OUTSIDE PLANT OSP

Core Network | Central Office | Feeder Network | Distribution Network | Customer Premises

TELEPHONE
IPTV
INTERNET
Surveillance
Smart Metering

A
B

OLT

FDH-101
FDH-102
144F Feeder Ring
FDH-103
FDH-104
FDH-105
FDH-106
144F Feeder Ring

Splitter

Distribution Cable
12/24/48F
Distribution Cable
12/24/48F

ONT
Drop Cable 2F
R-NAP
Joint Box
Drop Cable 2F
Surveillance Cameras
Pole

C-NAP
FAT-1
(2:8)
Drop Cable 2F
FAT-2
(2:8)
FAT-3
(2:8)

Legend

OLT	
FDH	
Splitter	
CNAP	
RNAP	
FAT	
ONT	
Feeder Cable	
Distribution Cable	
Drop Cable	

REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

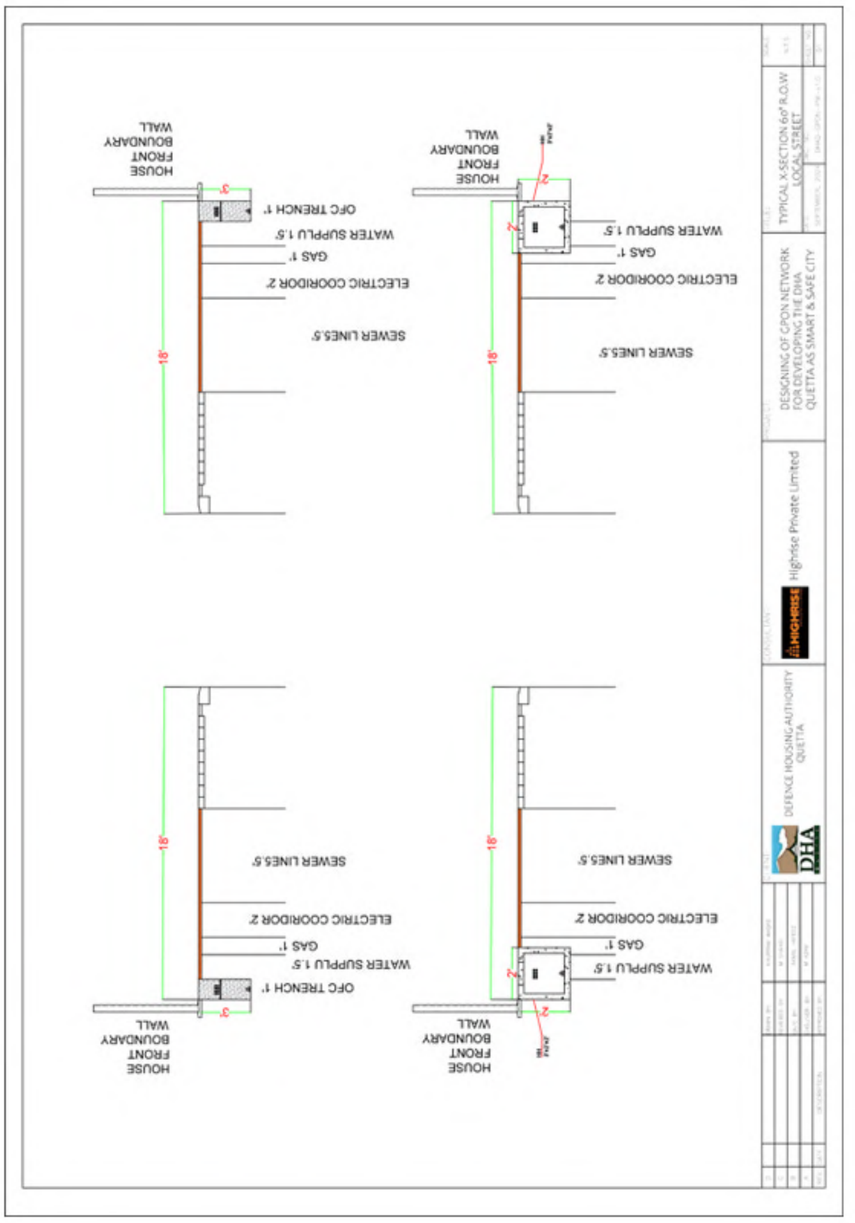
TITLE: Single Line Diagram (SLD) Plan B

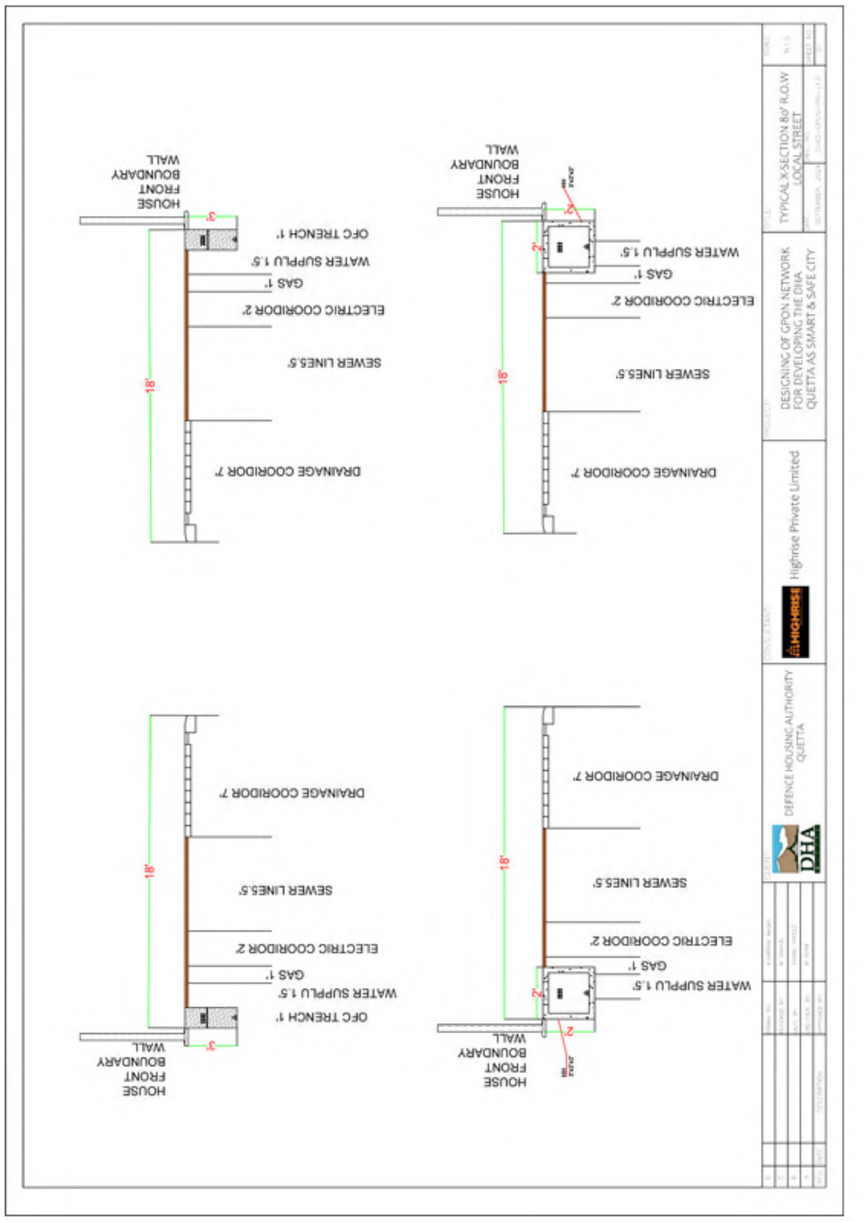
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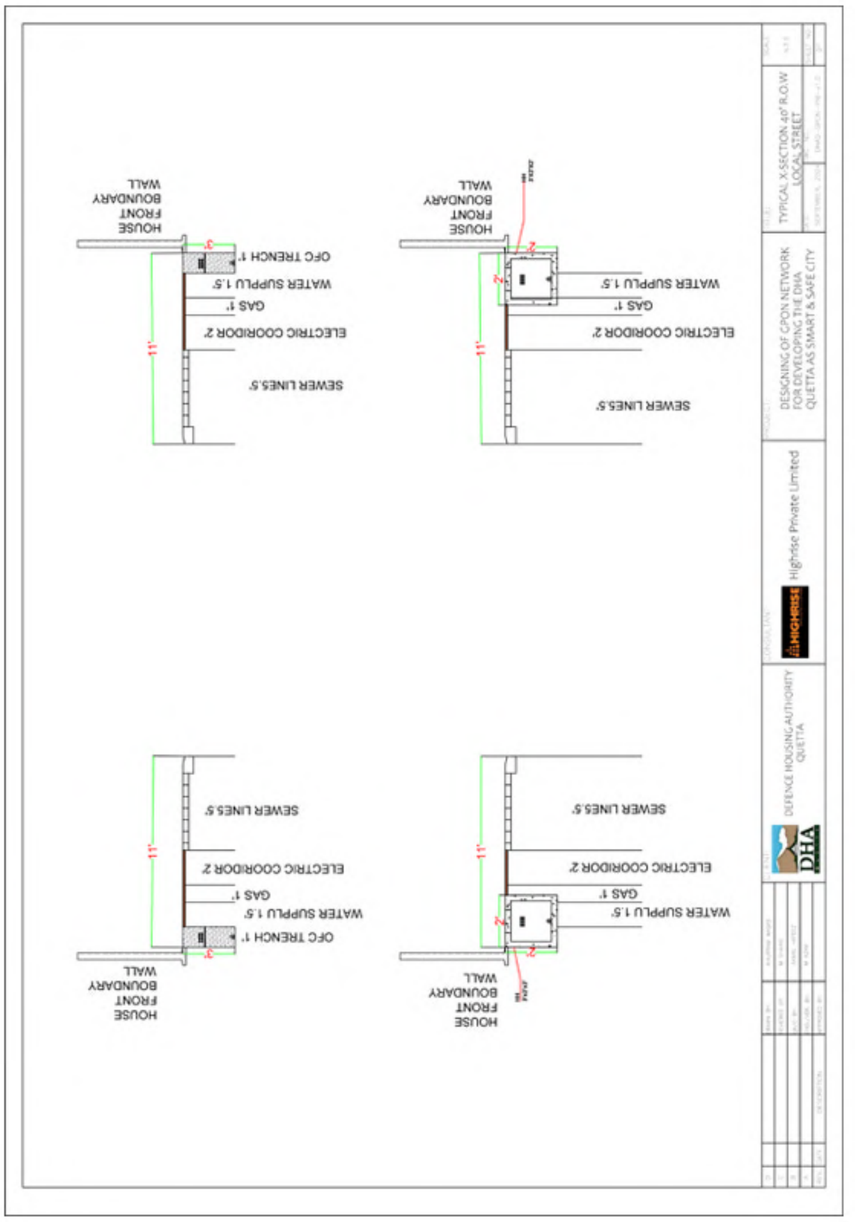
DATE: October 2025

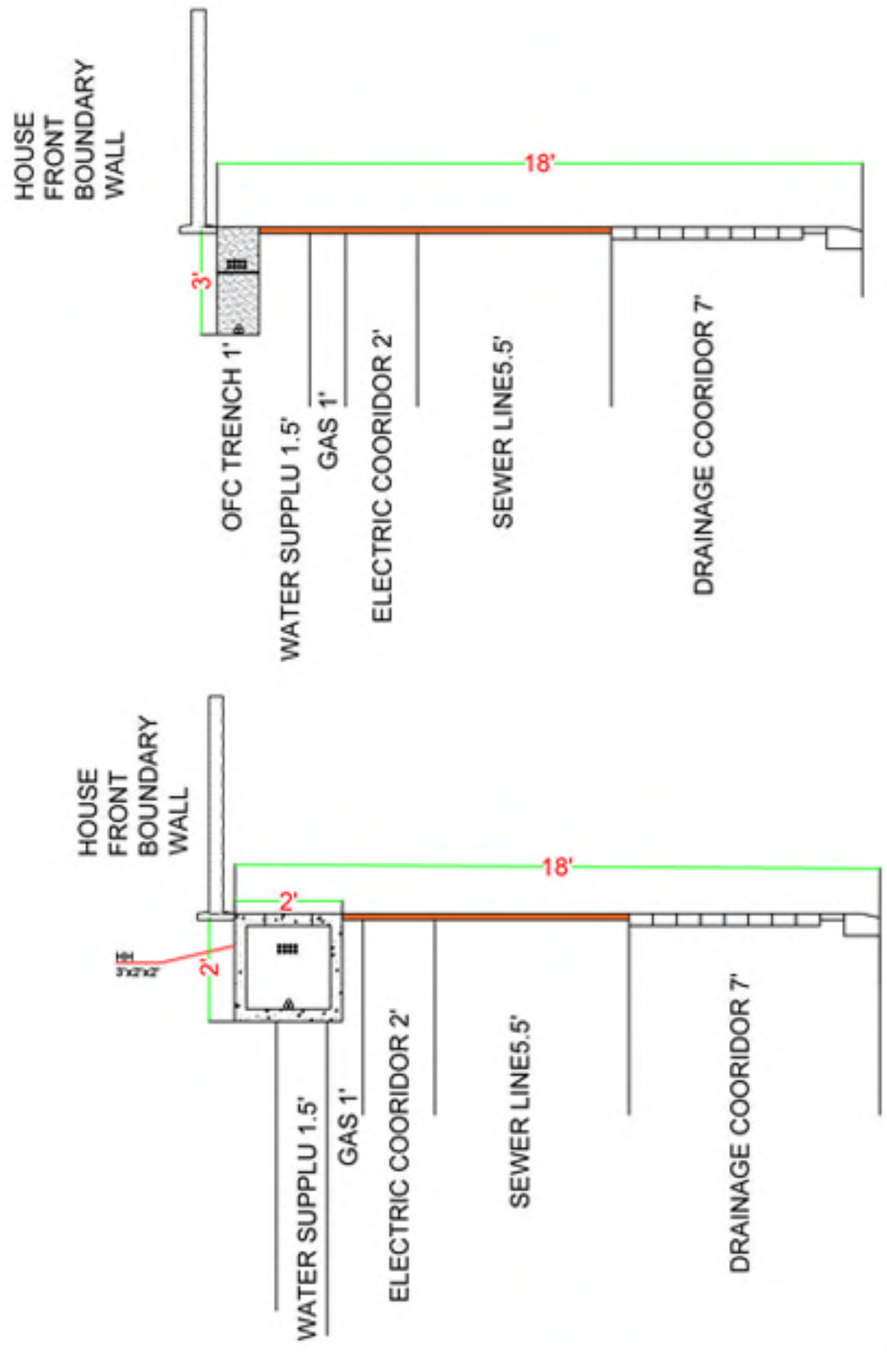
DWG. NO.: DHAQ–GPON–PNI–v1.0

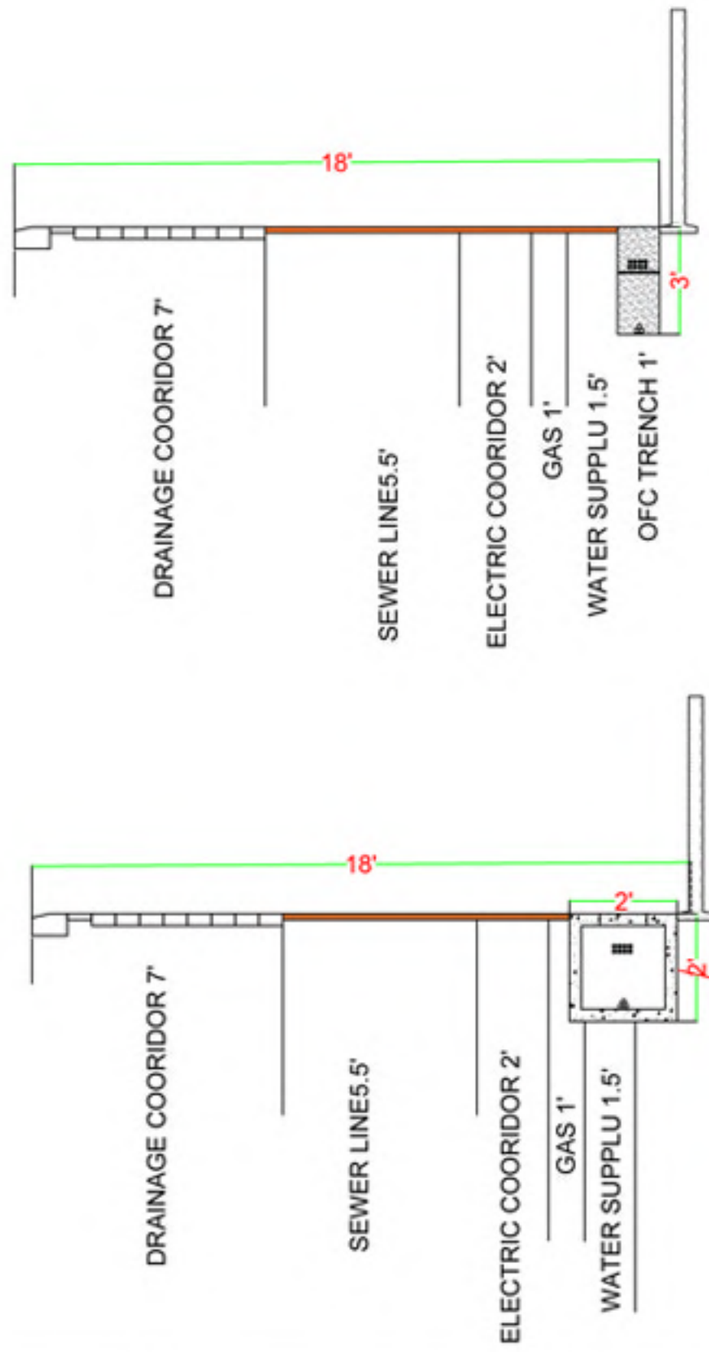
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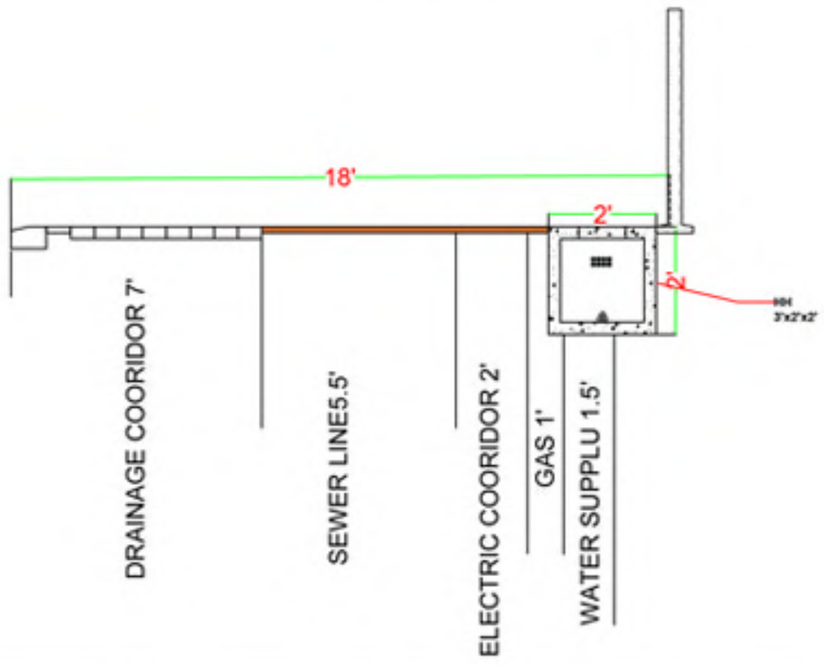

HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
18'
3'
2'
2'
TYPICAL X-SECTION 60' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA


HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
DRAINAGE COORIDOR 7'
18'
3'
2'
2'
TYPICAL X-SECTION 80' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA


HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
11'
3'
2'
2'
TYPICAL X-SECTION 40' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA







REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

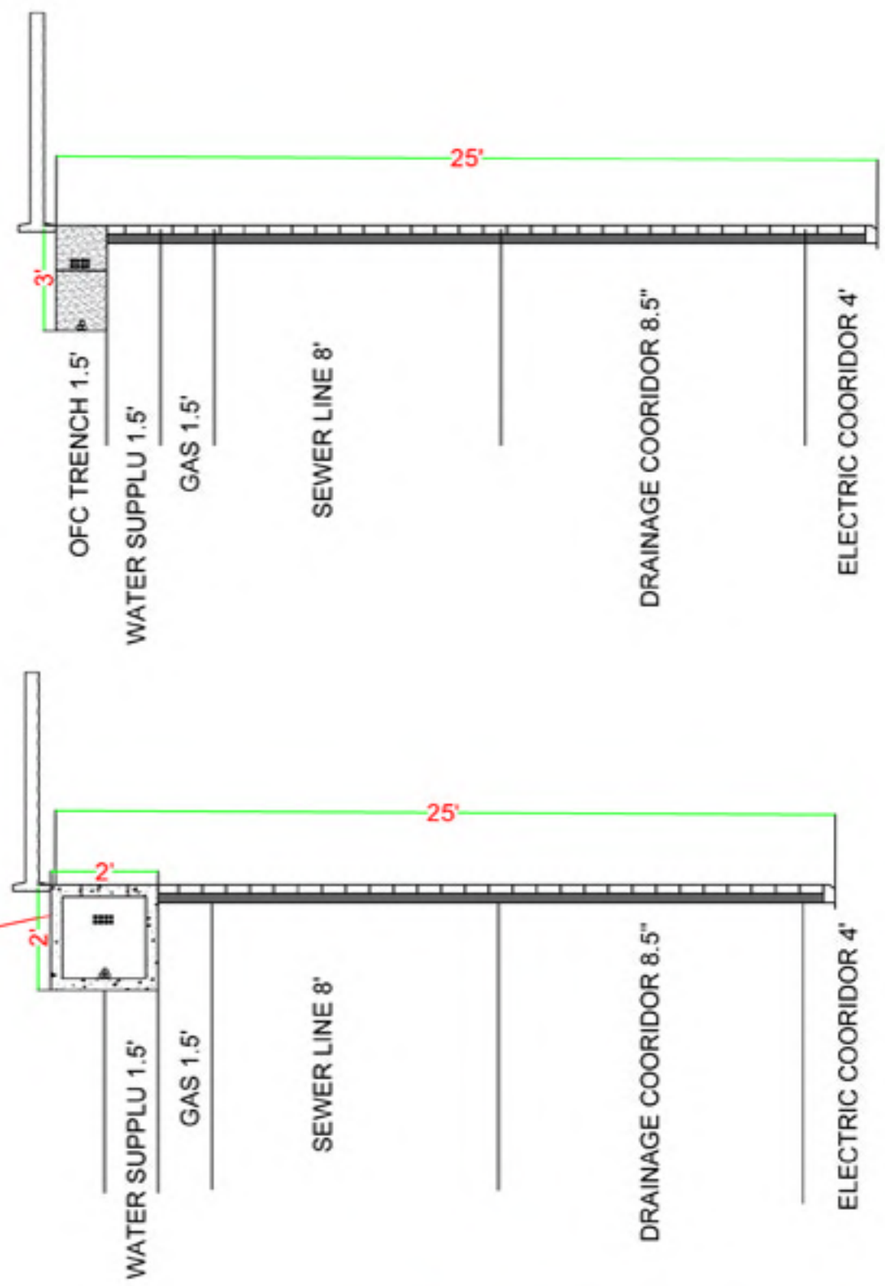
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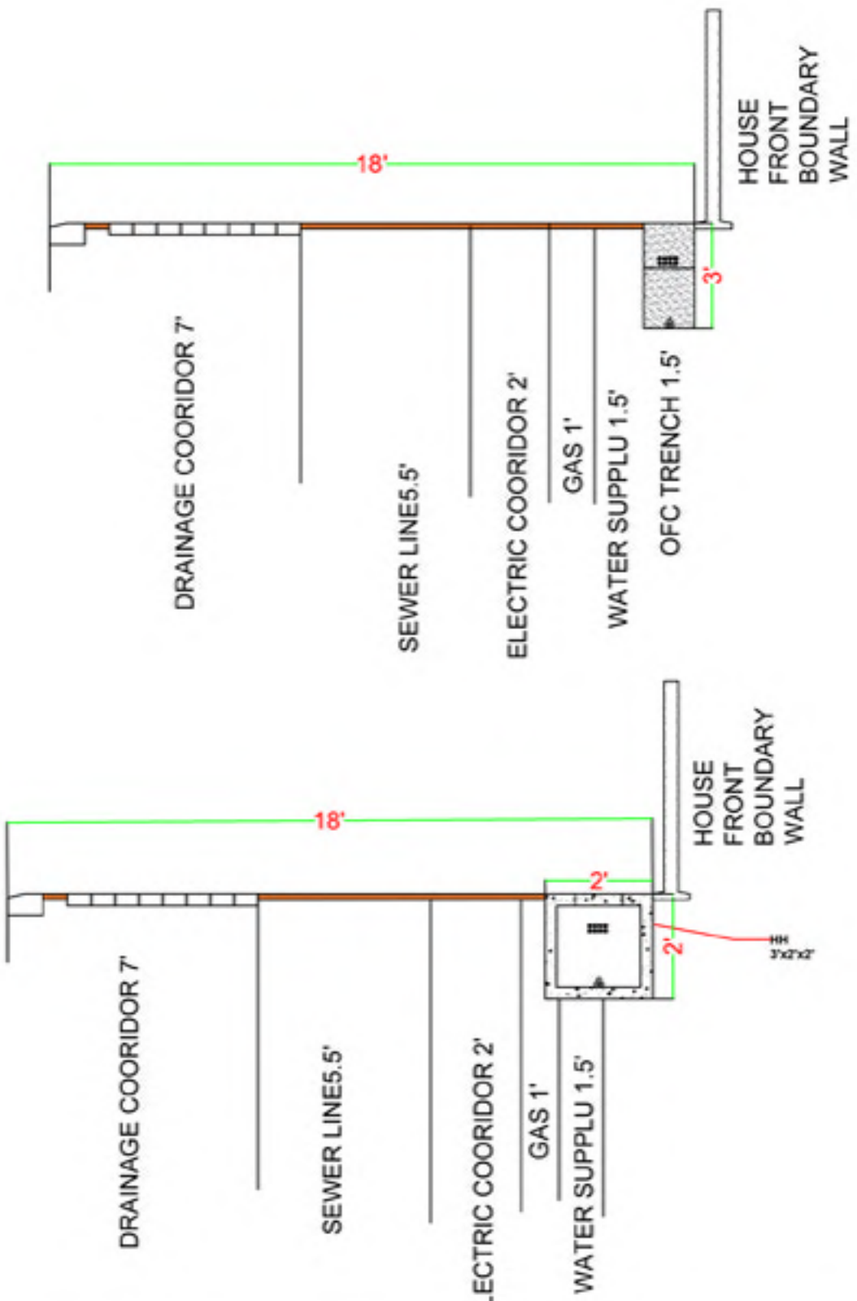
SCALE: N.T.S

DATE: SEPTEMBER, 2024

DWG. NO.: DHAQ-GPON-PN-v1.0

SHEET NO.: 01





REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

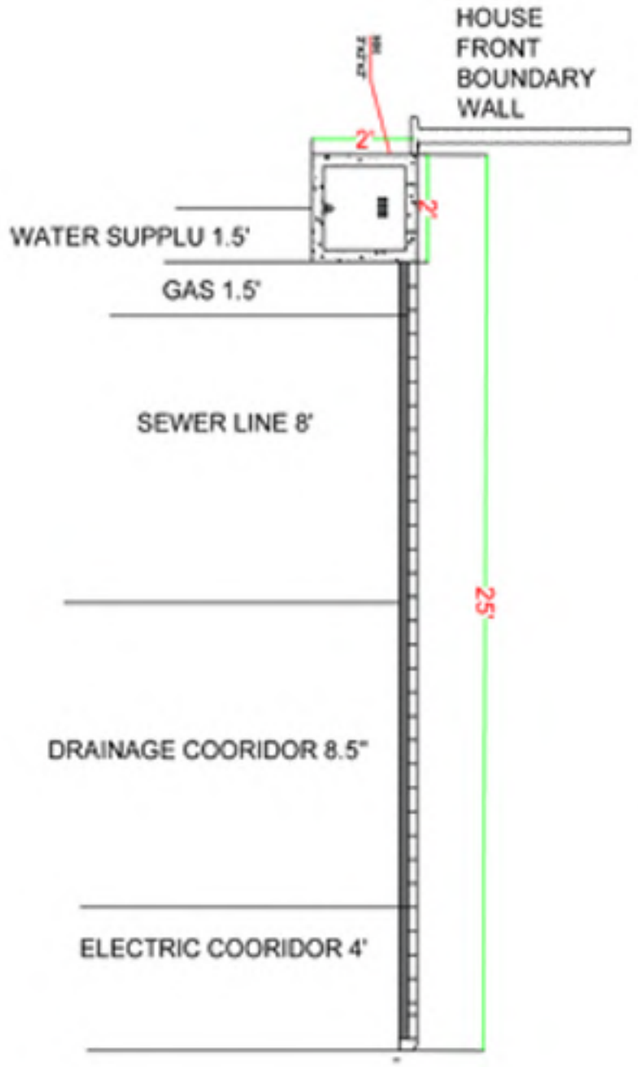
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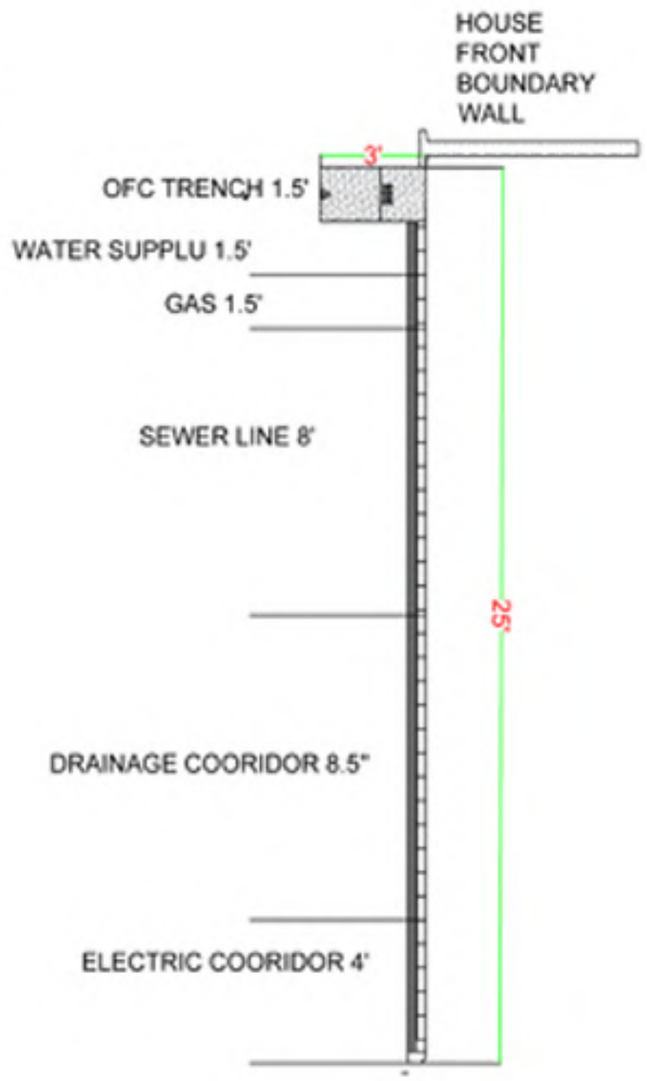
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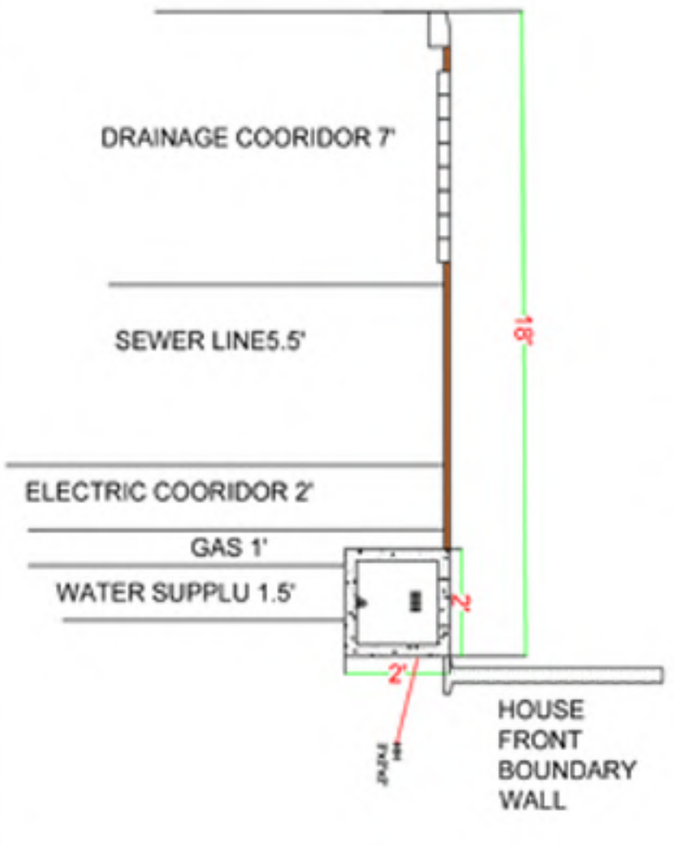
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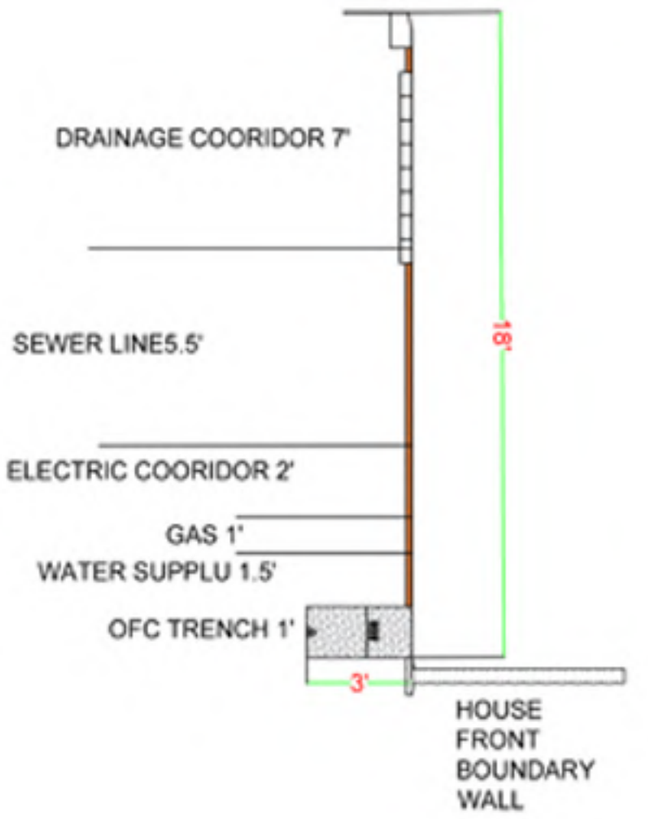
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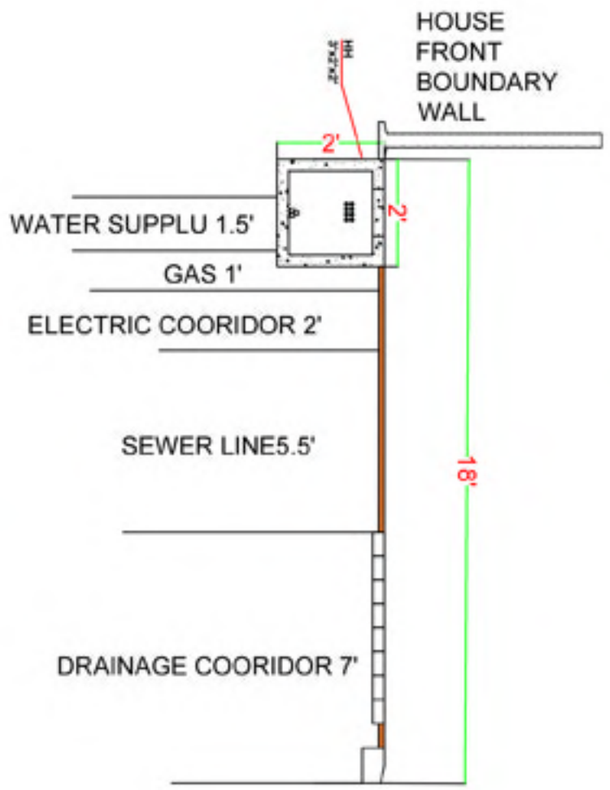
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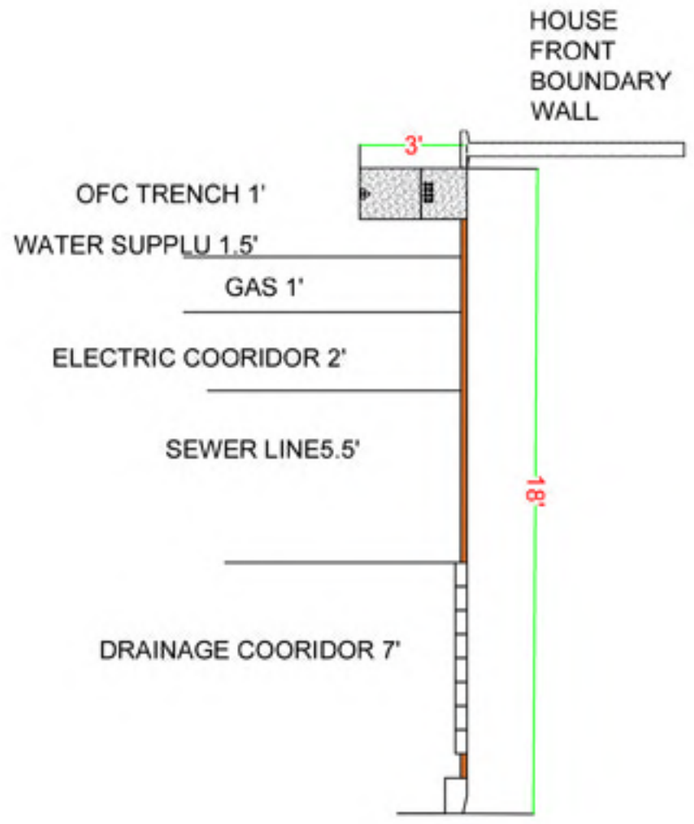


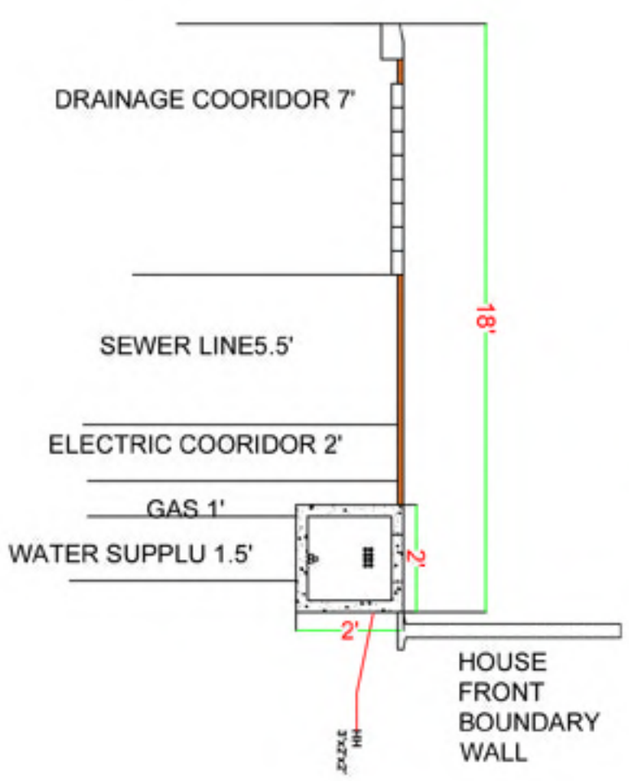


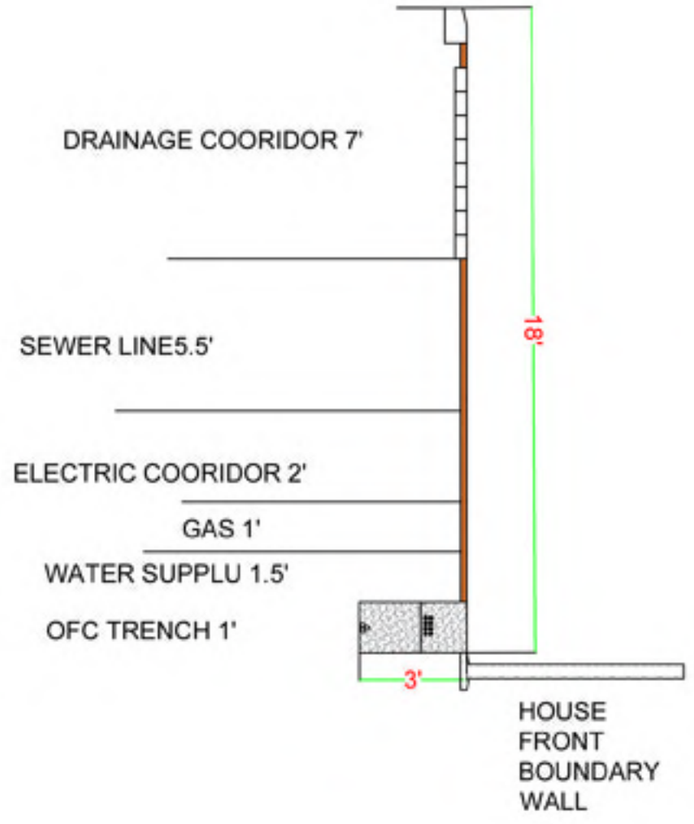












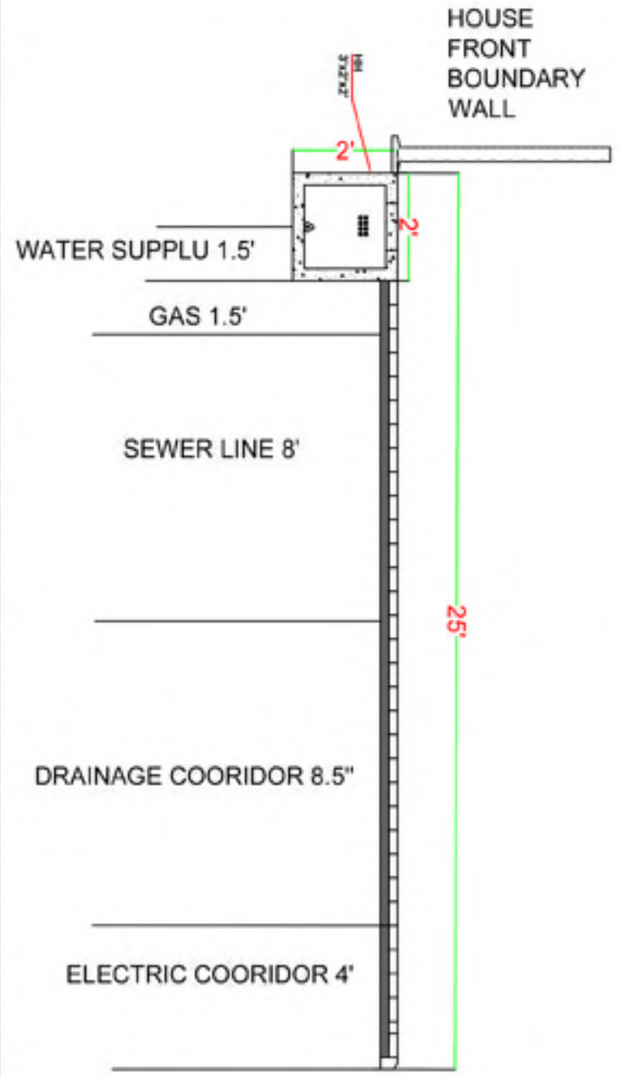
DEFENCE HOUSING AUTHORITY QUETTA

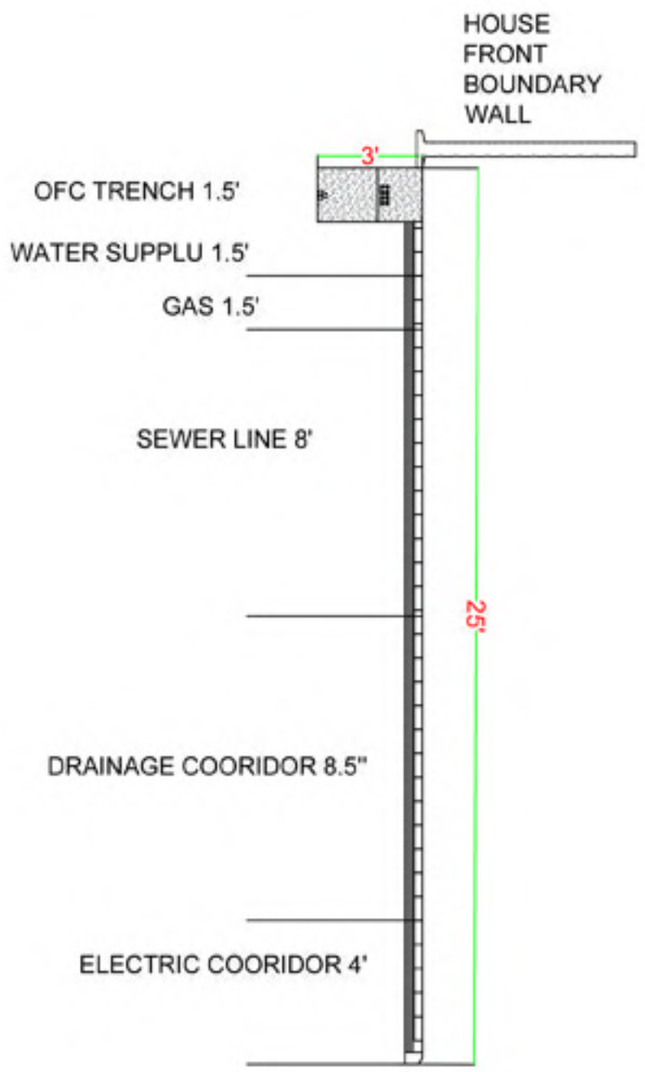
Highrise Private Limited

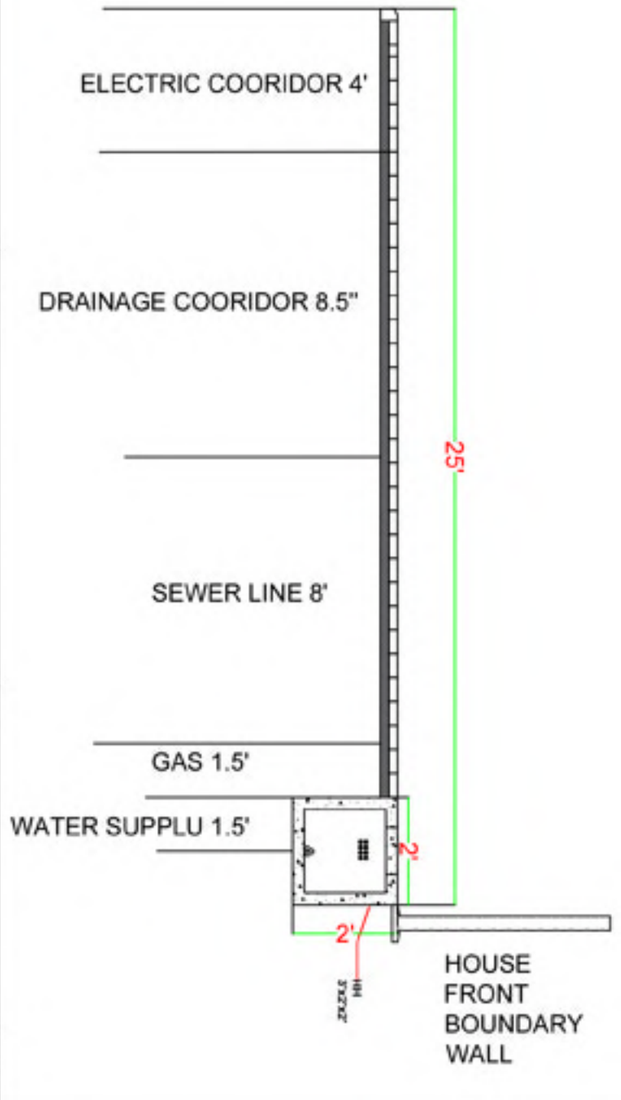
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

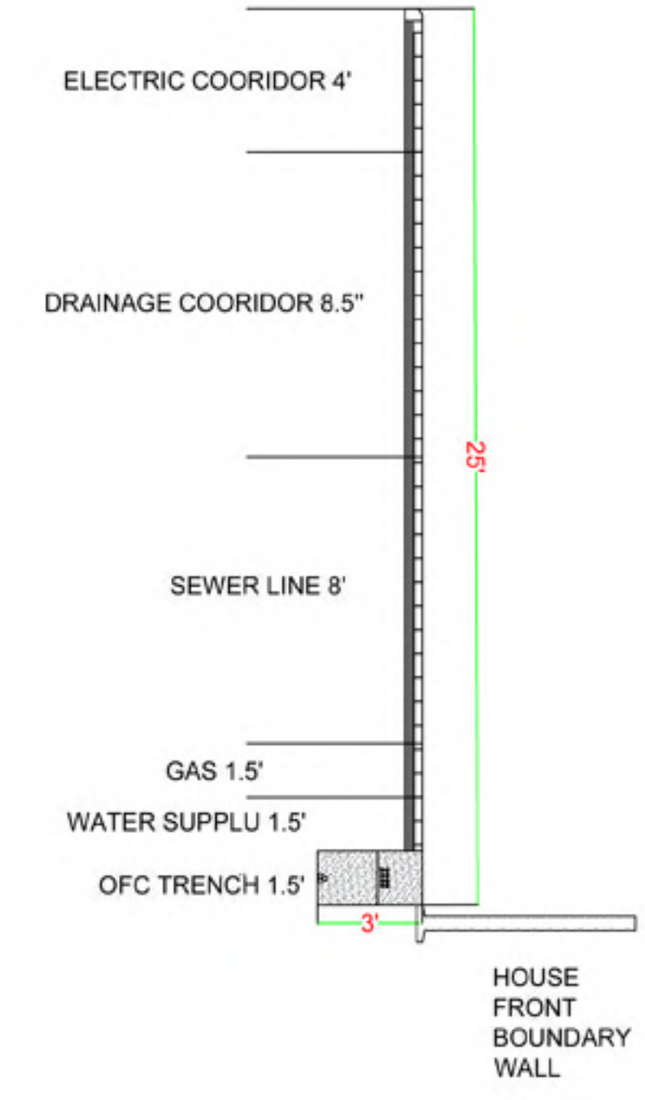
TYPICAL X-SECTION 295' R.O.W LOCAL STREET

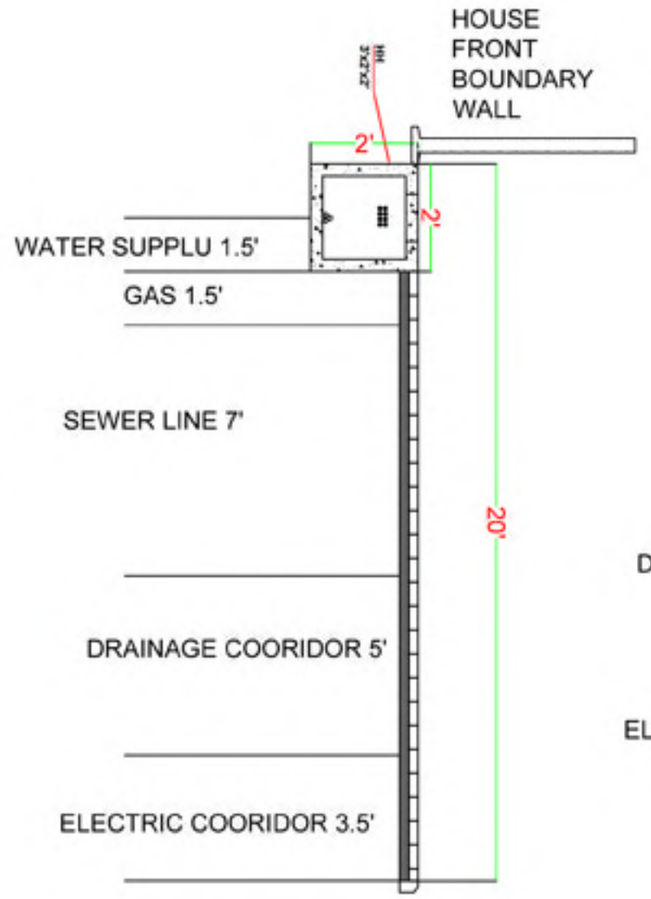
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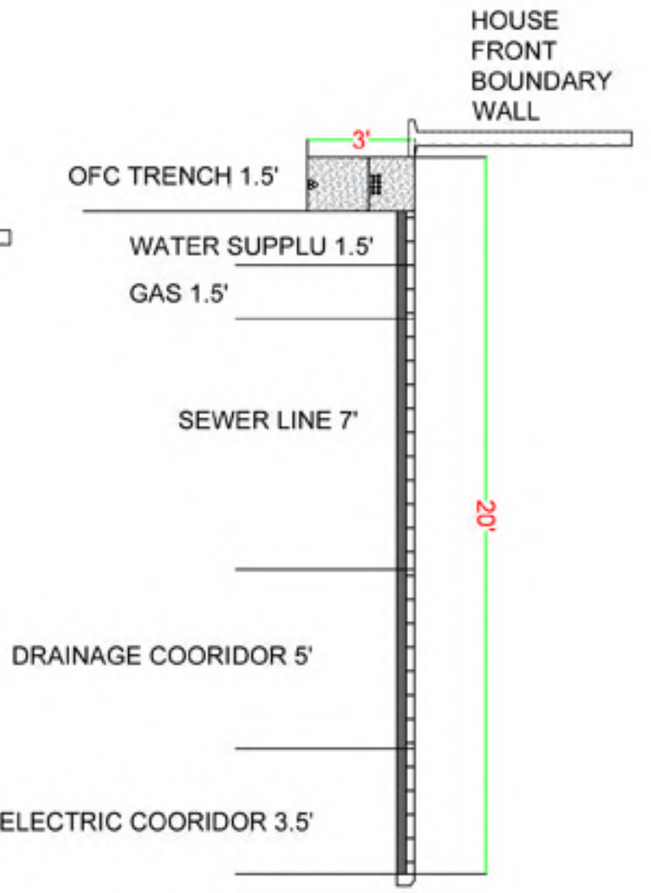


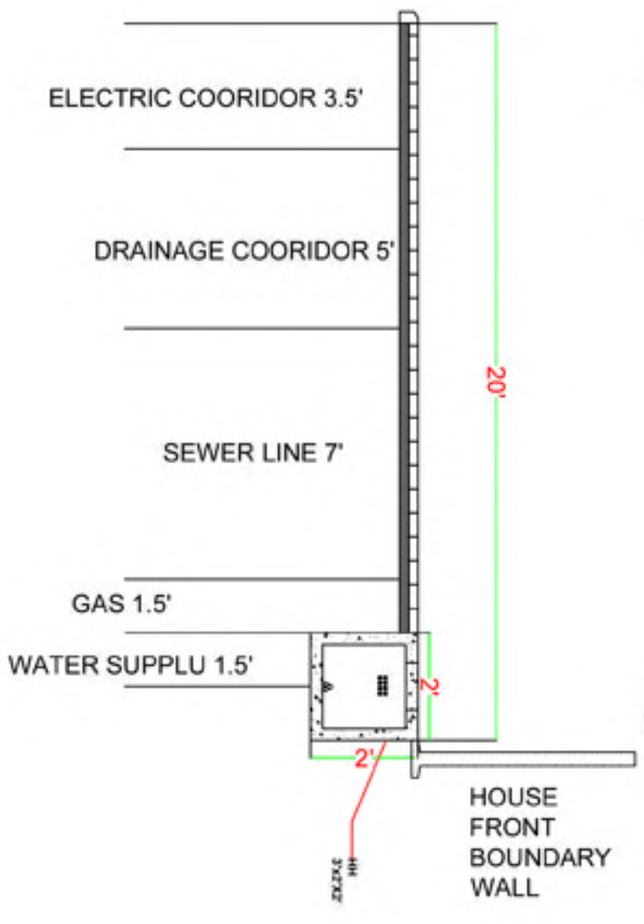


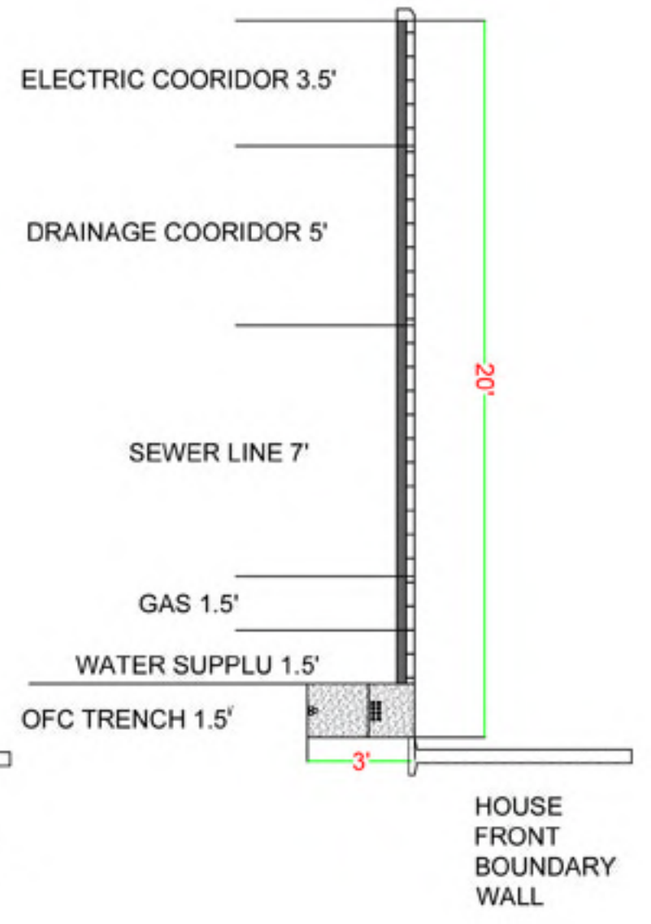












DEFENCE HOUSING AUTHORITY
QUETTA

Highrise Private Limited

DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

TYPICAL X-SECTION 350' R.O.W LOCAL STREET

SEPTEMBER, 2024

N.T.S

OPTICAL FIBER NETWORK PLAN

FOR

DHA QUETTA SMART & SAFE CITY

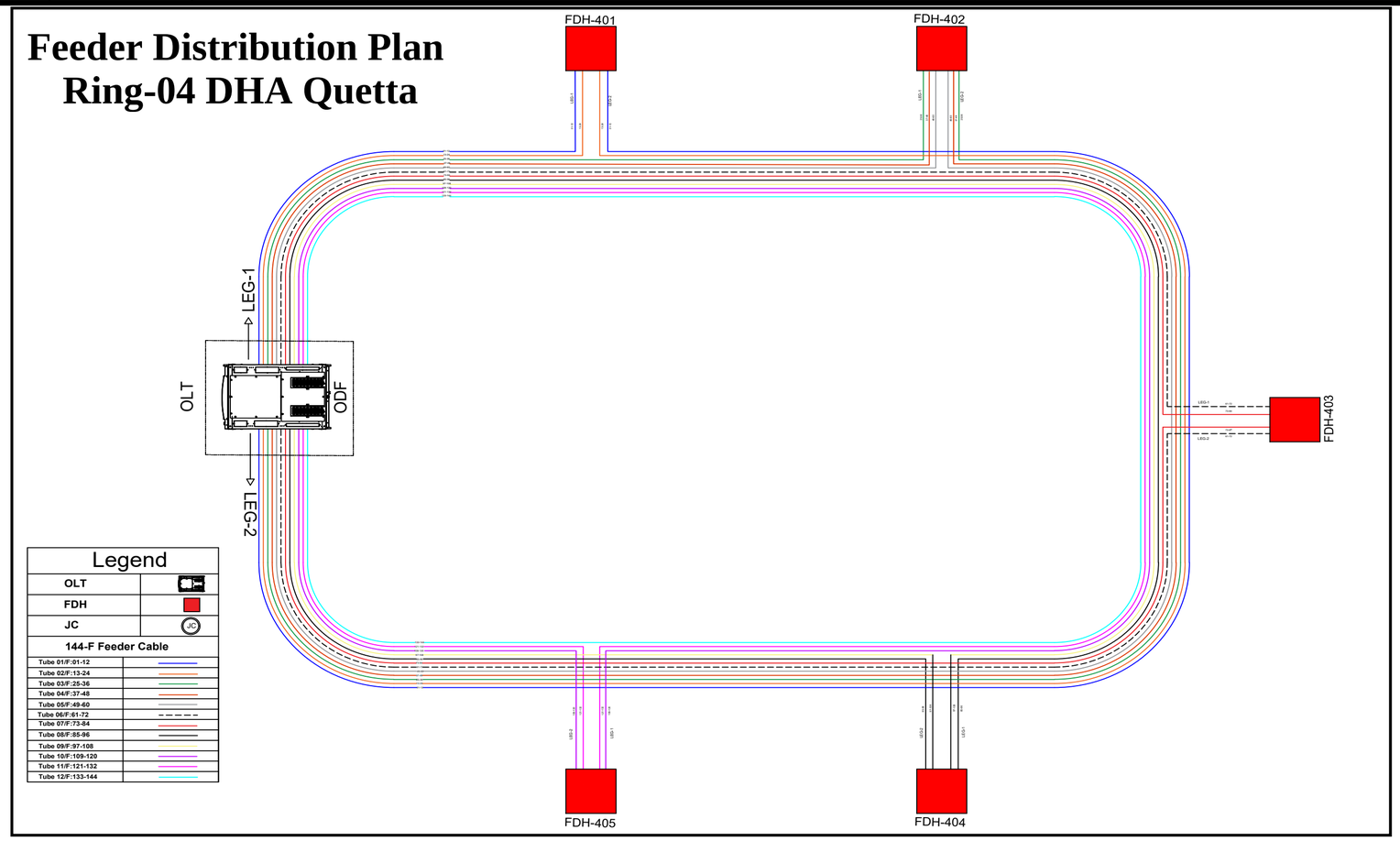
RING-04 SECTOR A2

BOQ Ring-04,Sector A2 DHA Quetta

Connection Summary									ODN Ports			Feeder BOQ											DISTRIBUTION BOQ																				
Exchange Ring No/ Route Area	OLT Location	FDH List	FDH 144	Plots	Residential		Commercial		Total Users	Design Residential ODN Ports	Design Commercial ODN Ports	Total Design ODN Ports	Feeder Fiber Length(Meter)			JOINT ENCLOUSURE	Duct Length(HDPE 57/63mm)			Feeder Civil Work (Trench)/Mtr)			HandHole		Distribution Cable (MTR)			Duct HDPE Pipe 57mm/63mm (Meter)		Civil Work (Trench)/Mtr)		RNAP+CNAP				Total FAT 8P	FDH Spliters							
					Total Residential Plots	User	Total Commercial Plots	User					144F	48F	24F	144F	2 Way Duct (Feeder)	3 Way Duct (Feeder+Dist)	Feeder Common Route Duct (3 Way)	Trench 2 Ways	Trench (3 Way) Feeder+Dist	Feeder Common Trench 3 Way	FDH-Base 3x4x3	HandHole 3x2x2	48F	24F	12F	1 Way 57mm	2 Ways 57mm	Trench (3ft) 1 Way	Trench (3ft) (2 Way)	*JOINT BOX*			Total NAP 8P		No Of ISP	Residential Splitter Level 2	Commercial Splitter Level 2	Feeder Core	Used Cores
																															48F	24F	12F				2x4	2x4		
Ring-04/Sector A2	DHA-Quetta	FDH-401	1	213	165	165	48	48	213	192	384	576	4634	0	500	7	1404	7683	1929	702	2561	643	5	102	0	1717	903	1175	132	1175	66	0	24	0	24	48	1	6	12	24	18
		FDH-402	1	213	134	134	79	79	213	192	640	832													0	2242	2043	1949	262	1949	131	0	24	0	24	80	1	6	20	30	26
		FDH-403	1	70	0	0	70	70	70	0	576	576													0	1012	83	433	166	433	83	0	0	0	0	72	1	0	18	24	18
		FDH-404	1	60	0	0	60	60	60	0	512	512													0	611	160	0	0	0	0	0	0	0	0	64	1	0	16	18	16
		FDH-405	1	60	0	0	60	60	60	0	512	512													0	378	603	474	0	474	0	0	0	0	0	64	1	0	16	18	16
			5	616	299	299	317	317	616	384	2624	3008	4634	0	500	7	9087			702	2561		5	102	0	5960	3792	4031	560	4031	280	0	48	0	48	328	1	12	82	114	94
TOTAL SUMMARY			5	616	299	299	317	317	616	384	2624	3008	4634	0	500	7	9087			702	2561	643	5	102	0	5960	3792	4031	560	4031	280	0	48	0	48	328	1	12	82	114	94
																				3906			107																	

Loss Budget Ring 04 DHA Quetta

		Feeder Distance(KM)		Attenuation Loss / KM	A side Per Kilometer Attenuation Loss	B side Per Kilometer Attenuation Loss	Splice Loss	Connector Loss	Splitter Loss @ FDH	Total Loss at FDH Side A	Total Loss at FDH Side B	2 Connector + 2splice+Drop Cable Loss	Loss at Customer From A Side	Loss at Customer From B Side
FDH_No	SFP Class B+ Tx Power	A side	B side				0.05*5	4*0.5	Splitter 2:32					
FDH 401	2	1.299	3.334	0.35	0.45	1.17	0.25	2	15.05	17.8	18.5	1	**-16.9**	-17.6
FDH 402	2	1.788	2.845	0.35	0.63	1.00	0.25	2	15.05	17.9	18.3	1	**-17.0**	-17.4
FDH 403	2	2.686	1.947	0.35	0.94	0.68	0.25	2	15.05	18.2	18.0	1	**-17.3**	-17.1
FDH 404	2	3.41	1.223	0.35	1.19	0.43	0.25	2	15.05	18.5	17.7	1	**-17.6**	-16.8
FDH 405	2	4.082	0.551	0.35	1.43	0.19	0.25	2	15.05	18.7	17.5	1	**-17.8**	-16.6



DHA-QUETTA
Feeder Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP/Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 1 CORE FIBER FEEDER & 01 WHITE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

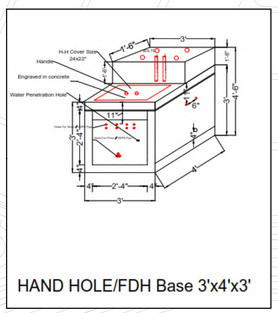
Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

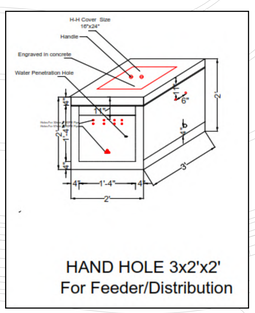
- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

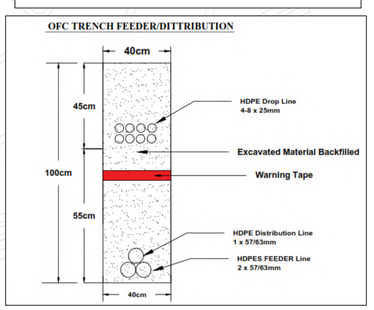
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- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.



HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution



REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FEEDER DUCT PLAN RING 04

SCALE: 1:2,200

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FEEDER CABLE PLAN RING-04

SCALE: 1:2,000

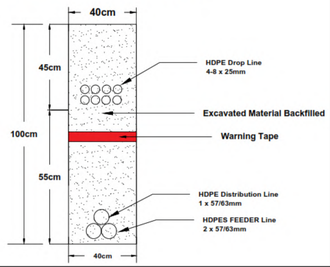
DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

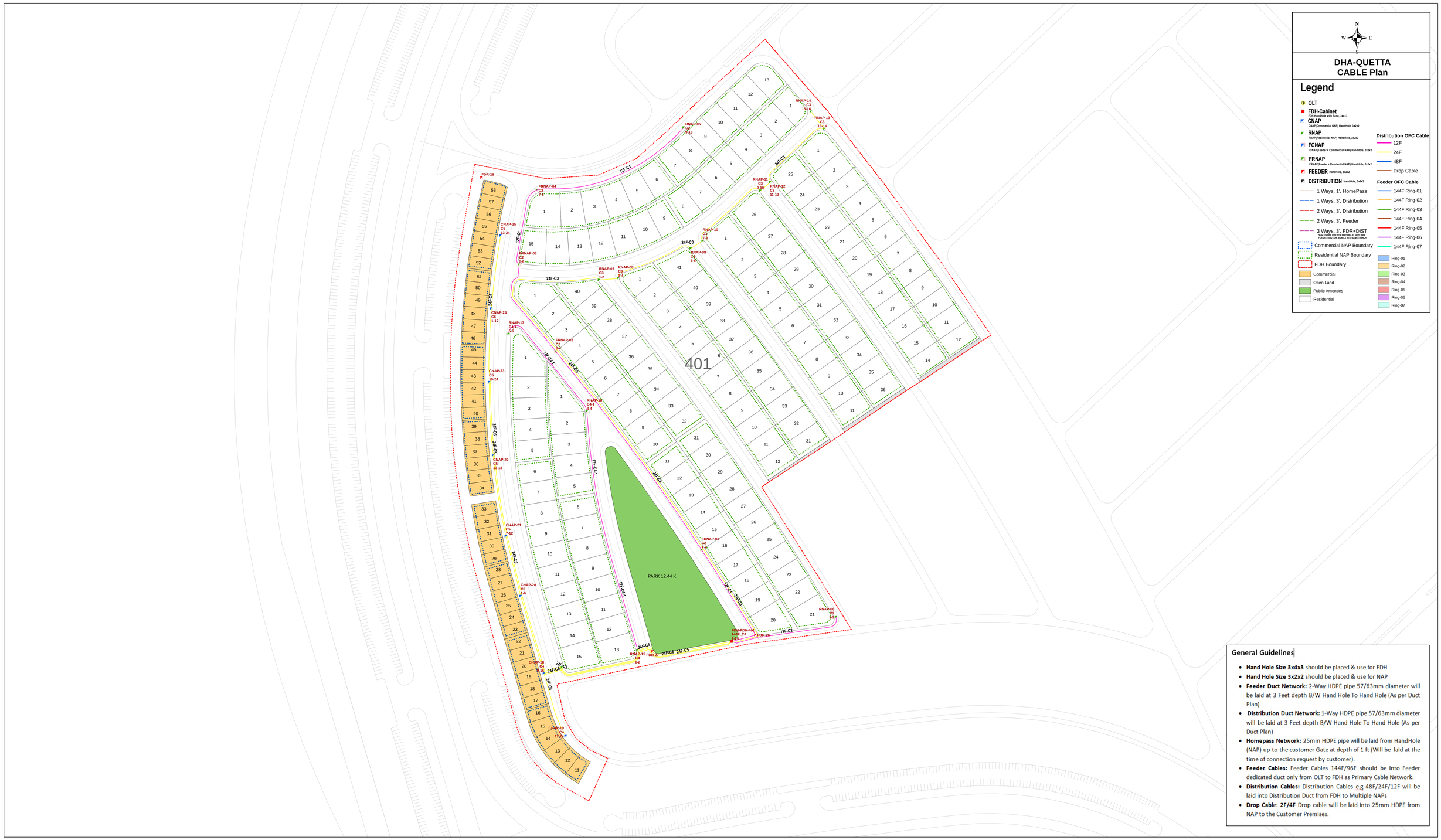
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- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

OFC TRENCH FEEDER/DITTRIBUTION




1 Ways Feeder
1 Ways, Dist Duct
1 Ways, Drop
1 Ways, Home Pass
1 Ways, Dist Duct
1 Ways, Feeder Duct
1 Ways, Dist Duct
1 Ways, Drop
1 Ways, Dist Duct
1 Ways, Drop
1 Ways, Dist Duct
1 Ways, Drop



N
W E
S

DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP/Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP/Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP/Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP/Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER HandHole, 1x2x2
- DISTRIBUTION HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 1 CORE PER 1/2R FEEDER & 01 CORE PER FOR DISTRIBUTION, BUNDLE W/1 CABLE TIE/INCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
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01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-401 CABLE PLAN RING-04

SCALE: 1:950

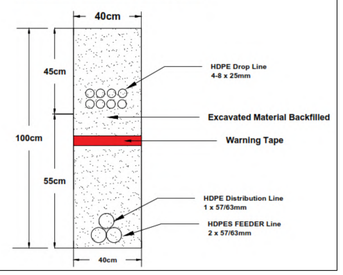
DATE: 15.01.25

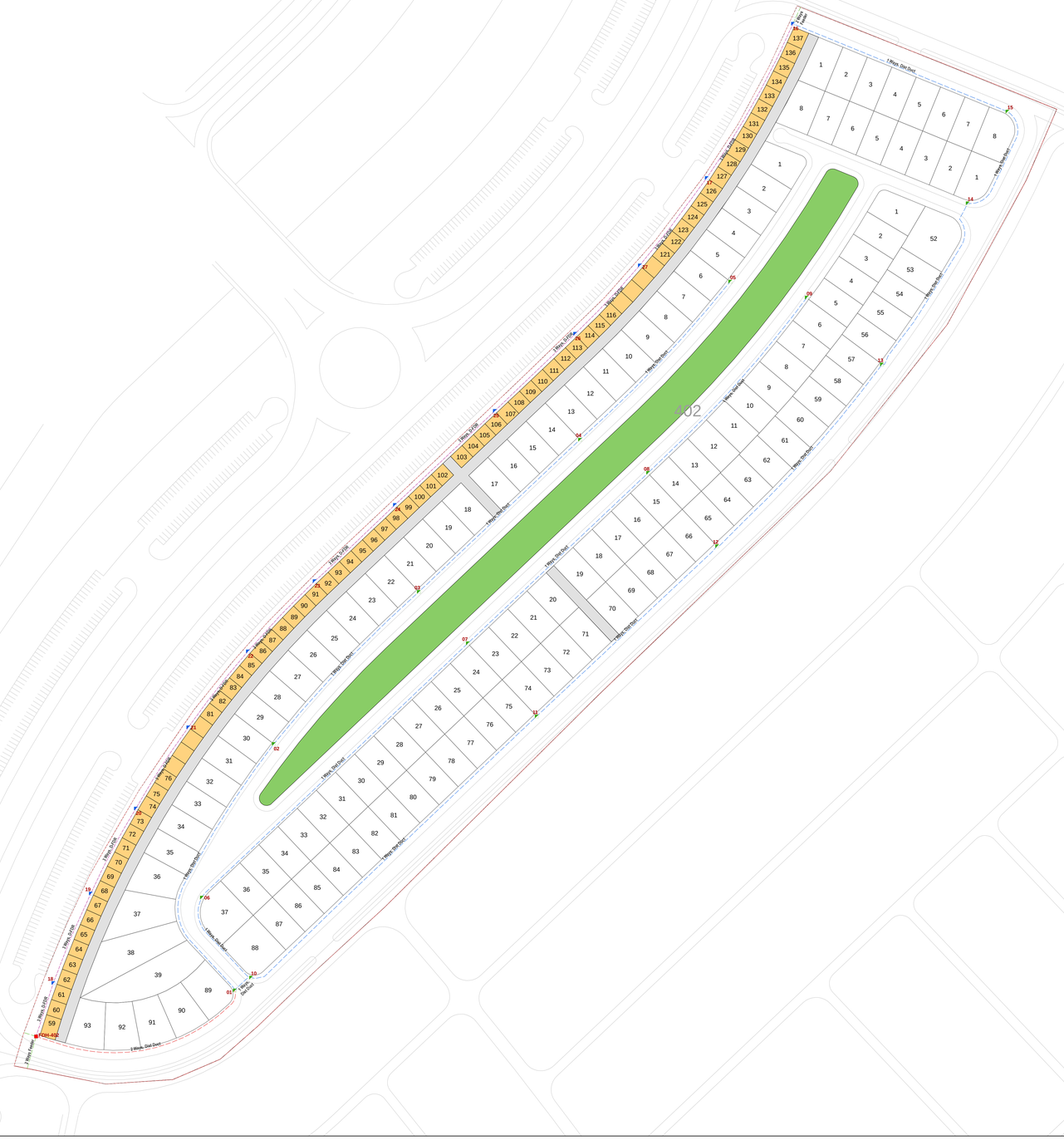
DWG NO.: DHAQ-GPON-PNI-v1.0

General Guidelines

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OFC TRENCH FEEDER/DITTRIBUTION




FDH-402
1 Work, Old Duct
1 Work, Old Duct
1 Work, Old Duct



DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH:HandHole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER HandHole, 3x2x2
- DISTRIBUTION HandHole, 3x2x2

- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 3 WAYS, FIRST FOR FEEDER & 2ND WAYS FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
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- Ring-06
- Ring-07

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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-402 CABLE PLAN RING-04

SCALE: 1:780

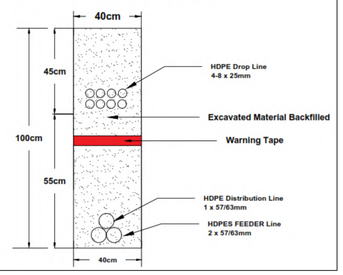
DATE: 15.01.25

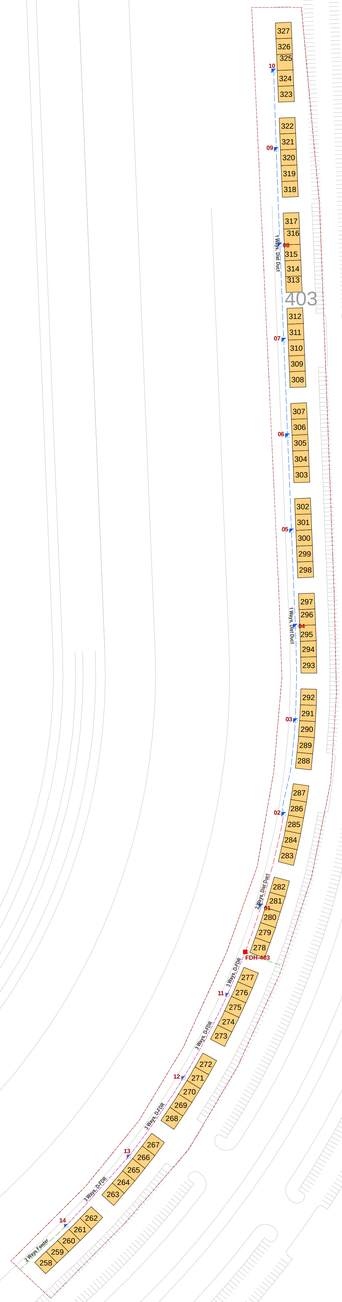
DWG NO.: DHAQ-GPON-PNI-v1.0

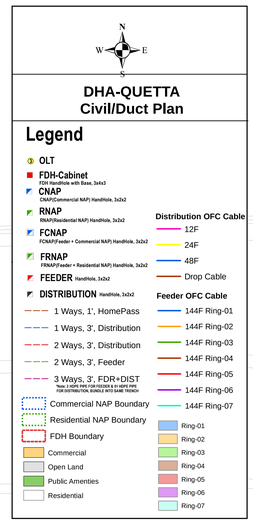
General Guidelines

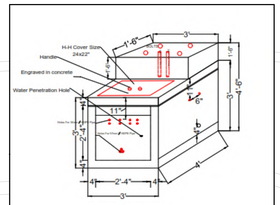
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OFC TRENCH FEEDER/DITTRIBUTION

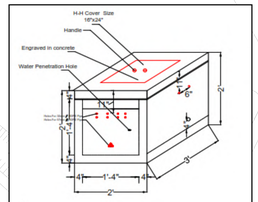








HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution

REV	DATE	DESCRIPTION	APPROVED		
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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

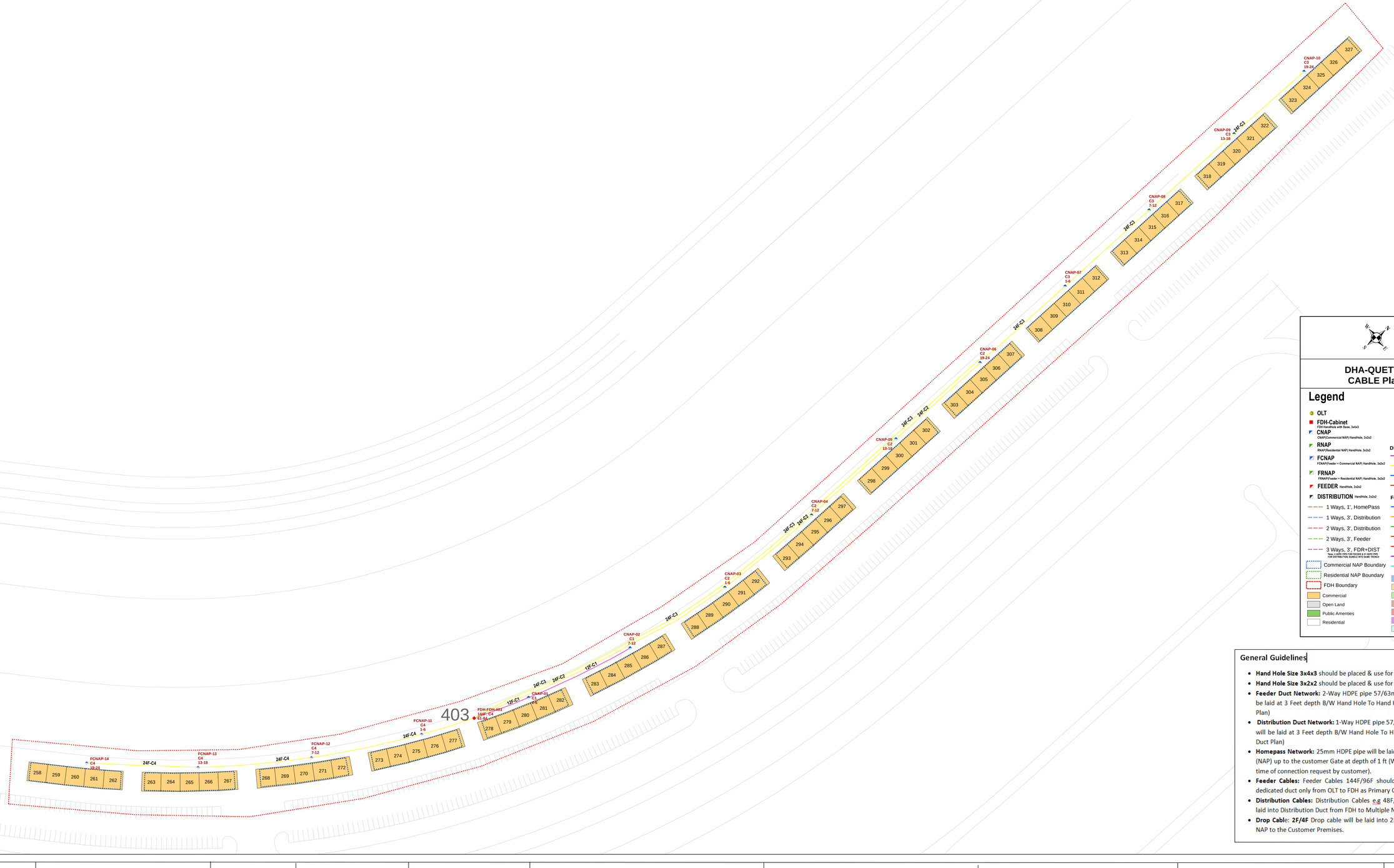
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-403 DUCT PLAN RING-04

SCALE: 1:1,260

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH-Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
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- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2
- 1 Ways, 1", HomePass
- 1 Ways, 3", Distribution
- 2 Ways, 3", Distribution
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- Commercial NAP Boundary
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- FDH Boundary
- Commercial
- Open Land
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Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
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CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-403 CABLE PLAN RING-04

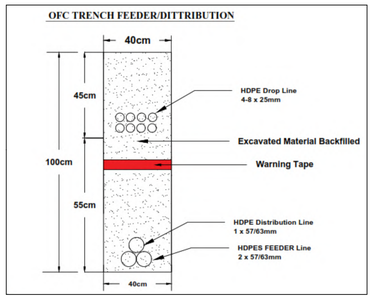
SCALE: 1:660

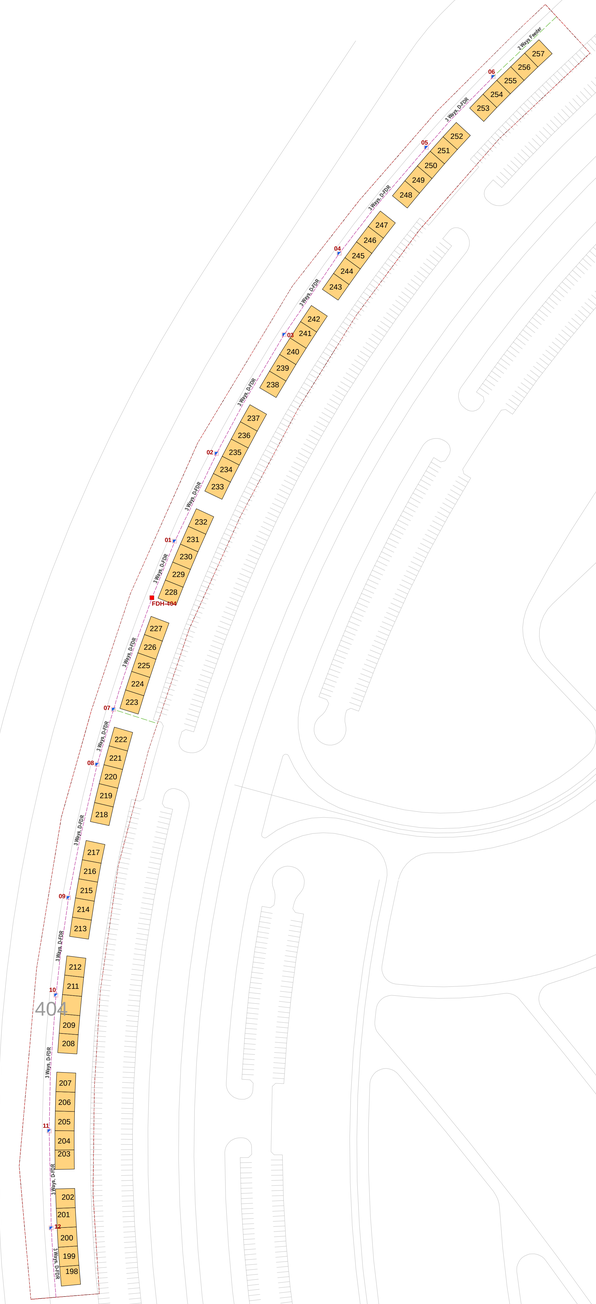
DATE: 15.01.25

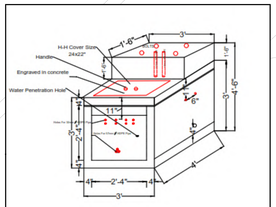
DWG NO.: DHAQ-GPON-PNI-v1.0

General Guidelines

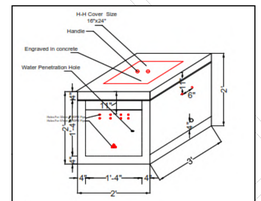
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HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution

DHA-QUETTA
Civil/Duct Plan

Legend

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REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

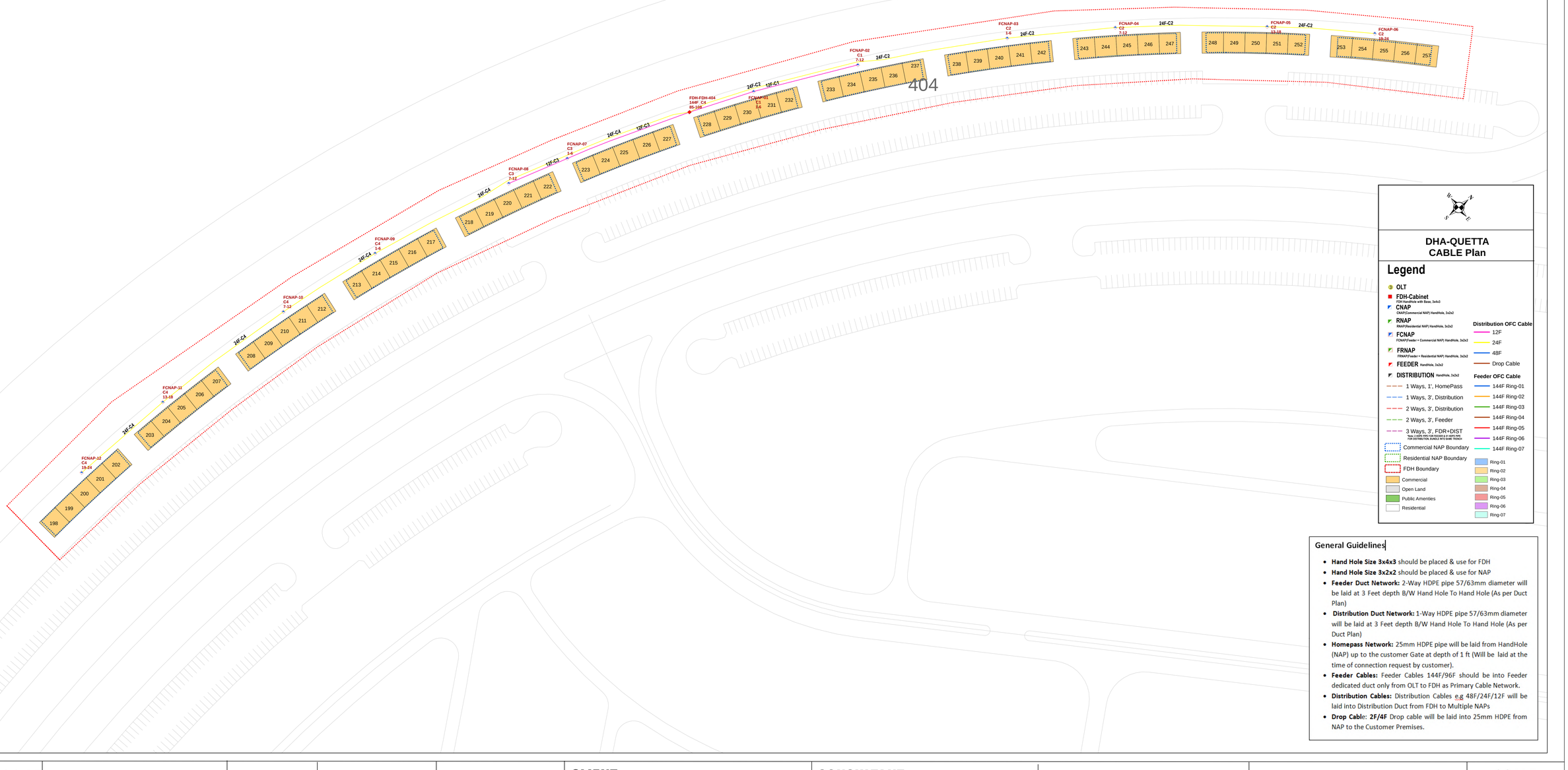
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-404 DUCT PLAN RING-04

SCALE: 1:1,040

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
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- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT:

DHA QUETTA

CONSULTANT:

HIGHRISE PRIVATE LIMITED

PROJECT:

Designing of Optical Fiber Network
For
DHA Quetta Smart & Safe City

TITLE:

DHA QUETTA
GPON FDH-404 CABLE PLAN RING-04

SCALE

1:620

DATE

15.01.25

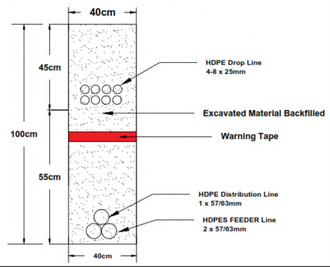
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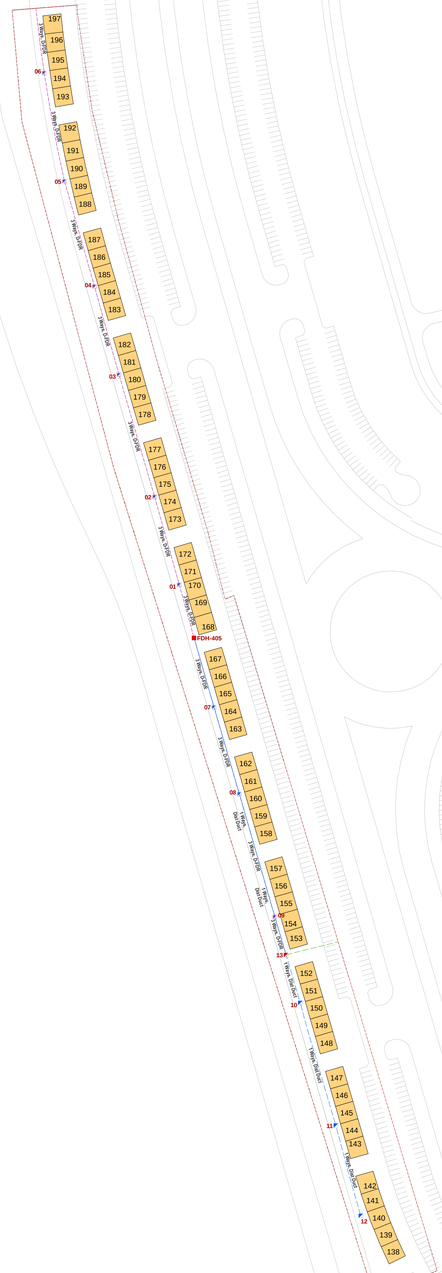
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OFC TRENCH FEEDER/DITTRIBUTION





N

W E

S

DHA-QUETTA
Civil/Duct Plan

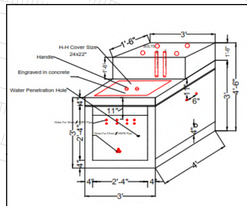
Legend

- OLT
- FDH-Cabinet — FDH HandHole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER HandHole, 3x2x2
- DISTRIBUTION HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

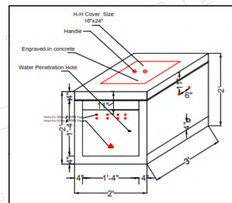
Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

Ring-01
Ring-02
Ring-03
Ring-04
Ring-05
Ring-06
Ring-07



HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution

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01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

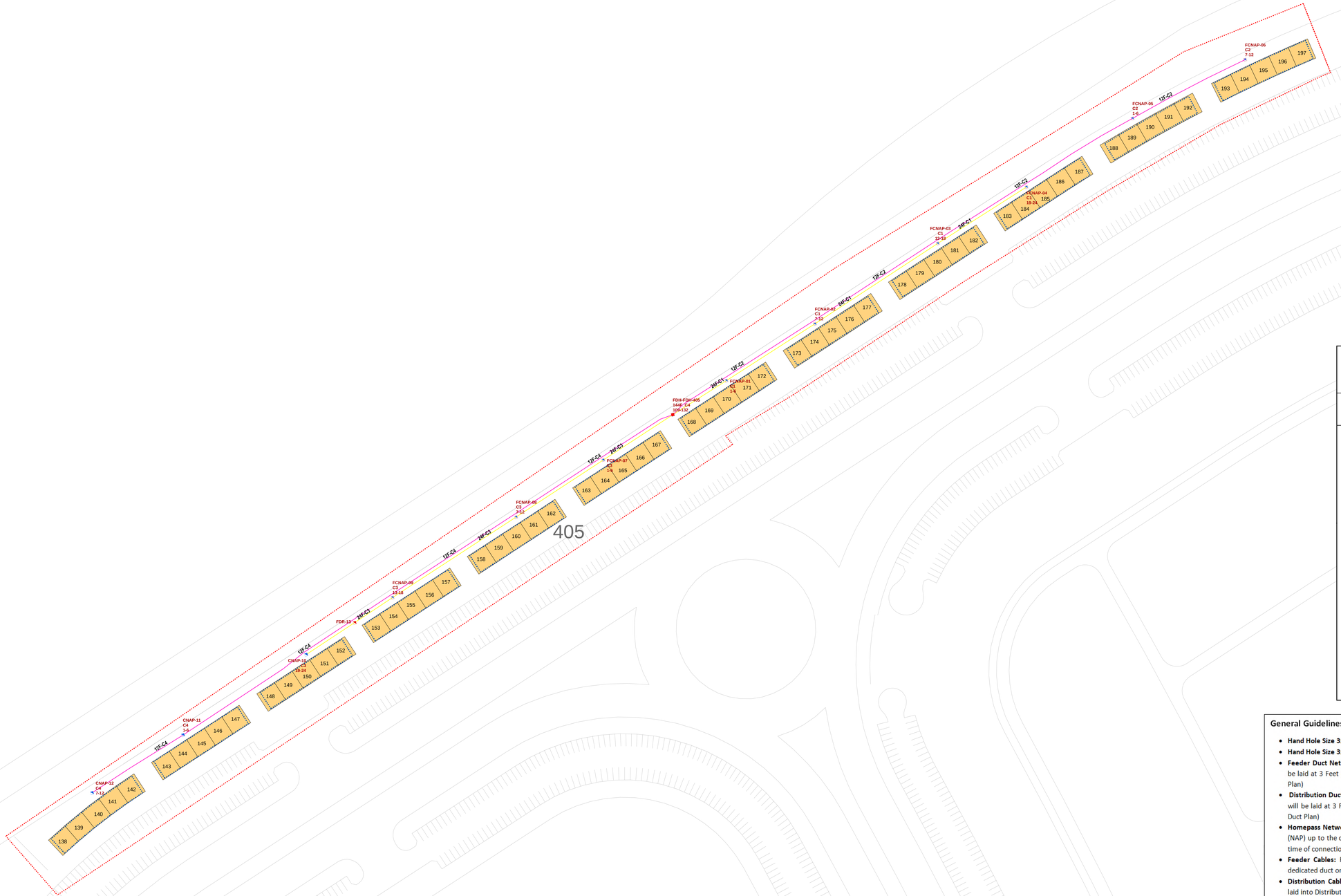
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-405 DUCT PLAN RING-04

SCALE: 1:1,100

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH-Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2

- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 3 WAYS ARE FOR FEEDER & 2 WAYS ARE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-405 CABLE PLAN RING-04

SCALE: 1:660

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

OUTSIDE PLANT OSP

Core Network

Central Office

Feeder Network

Distribution Network

Customer Premises

TELEPHONE

IPTV

INTERNET

Surveillance

Smart Metering

A

B

OLT

FDH-101

144F Feeder Ring

Feeder JC

FDH-102

FDH-103

Splitter

Distribution Cable 12/24/48F

Distribution Cable 12/24/48F

FDH-106

FDH-105

144F Feeder Ring

Feeder JC

FDH-104

Cable 12F

Surveillance Cameras

Pole

Cable 12F

Surveillance Cameras

Pole

R-NAP

Joint Box

ONT

Drop Cable 2F

C-NAP

FAT-1 (2:8)

Drop Cable 2F

FAT-2 (2:8)

FAT-3 (2:8)

Legend

OLT	
FDH	
Splitter	
CNAP	
RNAP	
FAT	
ONT	
Feeder Cable	
Distribution Cable	
Drop Cable	

REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

TITLE: Single Line Diagram (SLD) Plan A

SCALE: N.T.S

DATE: October 2025

DWG. NO.: DHAQ–GPON–PNI–v1.0

SHEET NO.: 01

OUTSIDE PLANT OSP

Core Network | Central Office | Feeder Network | Distribution Network | Customer Premises

TELEPHONE
IPTV
INTERNET
Surveillance
Smart Metering

A
B

OLT

FDH-101
FDH-102
144F Feeder Ring
FDH-103
FDH-104
FDH-105
FDH-106
144F Feeder Ring

Splitter

Distribution Cable
12/24/48F
Distribution Cable
12/24/48F

ONT
Drop Cable 2F
R-NAP
Joint Box
Drop Cable 2F
Surveillance Cameras
Pole

C-NAP
FAT-1
(2:8)
Drop Cable 2F
FAT-2
(2:8)
FAT-3
(2:8)

Legend

OLT	
FDH	
Splitter	
CNAP	
RNAP	
FAT	
ONT	
Feeder Cable	
Distribution Cable	
Drop Cable	

REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

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PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

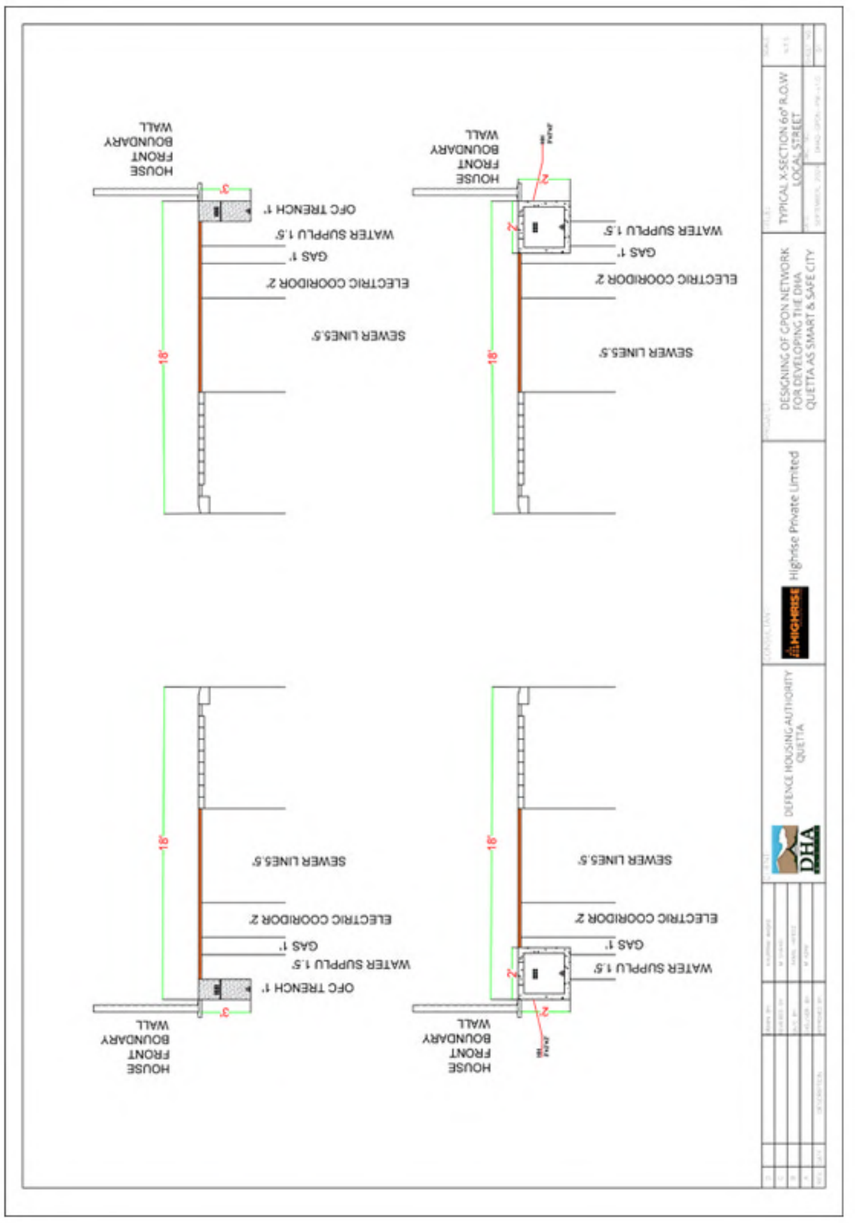
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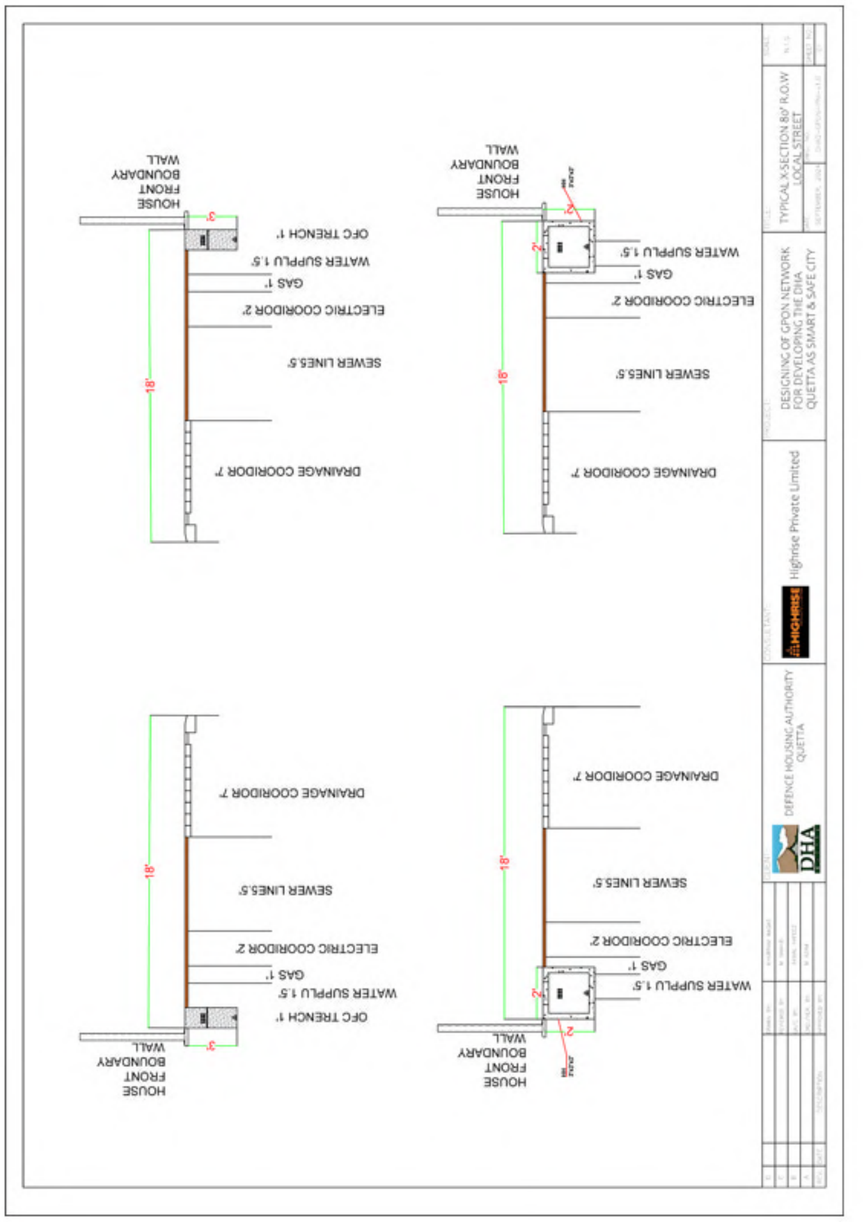
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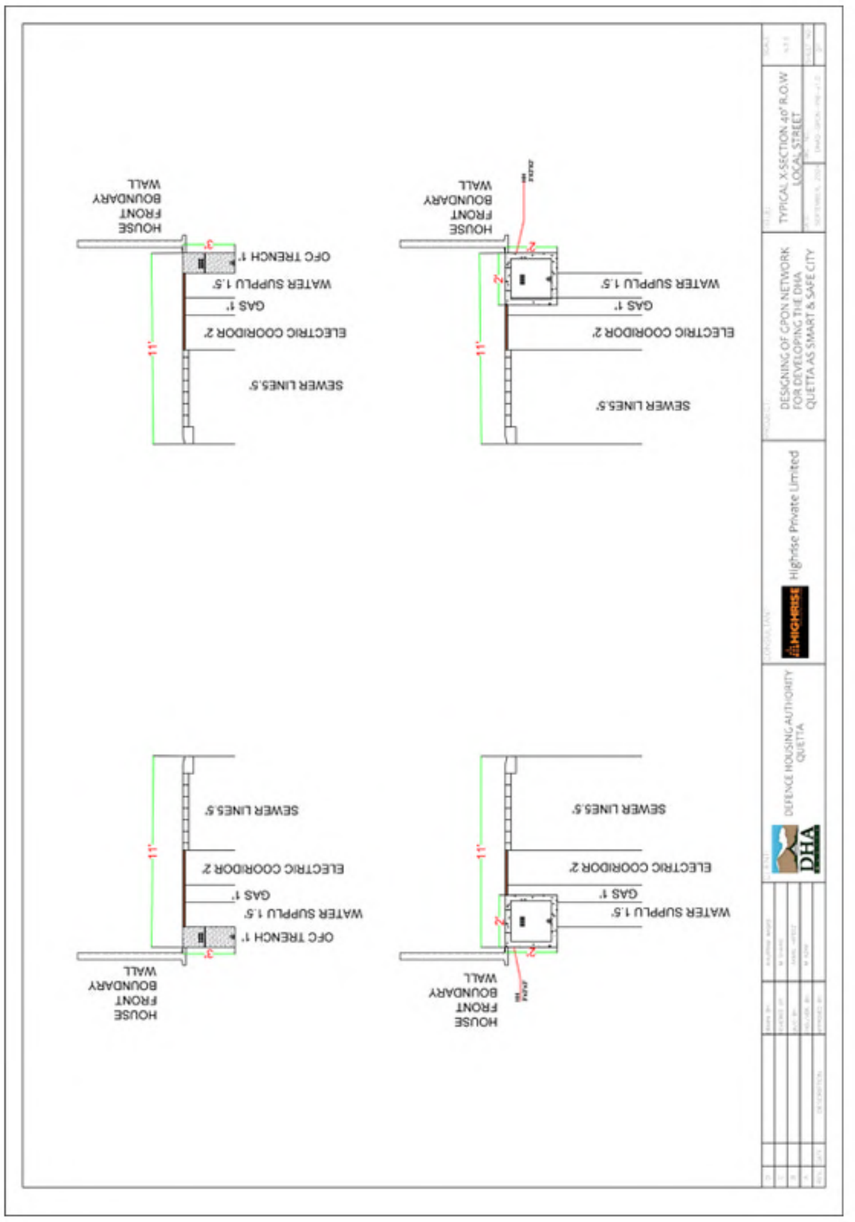
DATE: October 2025

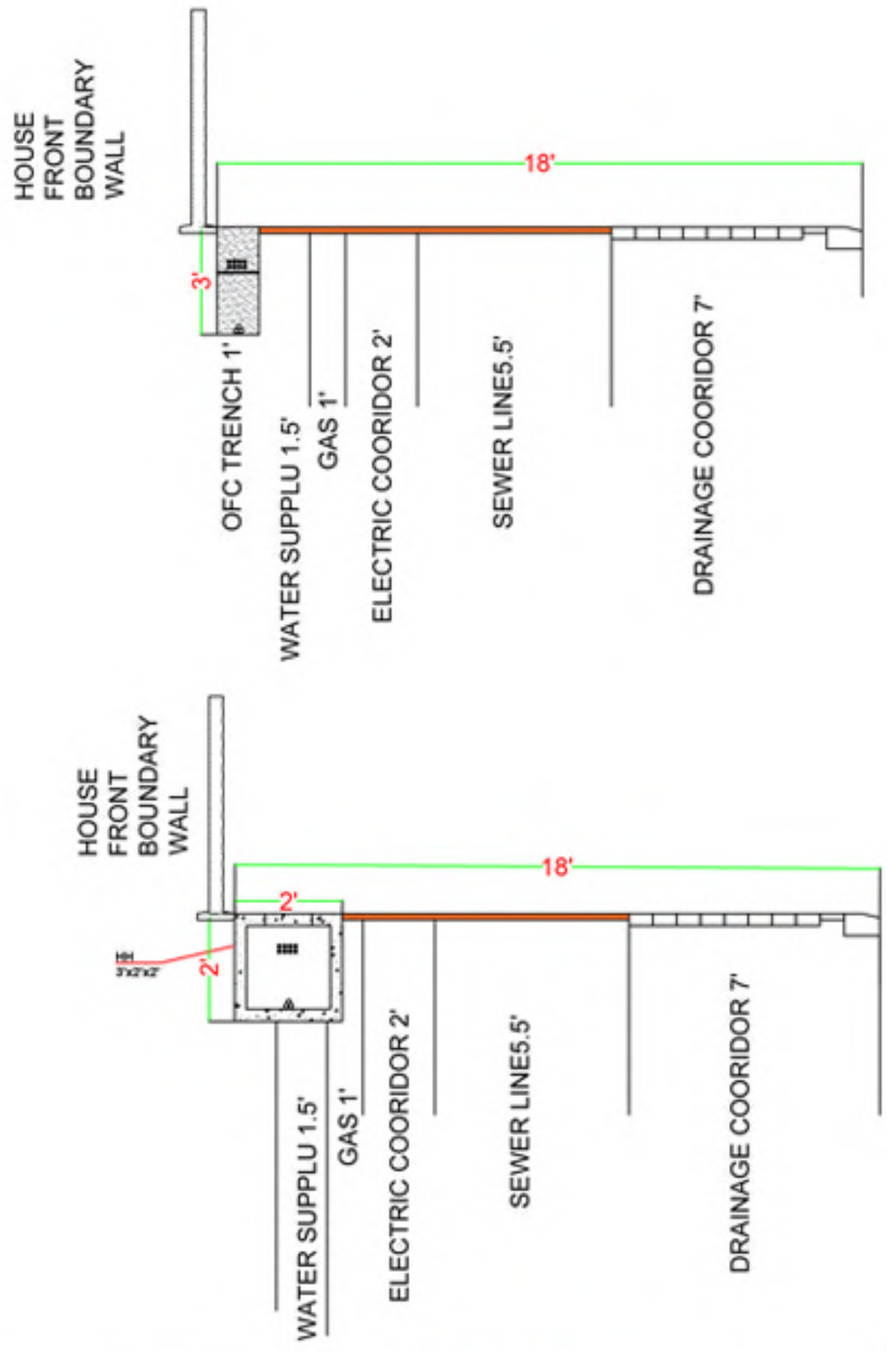
DWG. NO.: DHAQ–GPON–PNI–v1.0

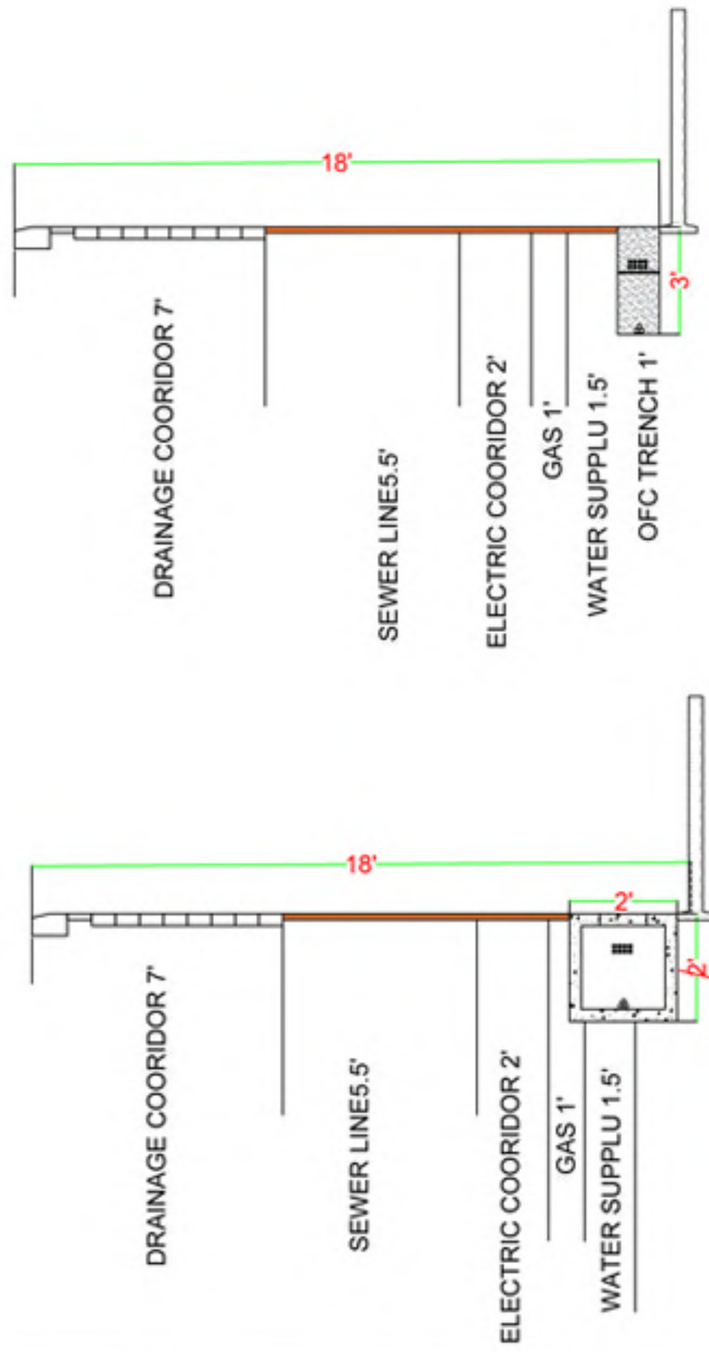
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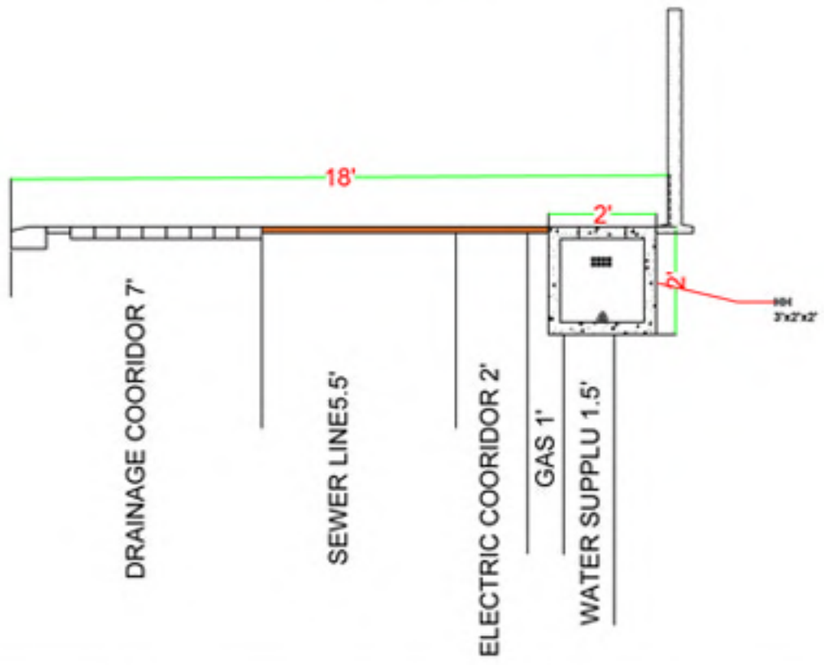

HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
18'
3'
2'
2'
TYPICAL X-SECTION 60' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA


HOUSE FRONT BOUNDARY WALL
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SEWER LINE5.5'
DRAINAGE COORIDOR 7'
18'
3'
2'
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Highrise Private Limited
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WATER SUPPLU 1.5'
GAS 1'
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SEWER LINE5.5'
11'
3'
2'
2'
TYPICAL X-SECTION 40' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA







REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

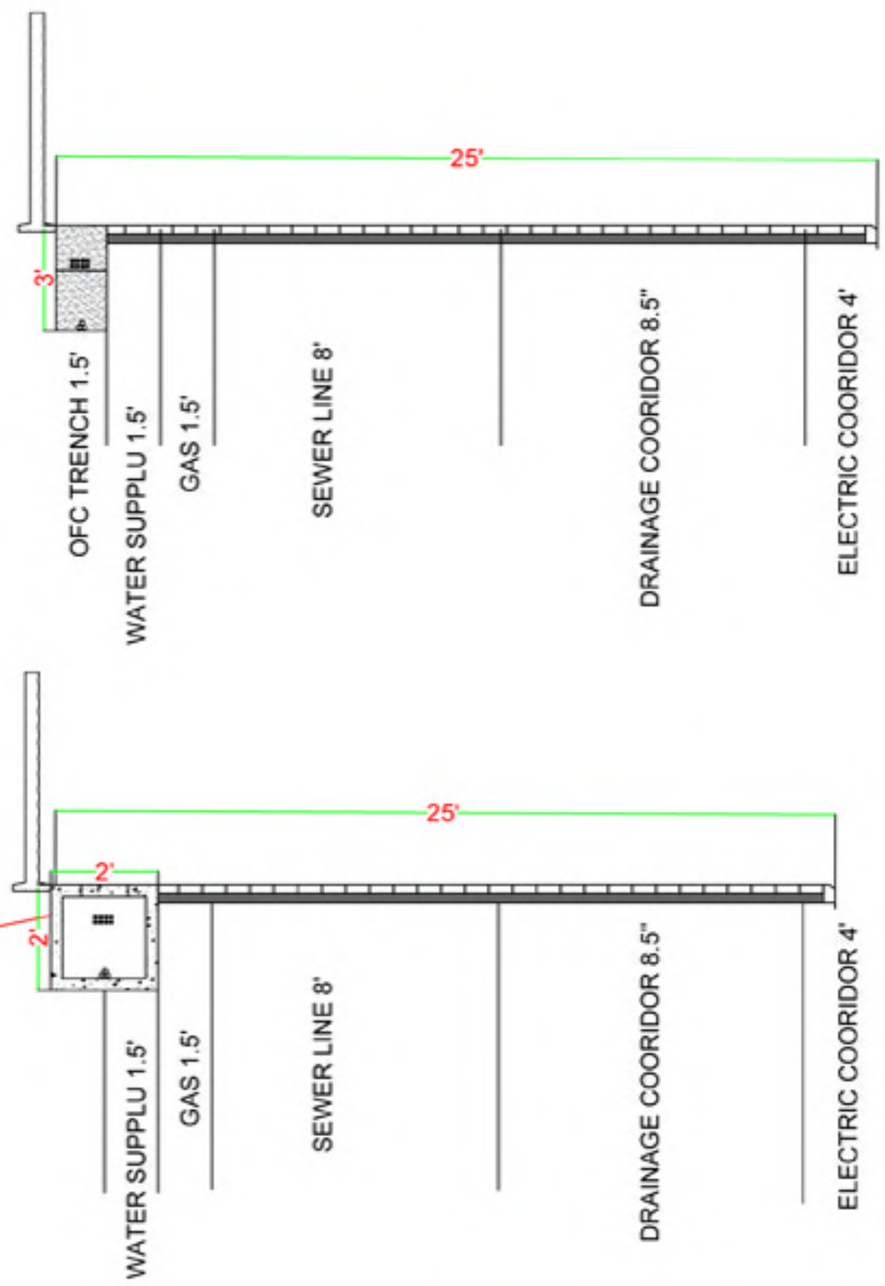
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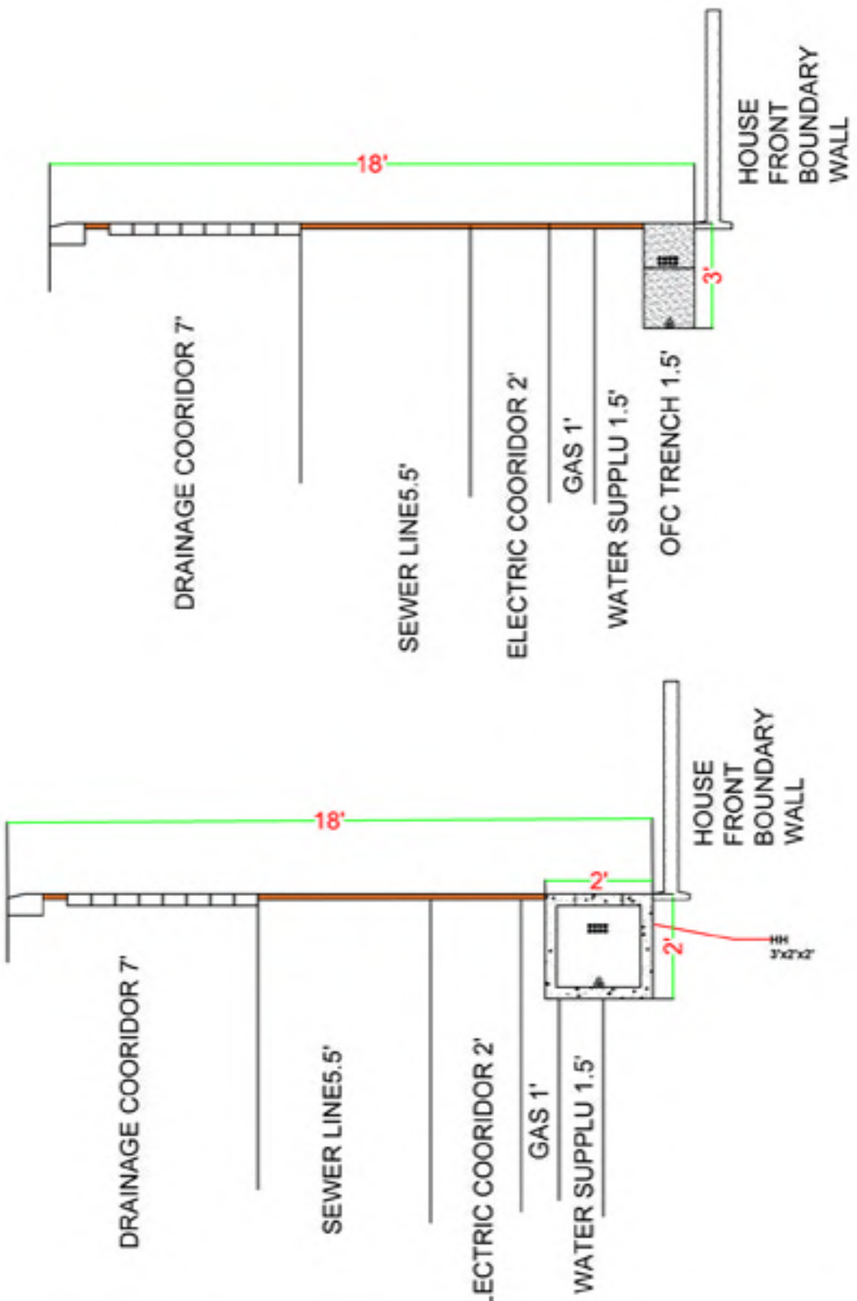
SCALE: N.T.S

DATE: SEPTEMBER, 2024

DWG. NO.: DHAQ-GPON-PN-v1.0

SHEET NO.: 01





REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

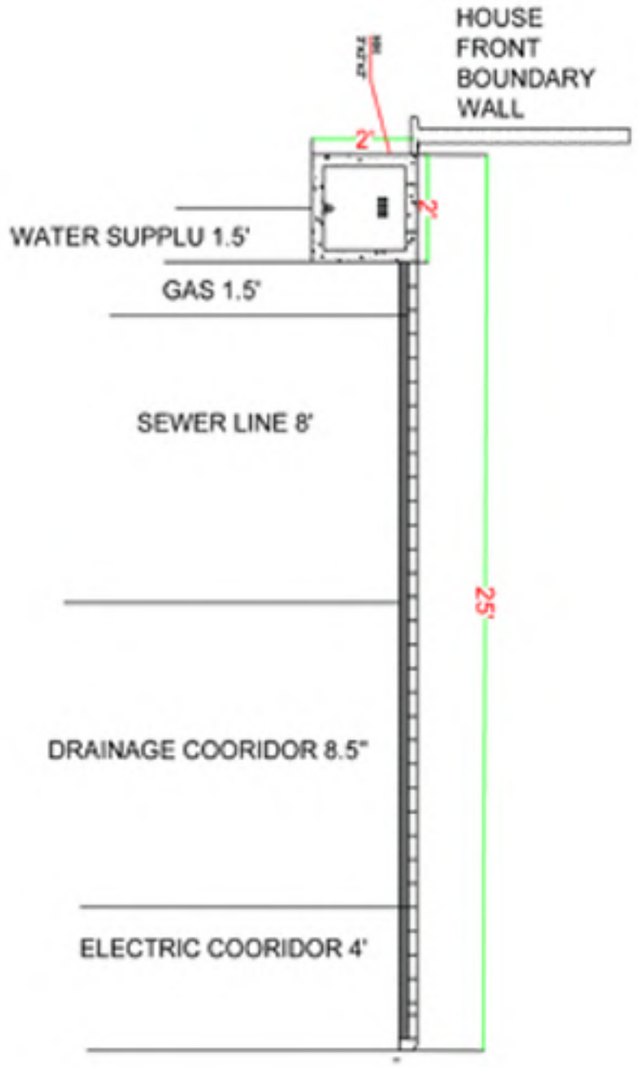
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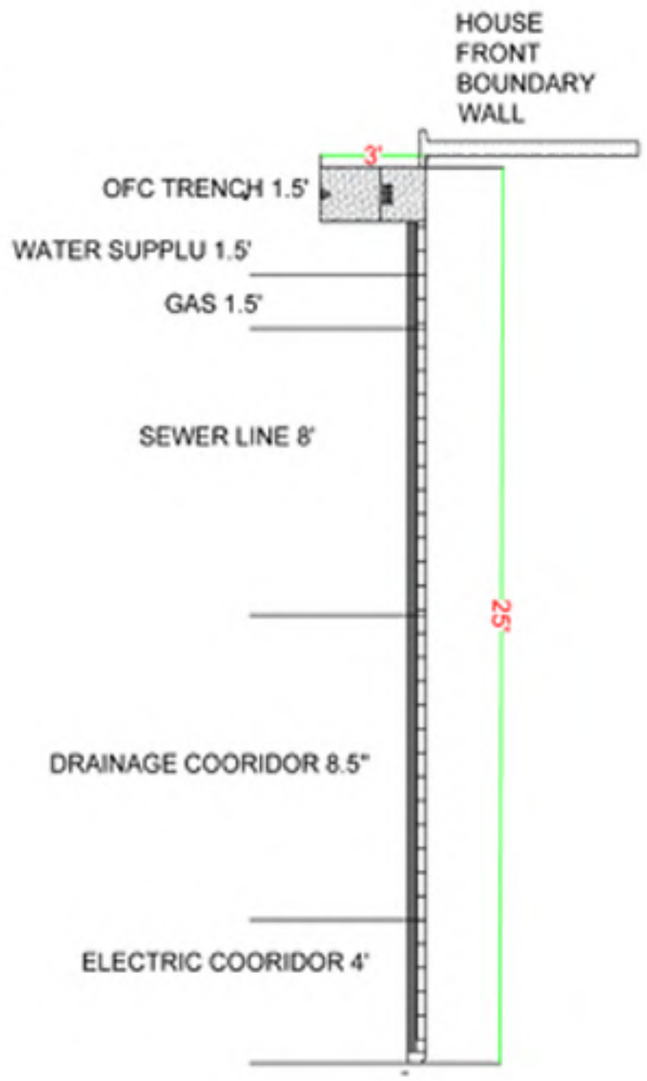
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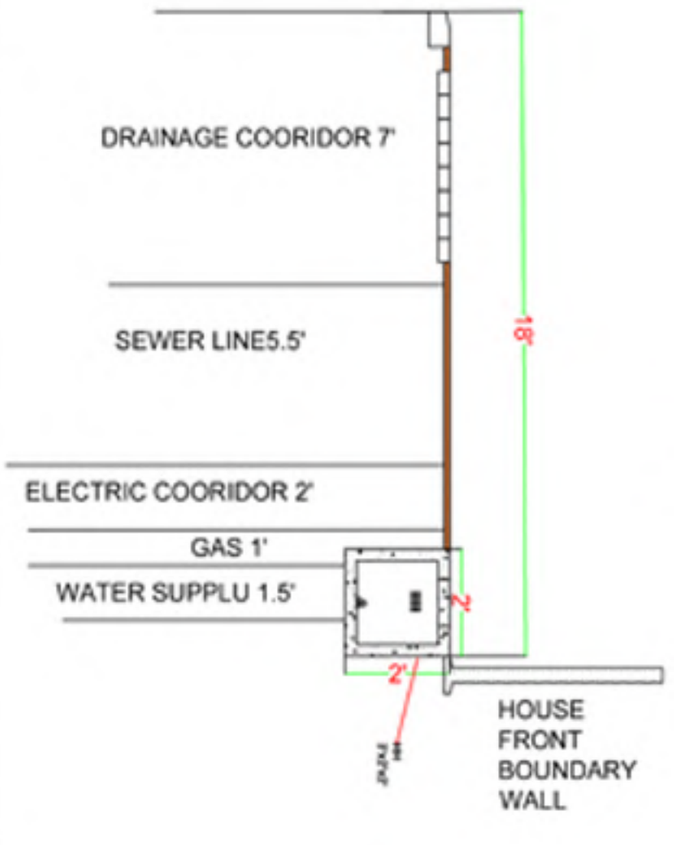
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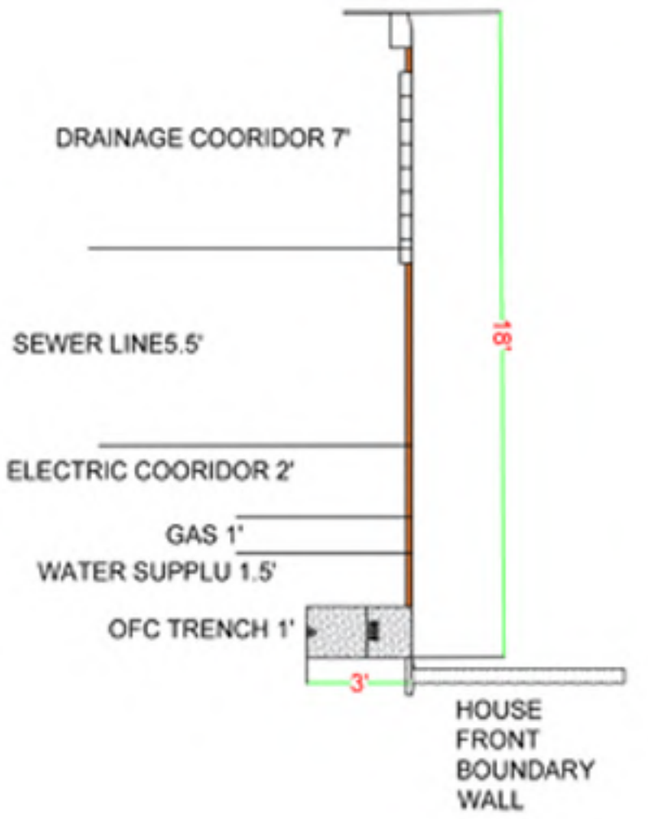
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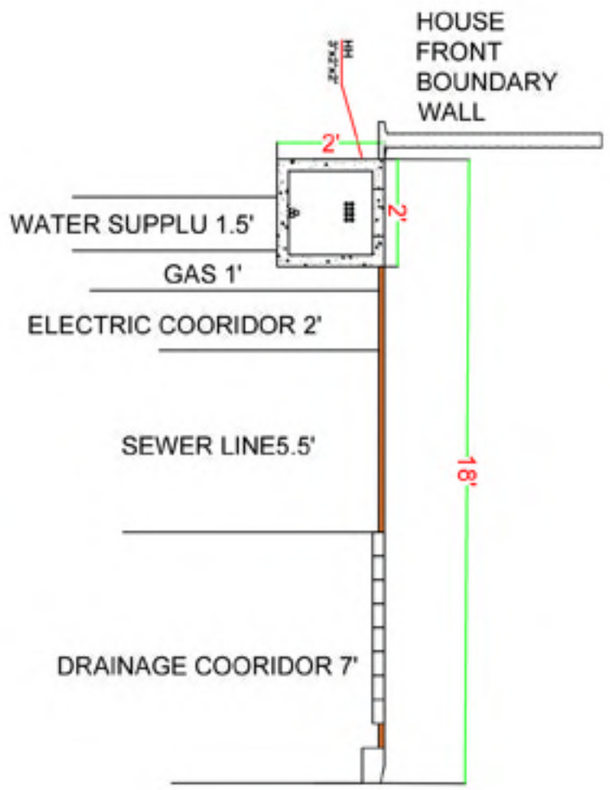
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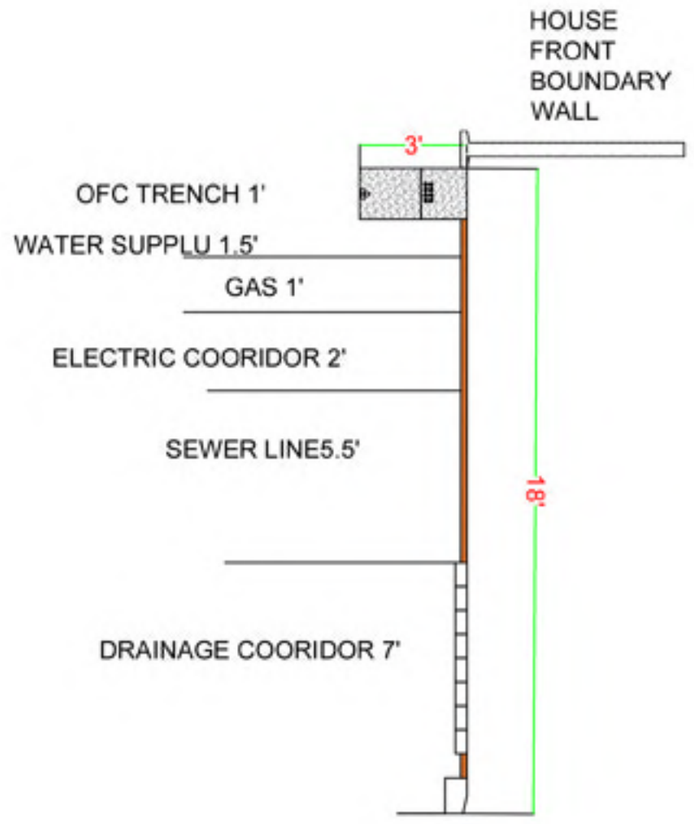


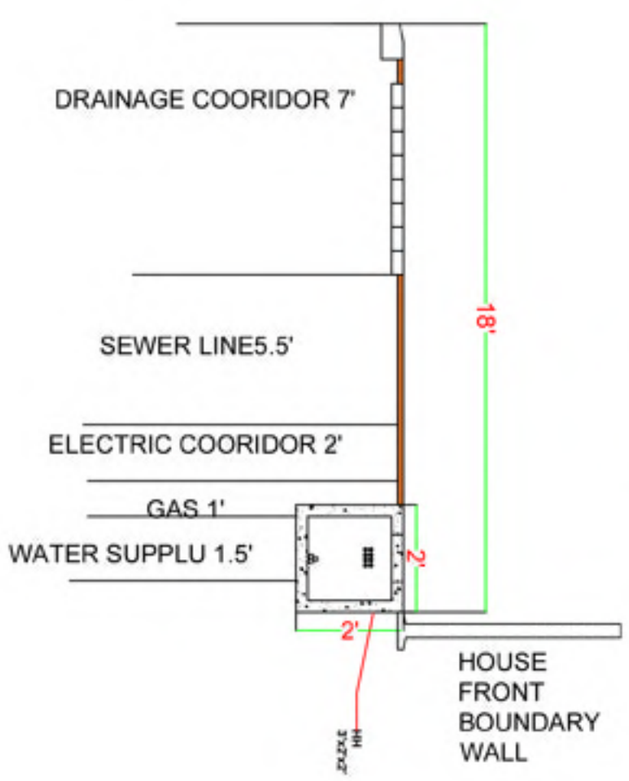


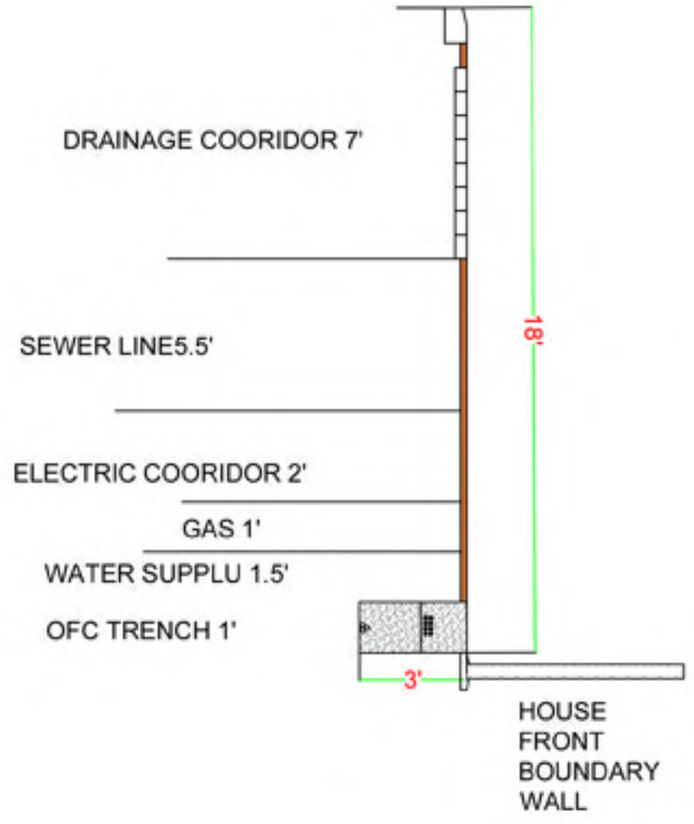












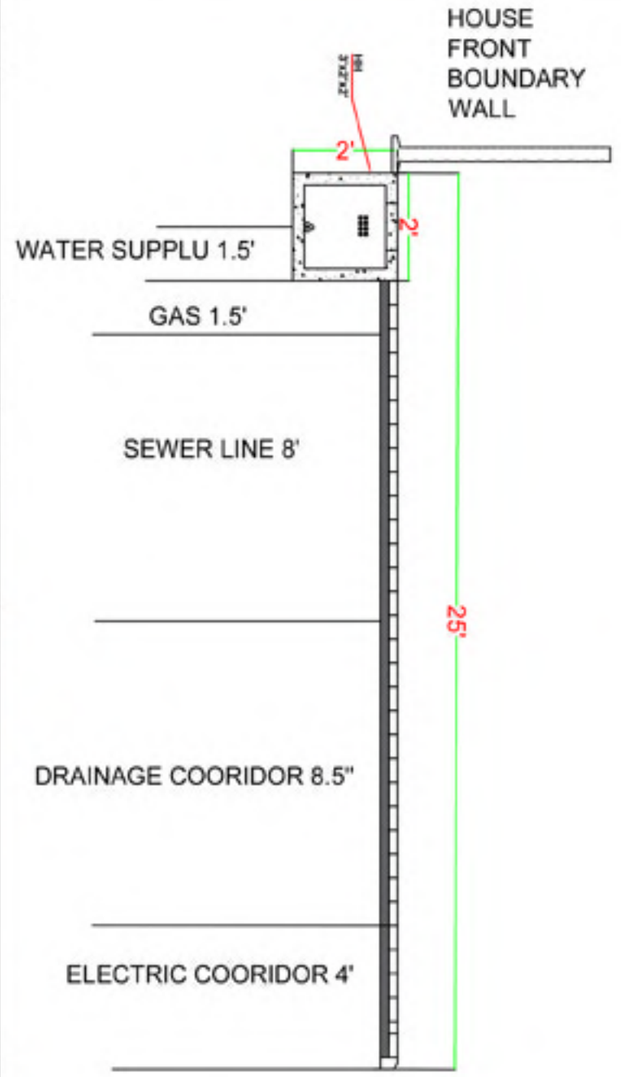
DEFENCE HOUSING AUTHORITY QUETTA

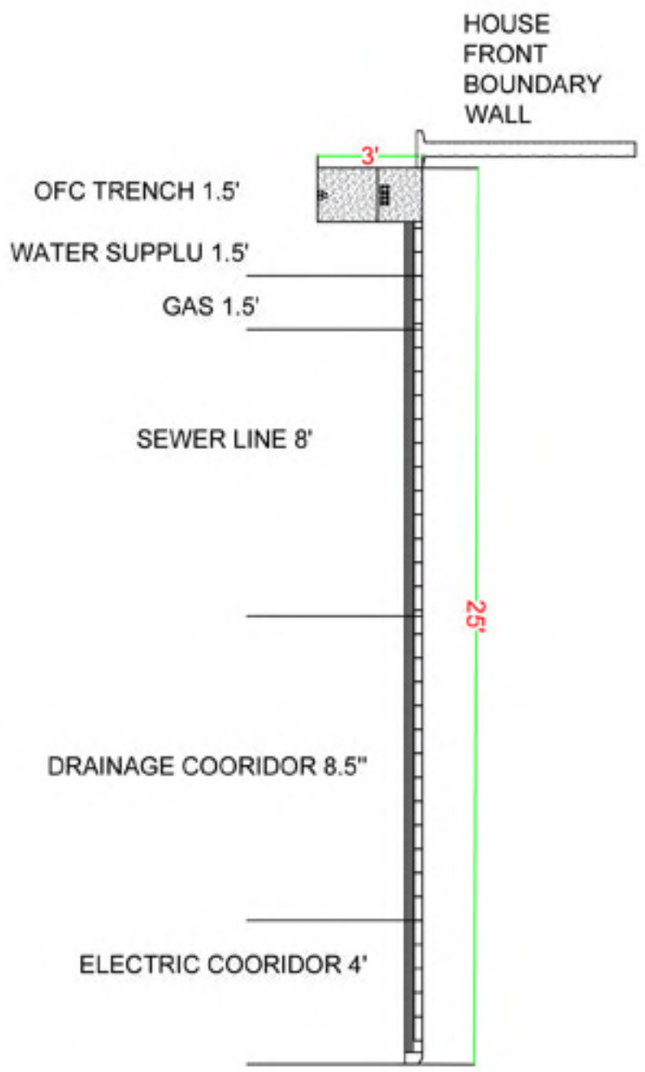
Highrise Private Limited

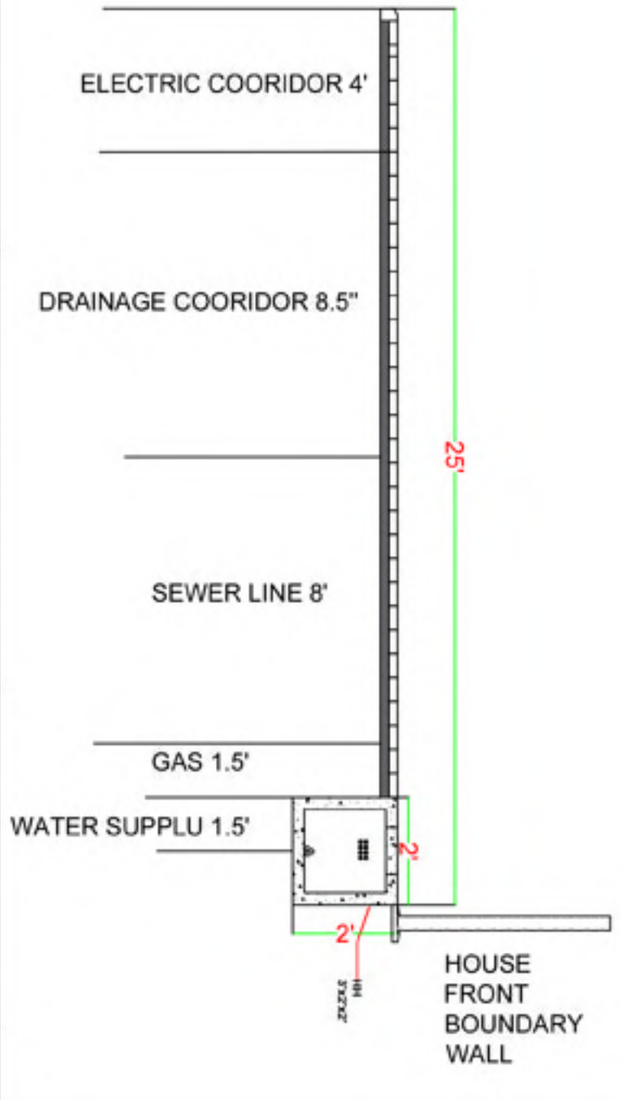
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

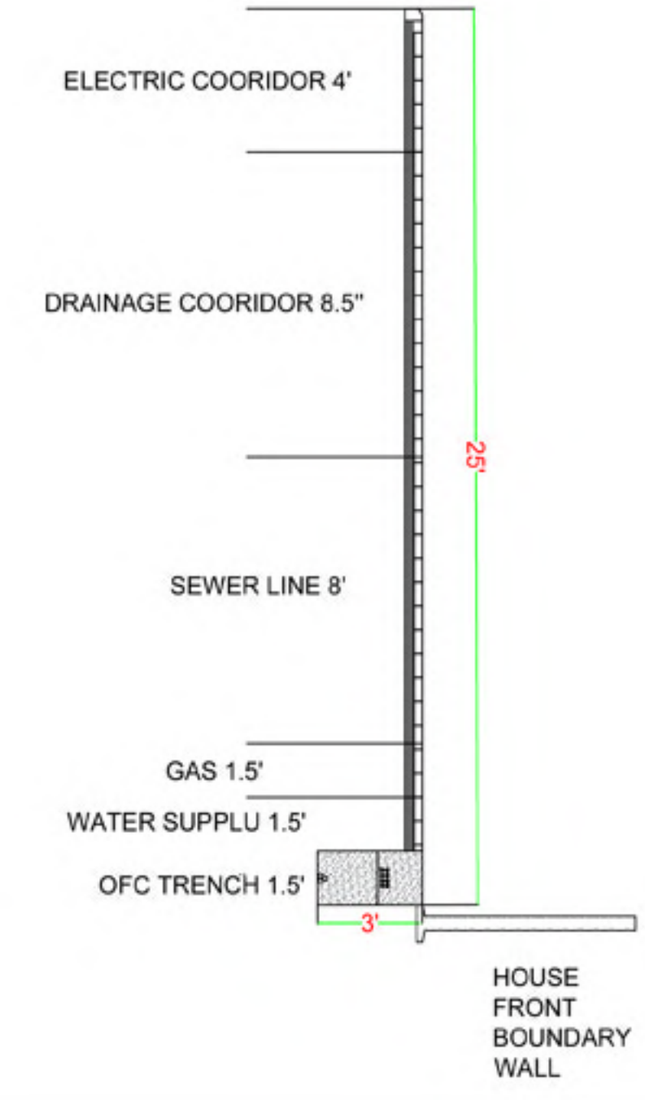
TYPICAL X-SECTION 295' R.O.W LOCAL STREET

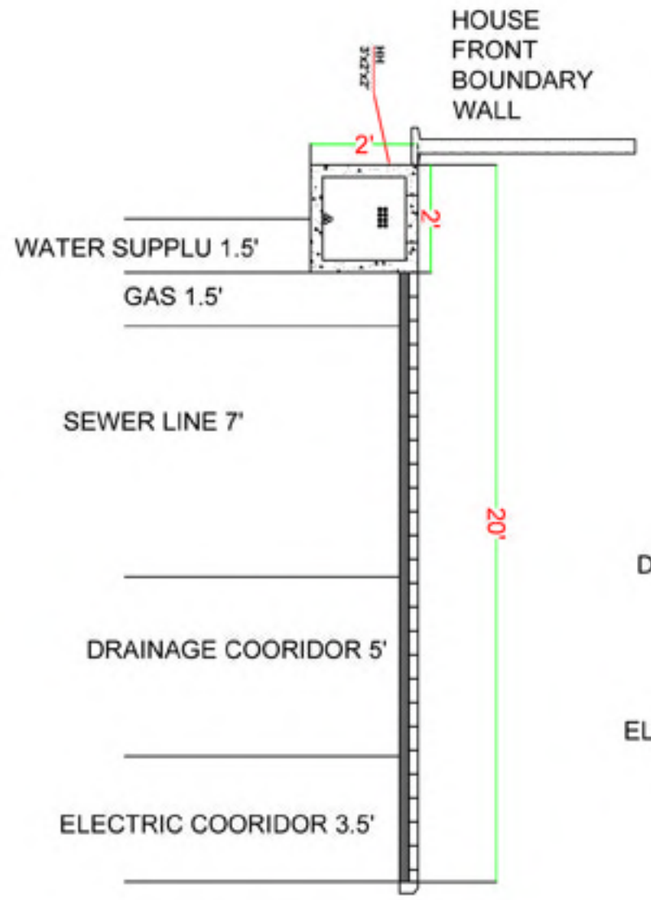
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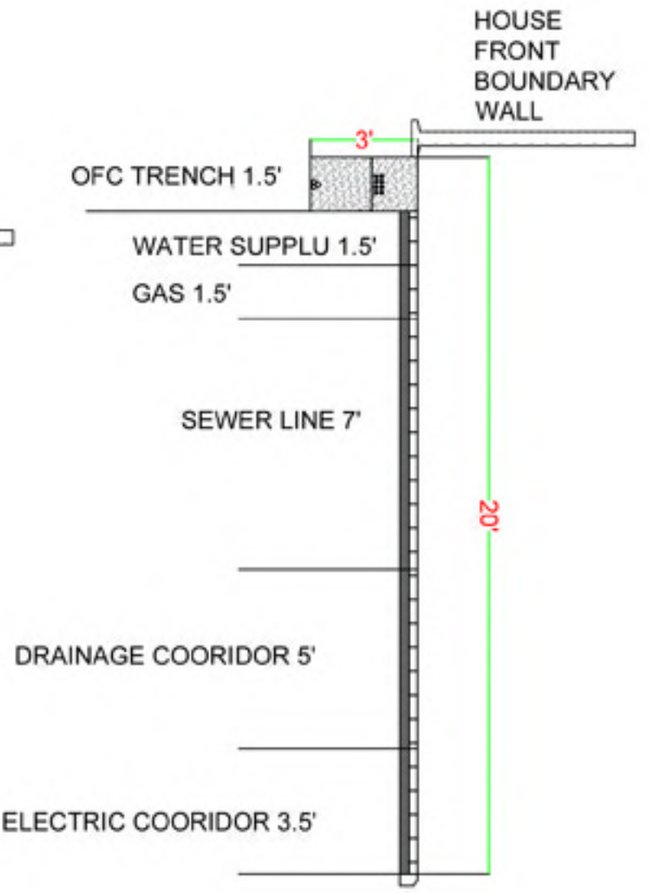


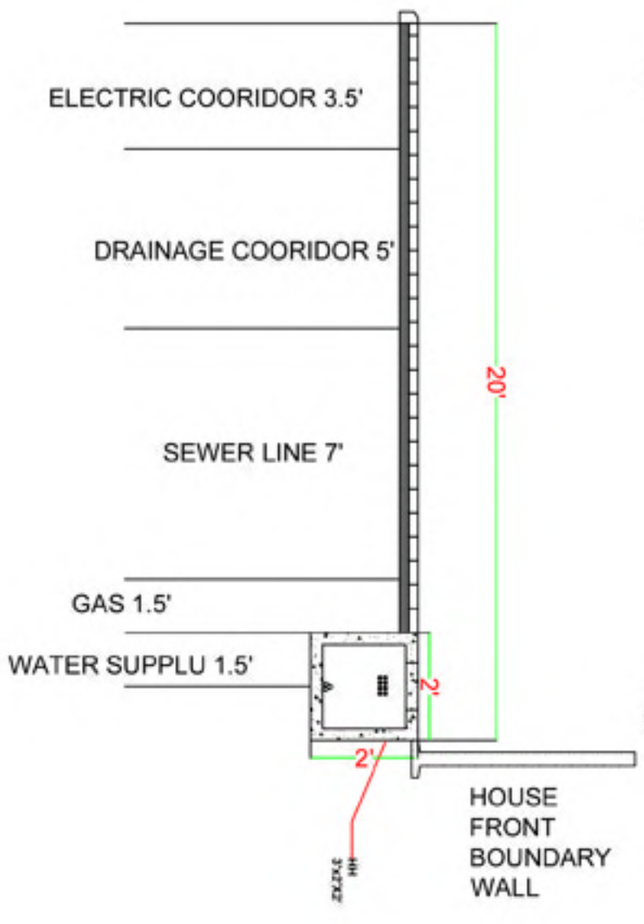


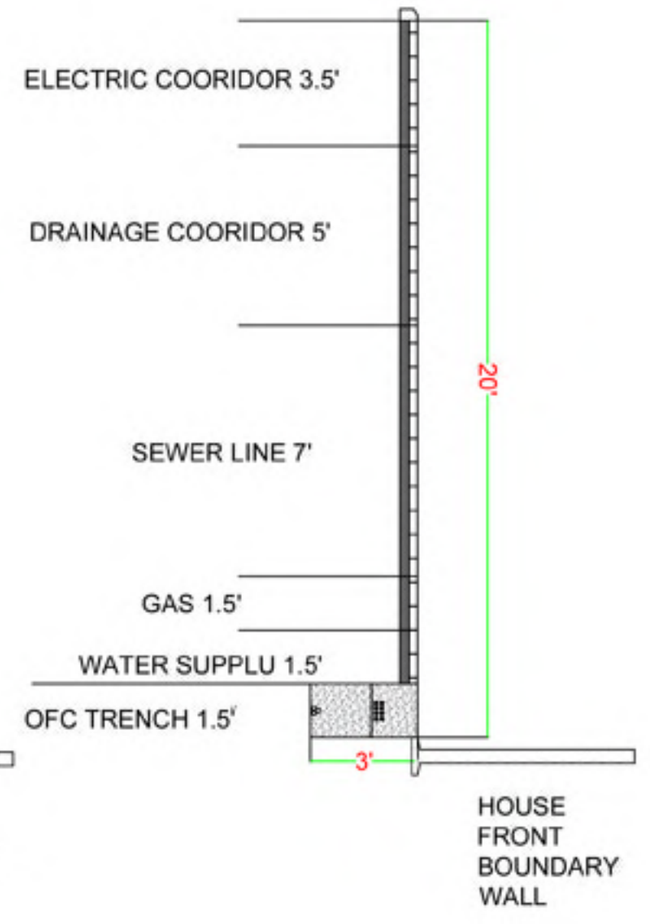












DEFENCE HOUSING AUTHORITY
QUETTA

Highrise Private Limited

DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

TYPICAL X-SECTION 350' R.O.W LOCAL STREET

SEPTEMBER, 2024

DHAQ--GPON--Proj---v1.0

SHEET NO. 01

N.T.S

OPTICAL FIBER NETWORK PLAN

FOR

DHA QUETTA SMART & SAFE CITY

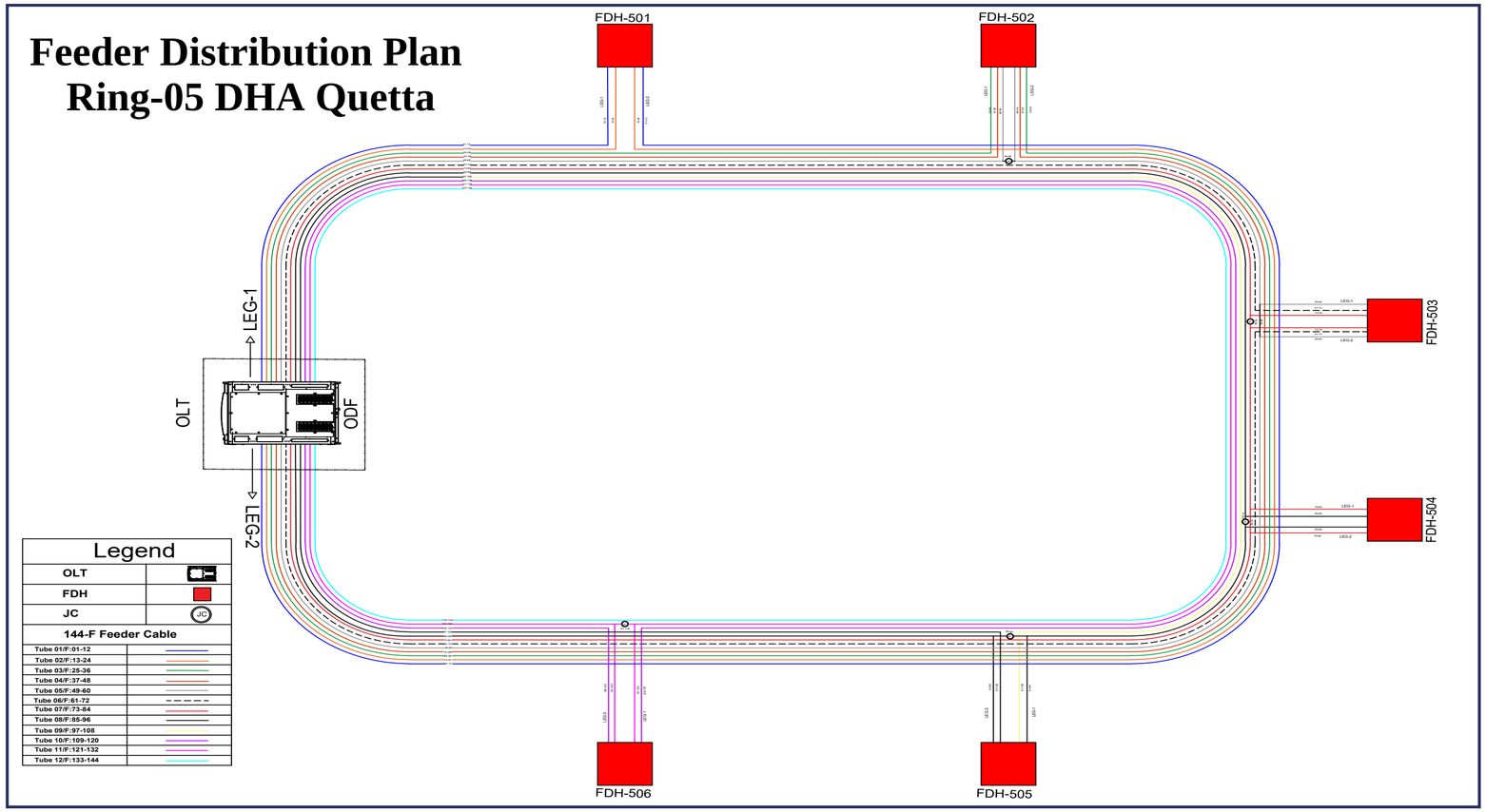
RING-05 SECTOR A3

BOQ Ring-05,Sector A3 DHA Quetta

Connection Summary										ODN Ports			Feeder BOQ												DISTRIBUTION BOQ																									
Exchange Ring No/ Route Area	OLT Location	FDH List	FDH 144	Plots	Residential		Commercial		Total Users	Design Residential ODN Ports	Design Commercial ODN Ports	Total Design ODN Ports	Feeder Fiber Length(Meter)			JOINT ENCLOUSURE	Duct Length(HDPE 57/63mm)			Feeder Civil Work (Trench)/Mtr)			HandHole		Distribution Cable (MTR)			Duct HDPE Pipe 57mm/63mm (Meter)		Civil Work (Trench)/Mtr)		RNAP+CNAP				Total NAP 8P	Total FAT 8P	FDH Spiltters					Feeder Core	Used Cores
					Total Residential Plots	User	Total Commercial Plots	User					144F	48F	24F	144F	2 Way Duct (Feeder)	3 Way Duct (Feeder+Dist)	Feeder Common Route Duct (3 Way)	Trench 2 Ways	Trench (3 Way) Feeder+Dist	Feeder Common Trench 3 Way	FDH-Base 3x4x3	HandHole 3x2x2	48F	24F	12F	1 Way 57mm	2 Ways 57mm	Trench (3ft) 1 Way	Trench (3ft) (2 Way)	*JOINT BOX*					No Of ISP	Residential Splitter Level 2	Commercial Splitter Level 2		
																															48F	24F	12F				2x4	2x4		
Ring-05/Sector A3	DHA-Quetta	FDH 501	1	129	94	94	35	35	129	128	320	448	6742	0	600	8	414	13227	1929	207	4409	643	6	88	0	1249	888	1516	0	1516	0	0	16	0	16	40	1	4	10	18	14
		FDH 502	1	90	0	0	90	90	90	0	768	768													0	1323	0	582	0	582	0	0	0	0	0	96	1	0	0	24	30	24
		FDH 503	1	220	197	197	23	23	220	256	192	448													0	2223	772	2586	0	2586	0	0	32	0	32	24	1	8	6	18	14
		FDH 504	1	167	167	167	0	0	167	192	0	192													0	1410	1308	0	1308	0	0	24	0	24	0	1	6	0	12	6
		FDH 505	1	234	225	225	9	9	234	256	128	384													0	864	1007	897	300	897	150	0	32	0	32	16	1	8	4	18	12
		FDH 506	1	253	253	253	0	0	253	256	0	256													0	1347	447	1068	26	1068	13	0	32	0	32	0	1	8	0	12	8
			6	1093	936	936	157	157	1093	1088	1408	2496	6742	0	600	8	13641			207	4409		6	88	0	7615	4524	7957	326	7957	163	0	136	0	136	176	1	34	44	108	78
TOTAL SUMMARY			6	1093	936	936	157	157	1093	1088	1408	2496	6742	0	600	8	13641			207	4409	643	6	88	0	7615	4524	7957	326	7957	163	0	136	0	136	176	1	34	44	108	78
																				5259			94																		

Loss Budget Ring 05 DHA Quetta

		Feeder Distance(KM)		Attenuation Loss / KM	A side Per Kilometer Attenuation Loss	B side Per Kilometer Attenuation Loss	Splice Loss	Connector Loss	Splitter Loss @ FDH	Total Loss at FDH Side A	Total Loss at FDH Side B	2 Connector + 2splice+Drop Cable Loss	Loss at Customer From A Side	Loss at Customer From B Side
FDH_No	SFP Class B+ Tx Power	A side	B side				0.05*6	4*0.5	Splitter 2:32					
FDH 501	2	1.109	5.607	0.35	0.39	1.96	0.3	2	15.05	17.7	19.3	1	**-16.8**	-18.4
FDH 502	2	1.773	4.943	0.35	0.62	1.73	0.3	2	15.05	18.0	19.1	1	**-17.1**	-18.2
FDH 503	2	2.885	3.831	0.35	1.01	1.34	0.3	2	15.05	18.4	18.7	1	**-17.5**	-17.8
FDH 504	2	3.748	2.968	0.35	1.31	1.04	0.3	2	15.05	18.7	18.4	1	**-17.8**	-17.5
FDH 505	2	4.087	2.629	0.35	1.43	0.92	0.3	2	15.05	18.8	18.3	1	**-17.9**	-17.4
FDH 506	2	5.201	1.515	0.35	1.82	0.53	0.3	2	15.05	19.2	17.9	1	**-18.3**	-17.0



DHA-QUETTA
Feeder Civil/Duct Plan

Legend

- OLT
- **FDH-Cabinet** FDH Handhole with Base, 3x4x3
- **CNAP** CNAP/Commercial NAP) HandHole, 3x2x2
- **RNAP** RNAP(Residential NAP) HandHole, 3x2x2
- **FCNAP** FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- **FRNAP** FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- **FEEDER** HandHole, 3x2x2
- **DISTRIBUTION** HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST

Note: 1 CORE FIBER IS RESERVED & 01 WIRE FIRE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH

- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

OLT

FDH-506 PARK 25.80 K

4 MOSQUE 4.10 K

FDH-501

501

FDH-502

502

FDH-505

505 EDUCATIONAL

PARK

3 MOSQUE

FDH-504

504

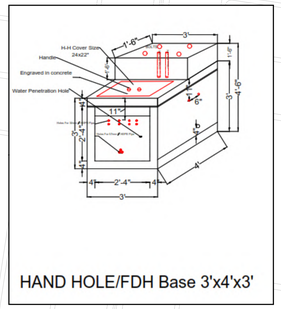
FDH-503

503 1 MOSQUE 4.12 K

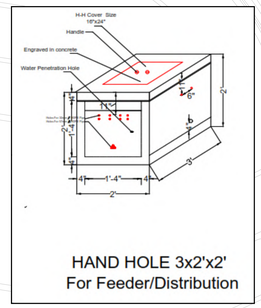
FDH-706

General Guidelines

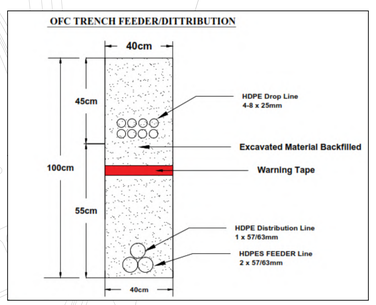
- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable: 2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.



HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution



REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FEEDER DUCT PLAN RING 05

SCALE: 1:2,700

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
CABLE Plan

Legend

- **OLT**
- **FDH-Cabinet** — FDH Handhole with Base, 3x4x3
- **CNAP** — CNAP(Commercial NAP) Handhole, 3x2x2
- **RNAP** — RNAP(Residential NAP) Handhole, 3x2x2
- **FCNAP** — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- **FRNAP** — FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- **FEEDER** Handhole, 3x2x2
- **DISTRIBUTION** Handhole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 1 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

OLT

144F Ring-05

FDH-FDH-506 144F C5 109-126

PARK 25.80 K

144F Ring-04

144F Ring-03

144F Ring-02

144F Ring-01

PARK

3 MOSQUE

FDH-FDH-505 144F C5 91-108

144F Ring-06

144F Ring-07

1 MOSQUE 4.12 K

FDH-FDH-503 144F C5 55-78

General Guidelines

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- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
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04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FEEDER CABLE PLAN RING-05

SCALE: 1:2,500

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH HandHole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 1x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — *Note:2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH*
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

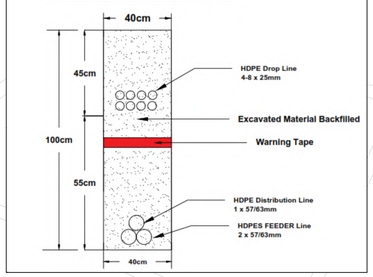
Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
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- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
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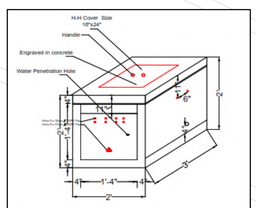
Ring-01 Ring-02 Ring-03 Ring-04 Ring-05 Ring-06 Ring-07

General Guidelines

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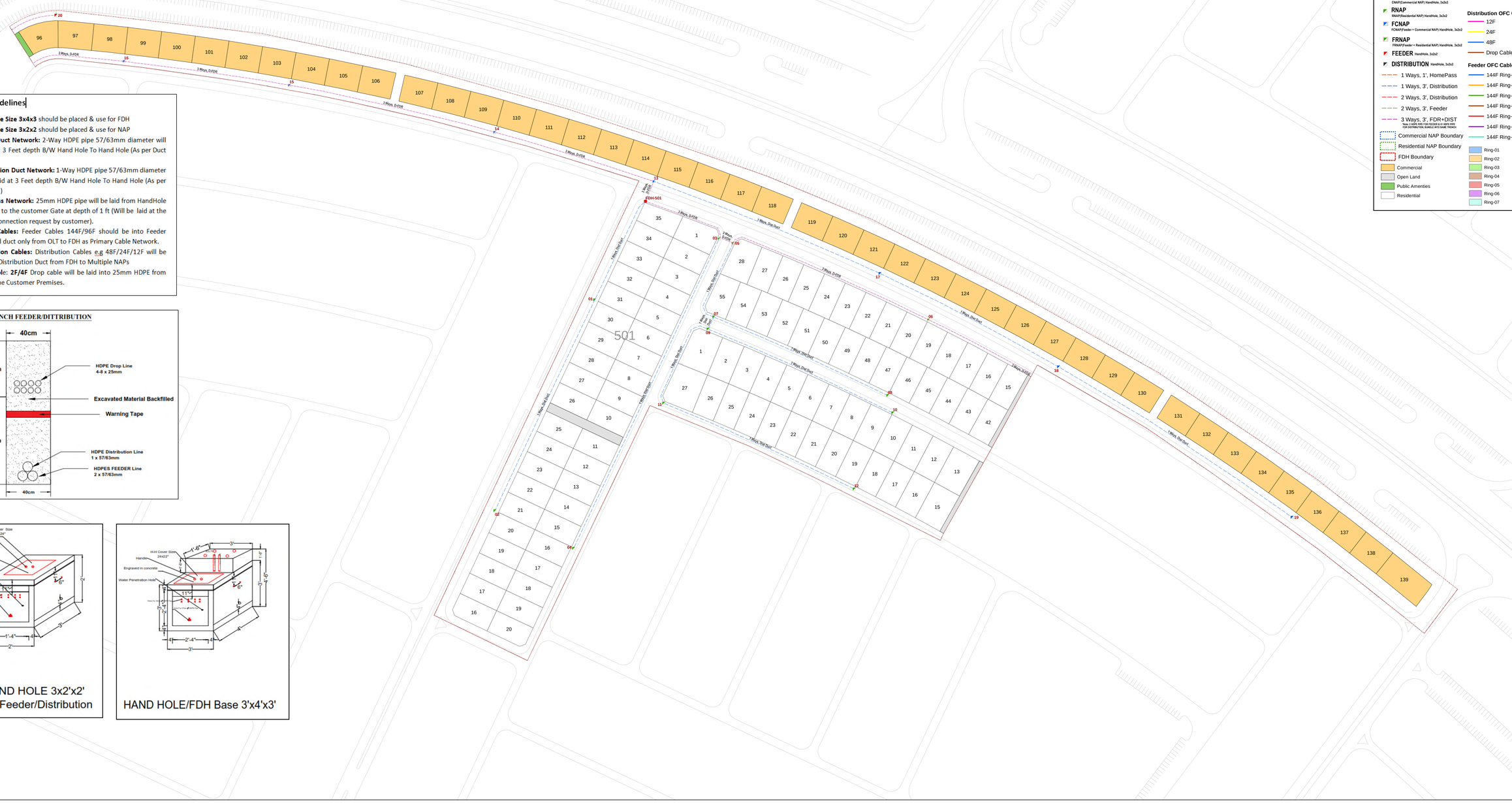
OFC TRENCH FEEDER/DITTRIBUTION





HAND HOLE 3x2'x2'
For Feeder/Distribution

HAND HOLE/FDH Base 3'x4'x3'



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CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

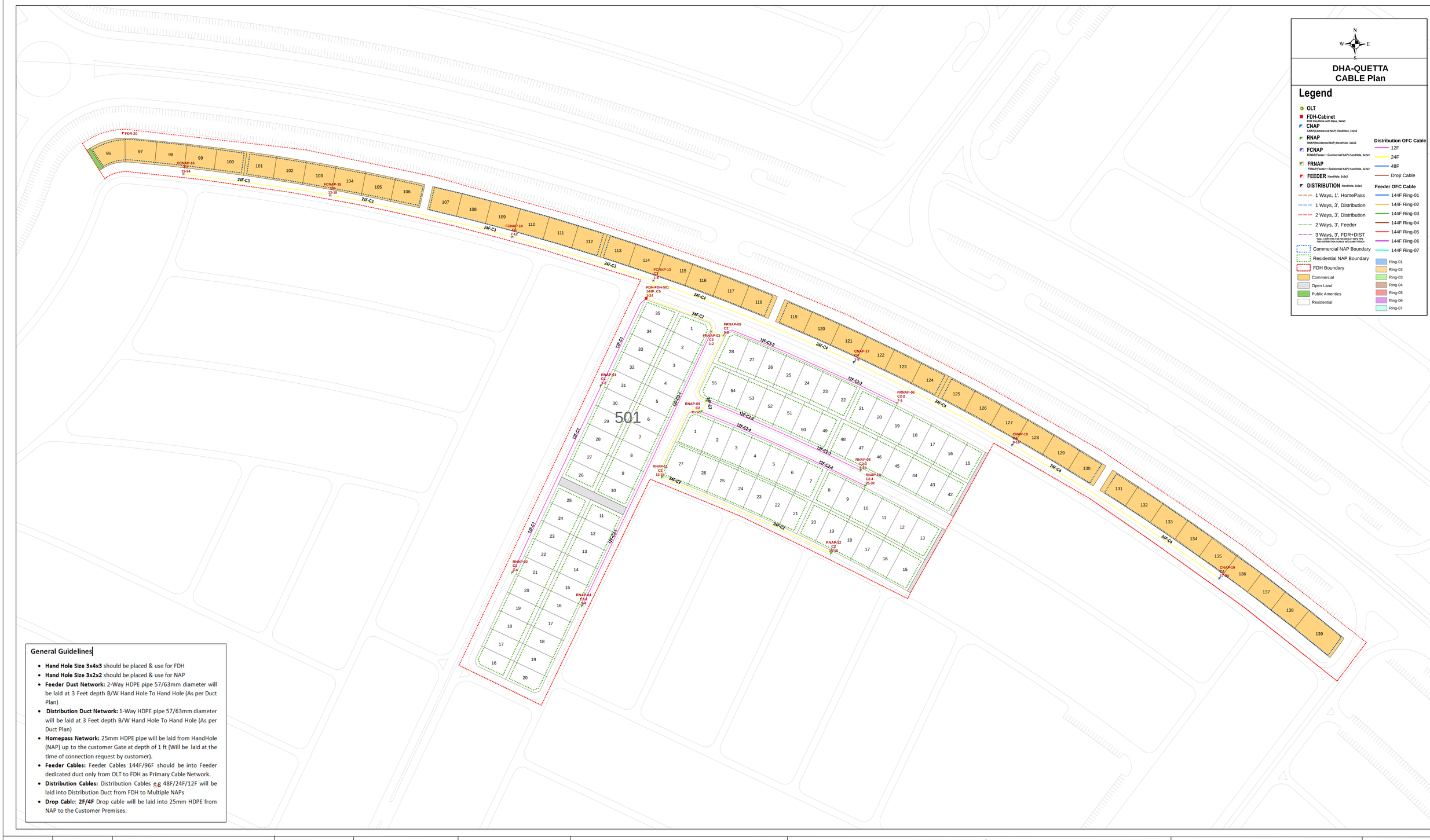
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-501 DUCT PLAN RING-05

SCALE: 1:970

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP(Residential NAP) Handhole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- FEEDER Handhole, 3x2x2
- DISTRIBUTION Handhole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
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- 2 Ways, 3', Feeder
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- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

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01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

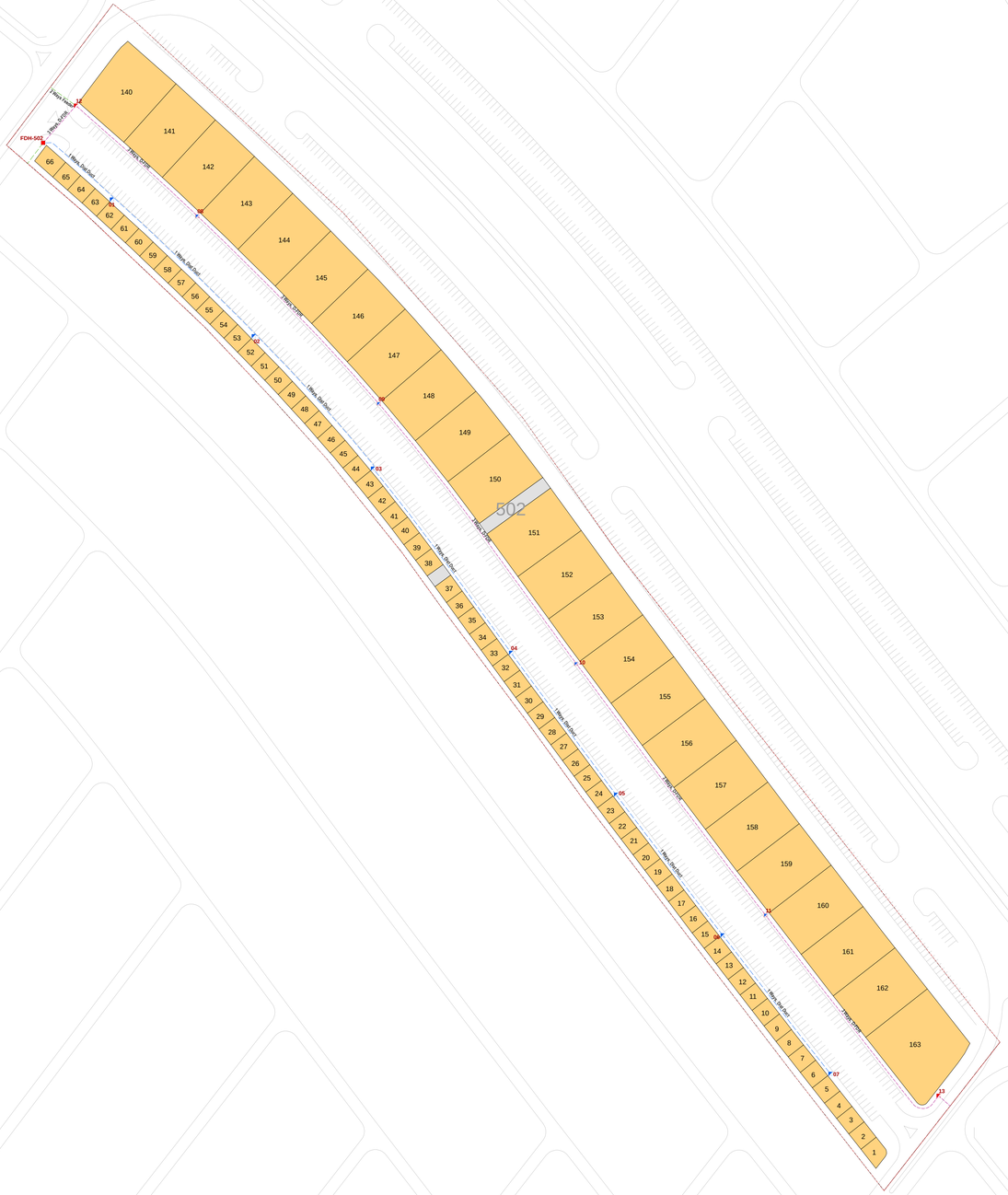
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-501 CABLE PLAN RING-05

SCALE 1:970

DATE 15.01.25

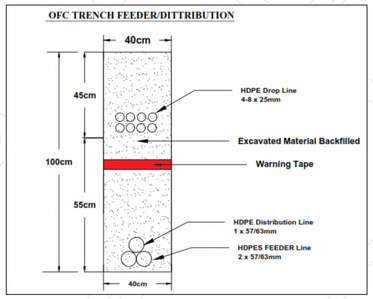
DWG NO. DHAQ-GPON-PNI-v1.0

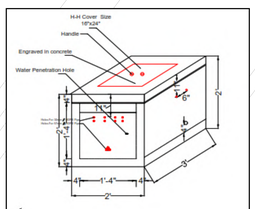


General Guidelines

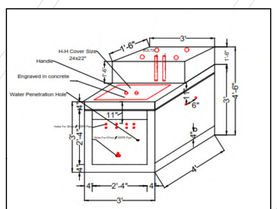
- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

OFC TRENCH FEEDER/DITTRIBUTION





HAND HOLE 3x2'x2'
For Feeder/Distribution



HAND HOLE/FDH Base 3'x4'x3'

N
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DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH HandHole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2

- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — *Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH*
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

REV	DATE	DESCRIPTION	APPROVED		
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

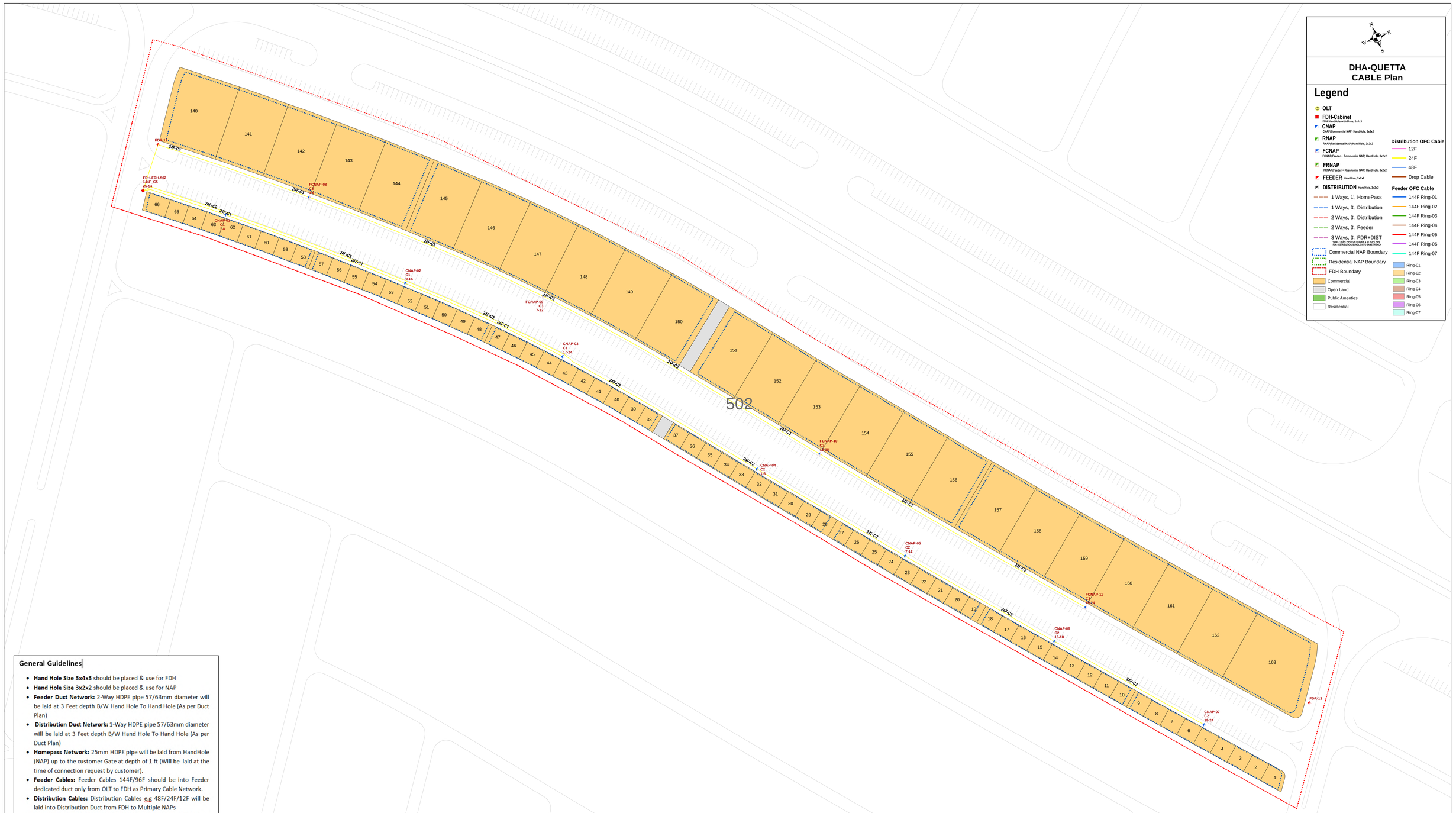
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-502 DUCT PLAN RING-05

SCALE: 1:940

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
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- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable: 2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-502 CABLE PLAN RING-05

SCALE: 1:620

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH HandHole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 1x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST

Note:2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH

- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

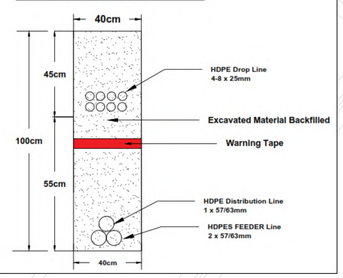
Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

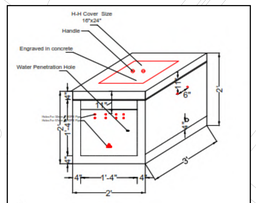
- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

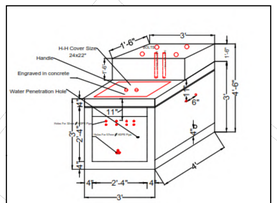
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- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

OFC TRENCH FEEDER/DITTRIBUTION

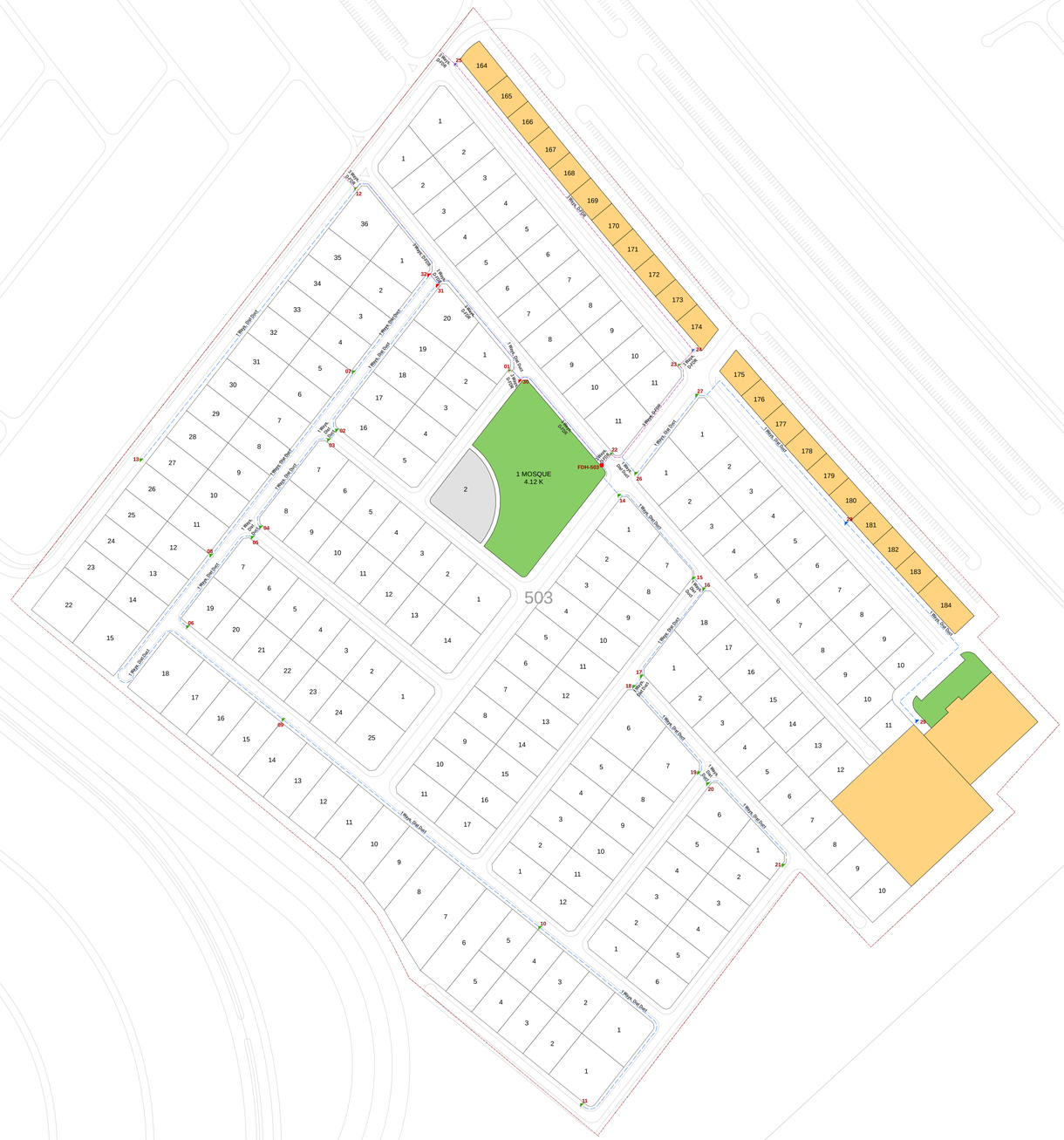




HAND HOLE 3x2'x2'
For Feeder/Distribution



HAND HOLE/FDH Base 3'x4'x3'



REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA
GPON FDH-503 DUCT PLAN RING-05

SCALE: 1:1,320

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP(Residential NAP) Handhole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- FEEDER — Handhole, 3x2x2
- DISTRIBUTION — Handhole, 3x2x2

- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST

Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH

- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

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General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
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REV	DATE	DESCRIPTION	APPROVED	APPROVED	
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03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-503 CABLE PLAN RING-05

SCALE: 1:980

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER HandHole, 3x2x2
- DISTRIBUTION HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — *Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH*
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

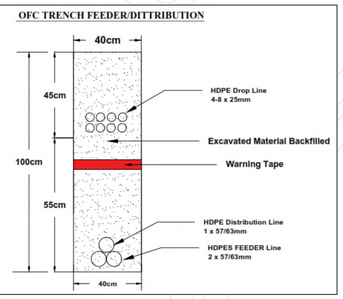
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

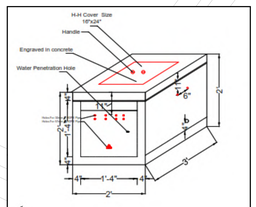
- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

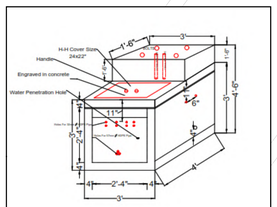
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- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

OFC TRENCH FEEDER/DITTRIBUTION

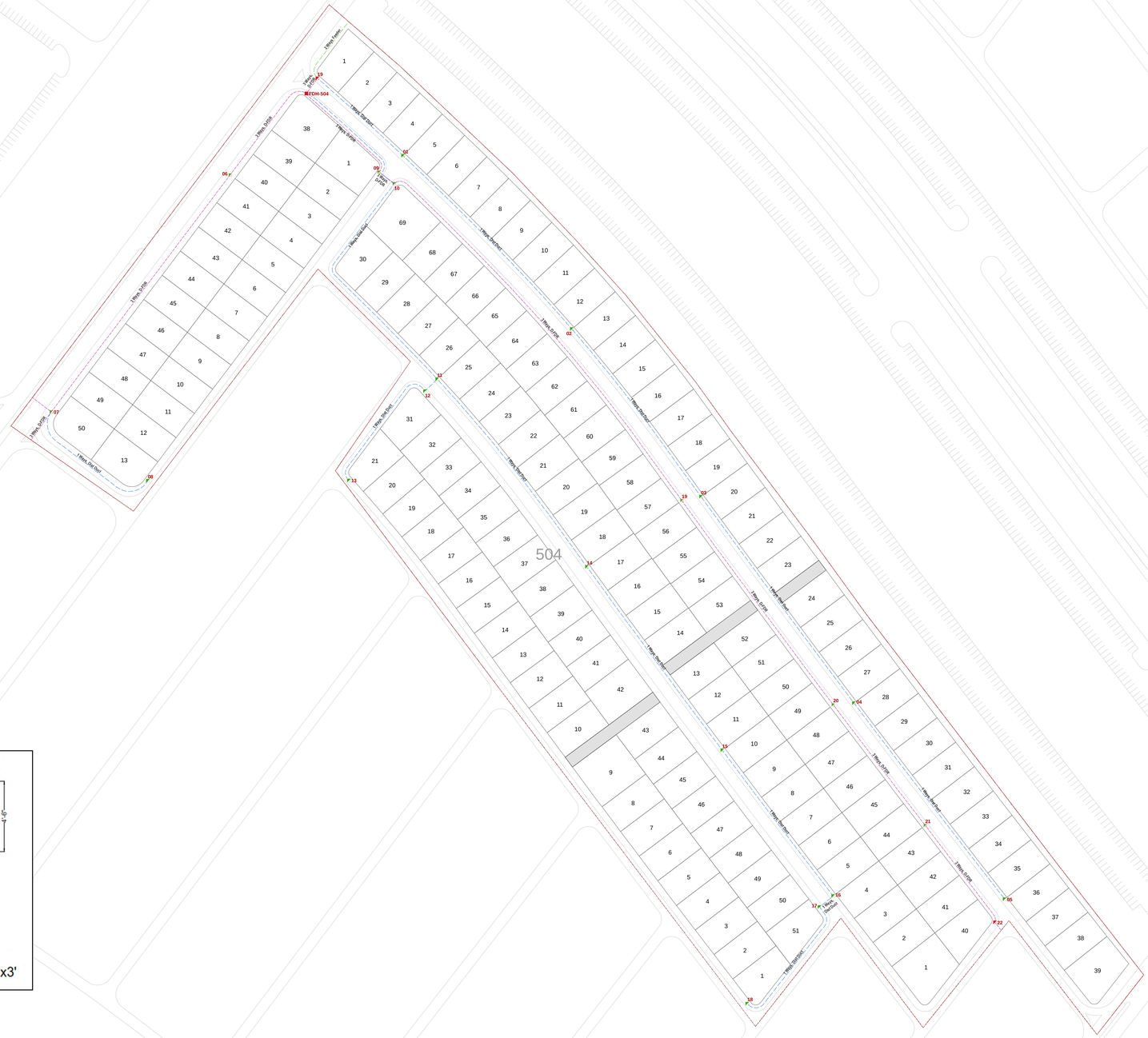




HAND HOLE 3x2'x2'
For Feeder/Distribution



HAND HOLE/FDH Base 3'x4'x3'


FDH-504
504
1 Ways, 1/2"DP
1 Ways, Duct Duct
1 Ways, 3/4"DP
1 Ways, 1/2"DP
1 Ways, Duct Duct
1 Ways, 1/2"DP
1 Ways, Duct Duct
1 Ways, 3/4

DHA-QUETTA
CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP(Residential NAP) Handhole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- FEEDER Handhole, 3x2x2
- DISTRIBUTION Handhole, 3x2x2
  - 1 Ways, 1', HomePass
  - 1 Ways, 3', Distribution
  - 2 Ways, 3', Distribution
  - 2 Ways, 3', Feeder
  - 3 Ways, 3', FDR+DIST
    Note: 3 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

504

General Guidelines

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REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-504 CABLE PLAN RING-05

SCALE 1:610

DATE 15.01.25

DWG NO. DHAQ-GPON-PNI-v1.0

DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
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- DISTRIBUTION — HandHole, 1x2x2
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- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
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- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
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- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

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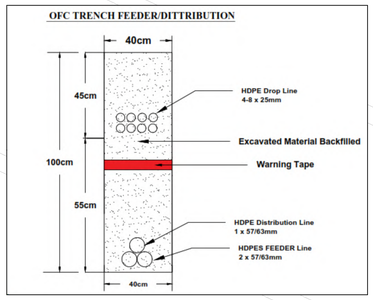
HAND HOLE/FDH Base 3'x4'x3'

HAND HOLE 3x2'x2'
For Feeder/Distribution

General Guidelines

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OFC TRENCH FEEDER/DITTRIBUTION



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04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
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01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

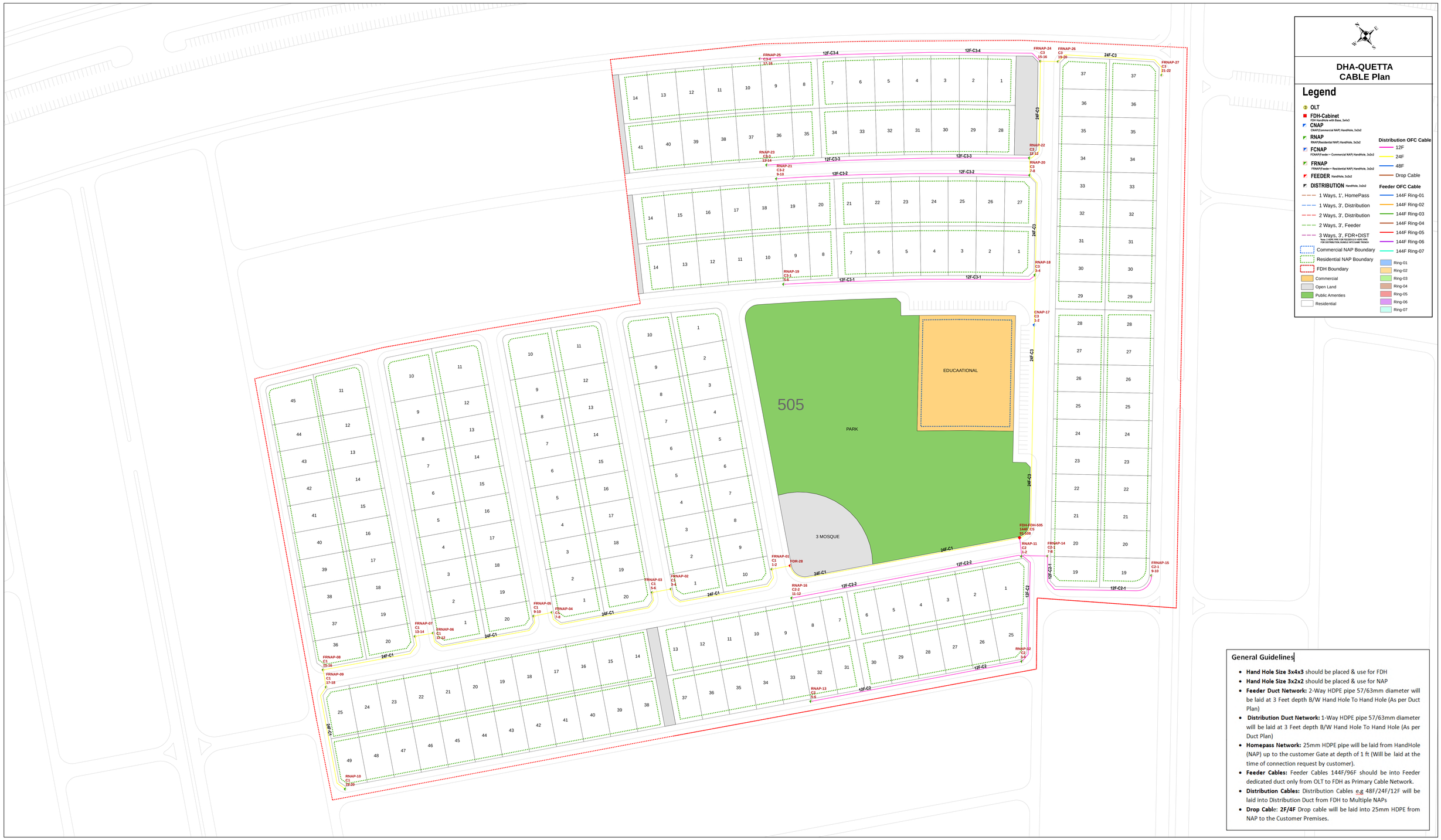
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-505 DUCT PLAN RING-05

SCALE: 1:730

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP(Residential NAP) Handhole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- FEEDER — Handhole, 3x2x2
- DISTRIBUTION — Handhole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable: 2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

REV	DATE	DESCRIPTION	APPROVED		
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-505 CABLE PLAN RING-05

SCALE: 1:710

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



DHA-QUETTA
Civil/Duct Plan

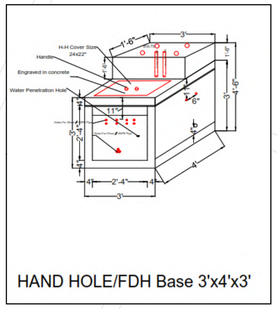
Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note:2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

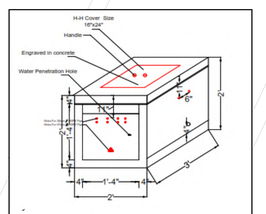
Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07



HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution

General Guidelines

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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

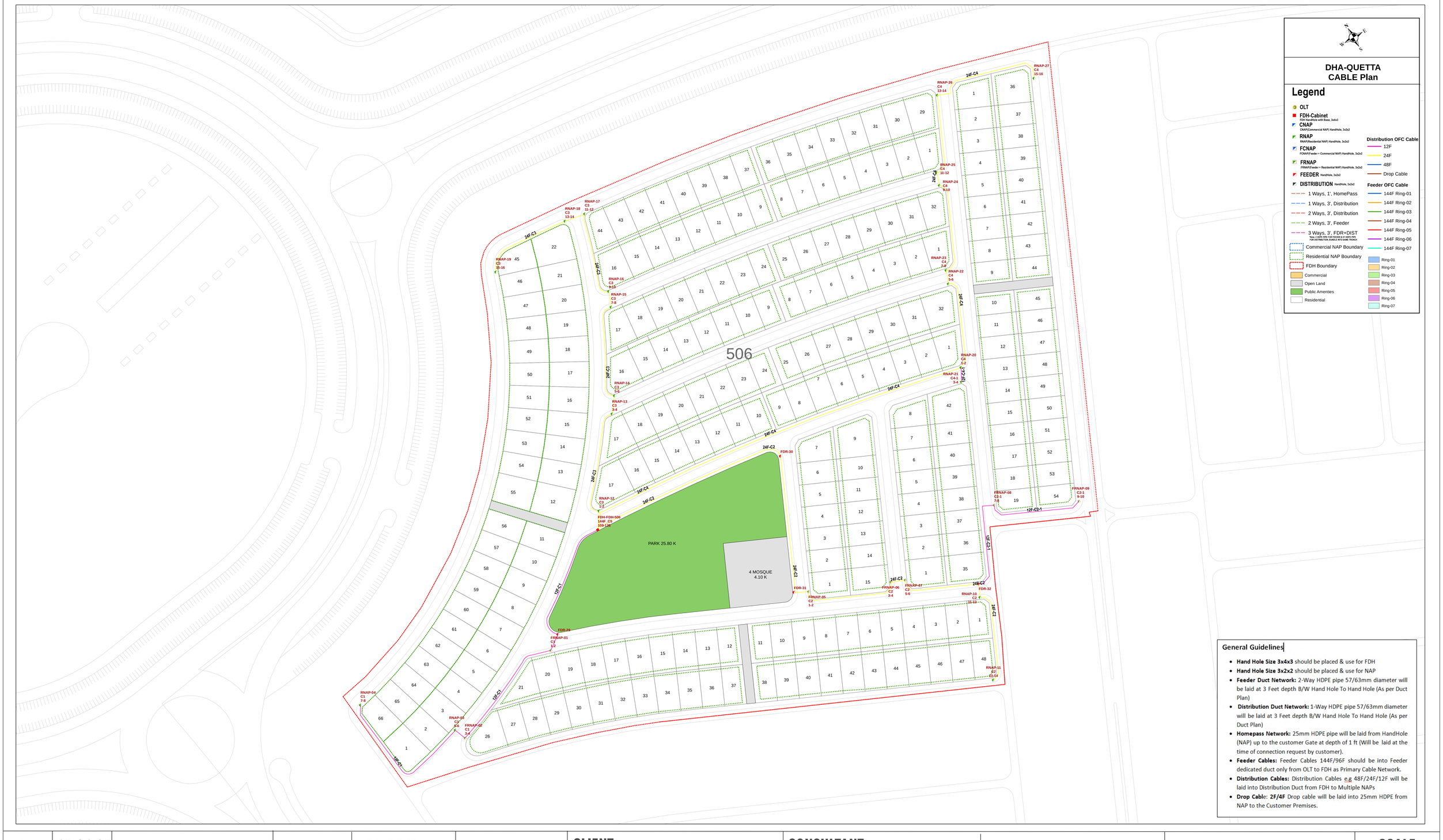
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-506 DUCT PLAN RING-05

SCALE: 1:760

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2

- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST

Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH

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- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

Ring-01
Ring-02
Ring-03
Ring-04
Ring-05
Ring-06
Ring-07

General Guidelines

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03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-506 CABLE PLAN RING-05

SCALE: 1:870

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

OUTSIDE PLANT OSP

Core Network

Central Office

Feeder Network

Distribution Network

Customer Premises

TELEPHONE

IPTV

INTERNET

Surveillance

Smart Metering

A

B

OLT

FDH-101

144F Feeder Ring

Feeder JC

FDH-102

FDH-103

Splitter

Distribution Cable 12/24/48F

Distribution Cable 12/24/48F

FDH-106

FDH-105

144F Feeder Ring

Feeder JC

FDH-104

Cable 12F

Surveillance Cameras

Pole

Cable 12F

Surveillance Cameras

Pole

R-NAP

Joint Box

ONT

Drop Cable 2F

C-NAP

FAT-1 (2:8)

Drop Cable 2F

FAT-2 (2:8)

FAT-3 (2:8)

Legend

OLT	
FDH	
Splitter	
CNAP	
RNAP	
FAT	
ONT	
Feeder Cable	
Distribution Cable	
Drop Cable	

REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

TITLE: Single Line Diagram (SLD) Plan A

SCALE: N.T.S

DATE: October 2025

DWG. NO.: DHAQ–GPON–PNI–v1.0

SHEET NO.: 01

OUTSIDE PLANT OSP

Core Network | Central Office | Feeder Network | Distribution Network | Customer Premises

TELEPHONE
IPTV
INTERNET
Surveillance
Smart Metering

A
B

OLT

FDH-101
FDH-102
144F Feeder Ring
FDH-103
FDH-104
FDH-105
FDH-106
144F Feeder Ring

Splitter

Distribution Cable
12/24/48F
Distribution Cable
12/24/48F

ONT
Drop Cable 2F
R-NAP
Joint Box
Drop Cable 2F
Surveillance Cameras
Pole

C-NAP
FAT-1
(2:8)
Drop Cable 2F
FAT-2
(2:8)
FAT-3
(2:8)

Legend

OLT	
FDH	
Splitter	
CNAP	
RNAP	
FAT	
ONT	
Feeder Cable	
Distribution Cable	
Drop Cable	

REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

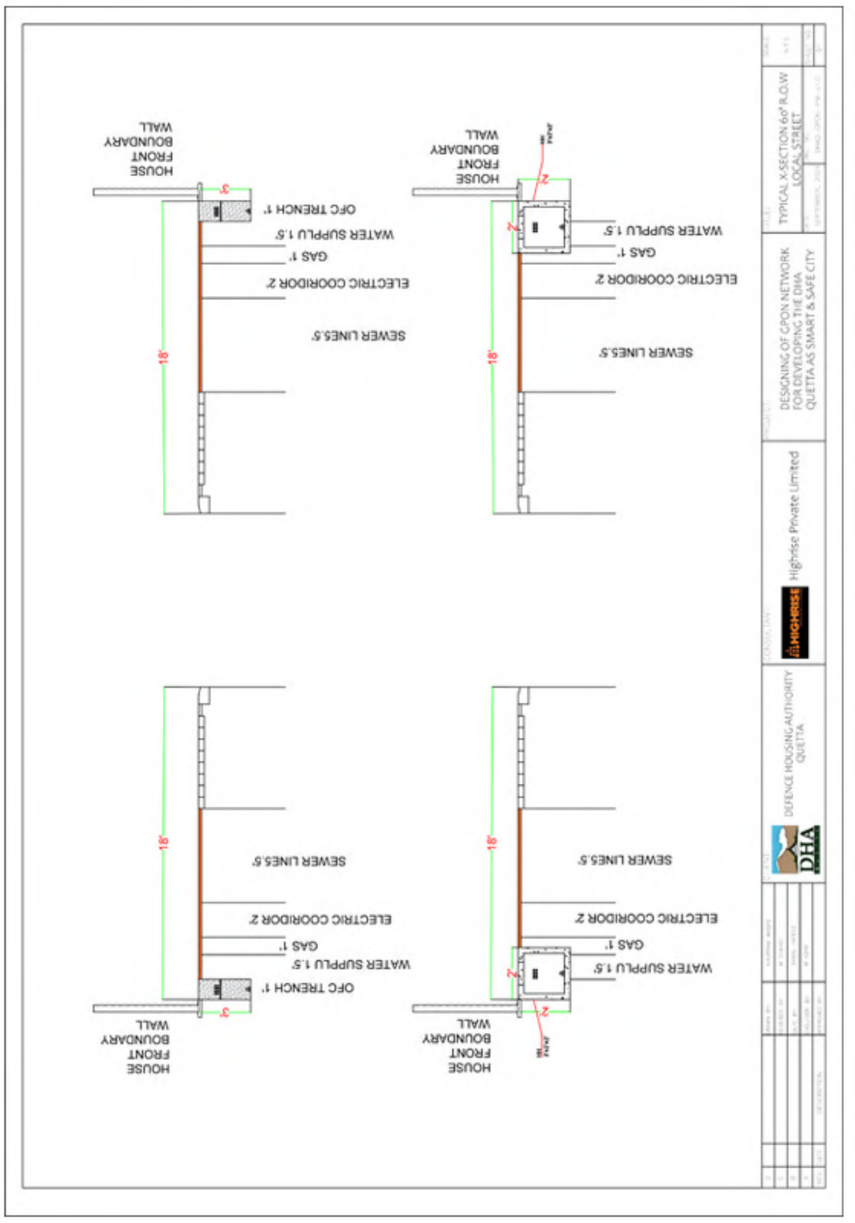
TITLE: Single Line Diagram (SLD) Plan B

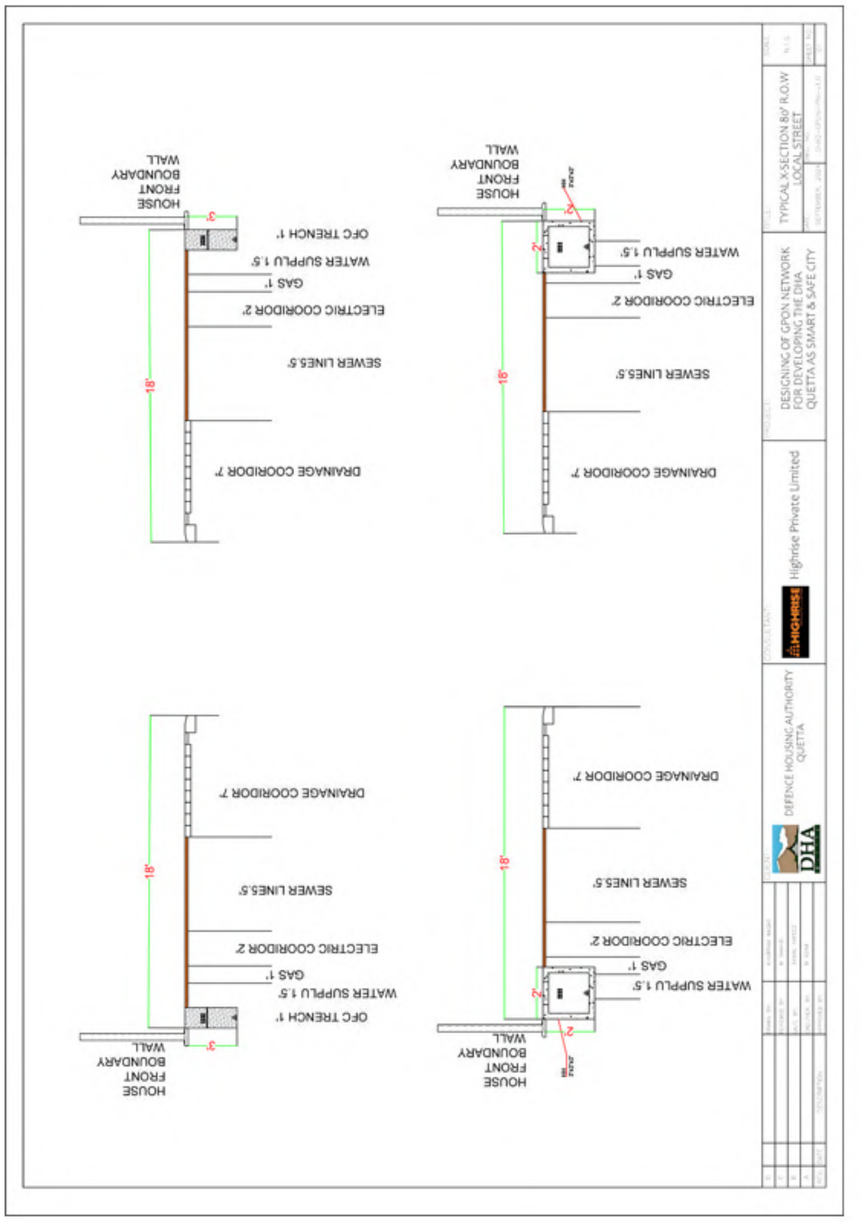
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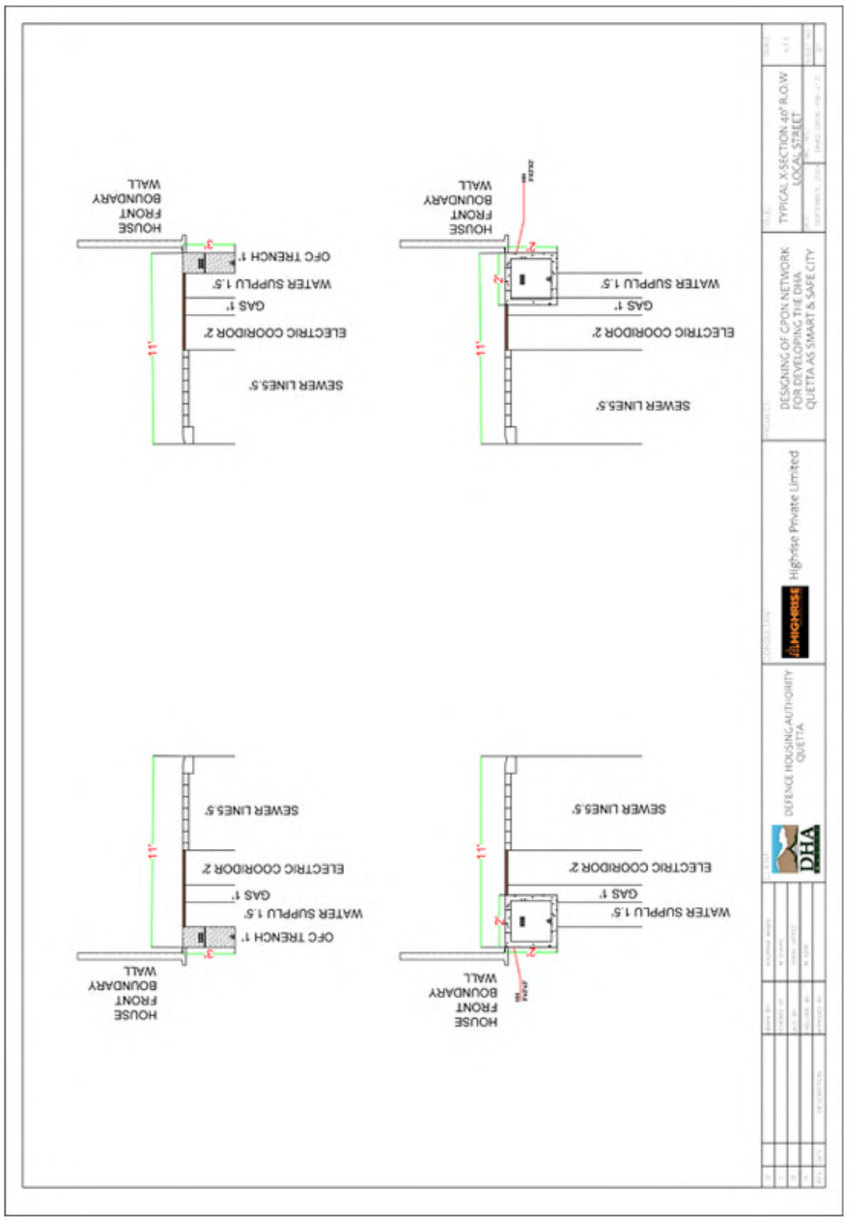
DATE: October 2025

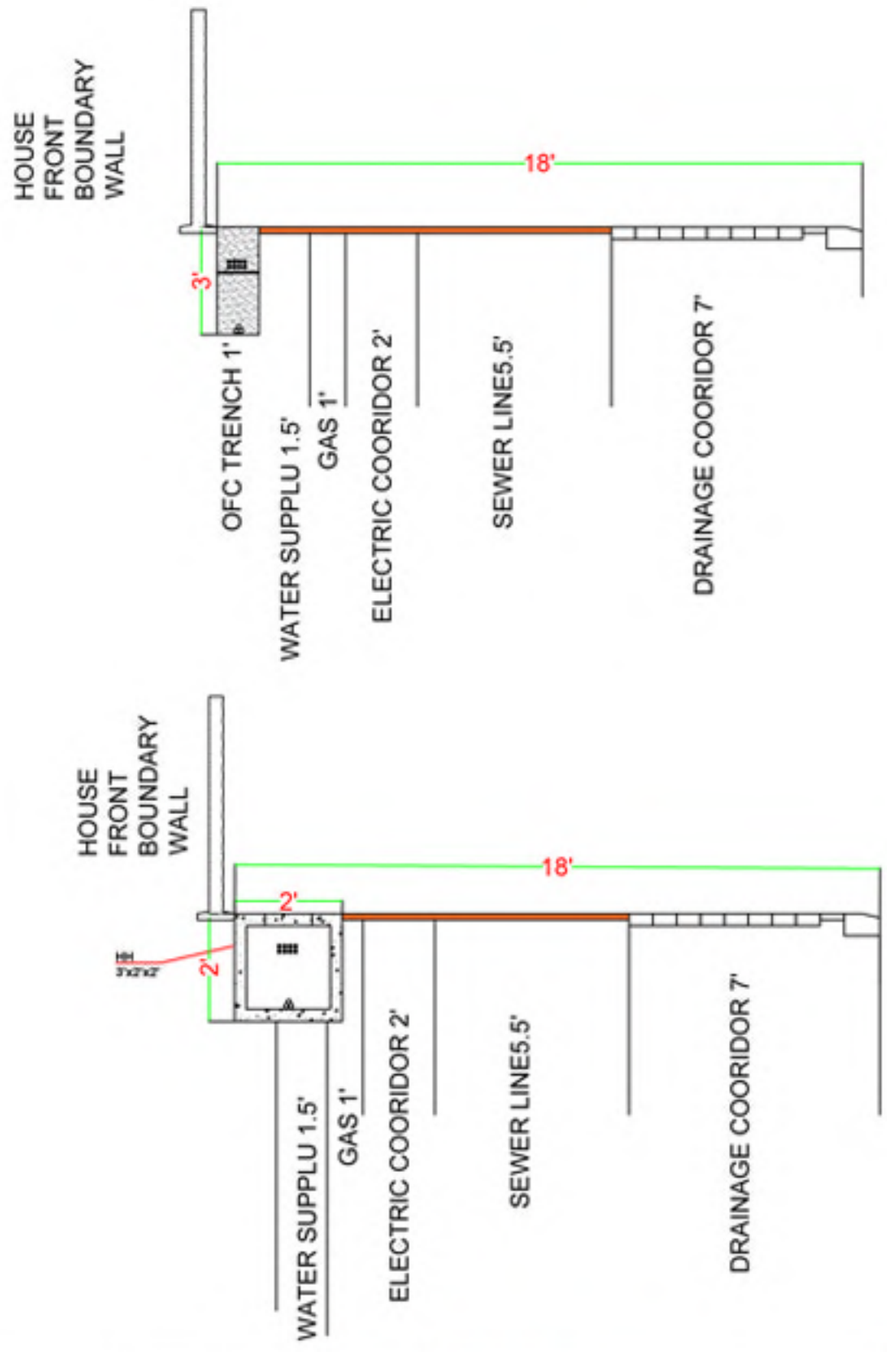
DWG. NO.: DHAQ–GPON–PNI–v1.0

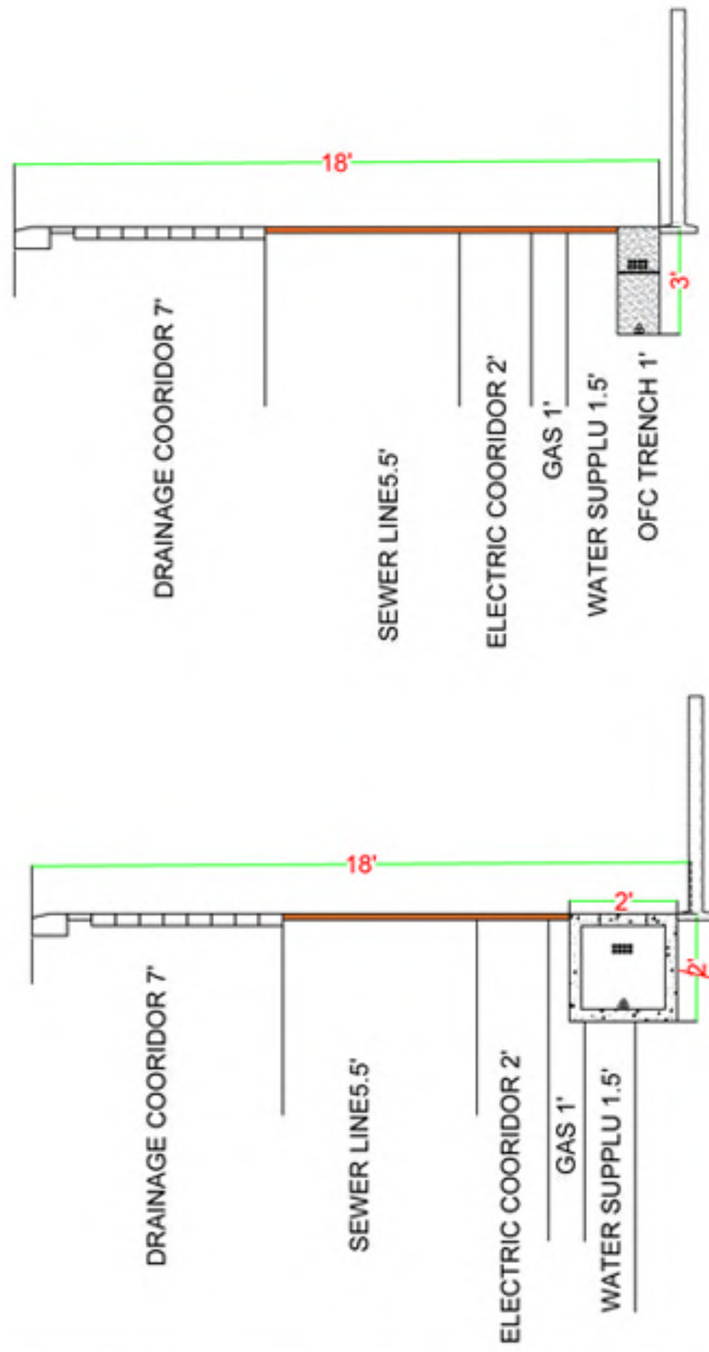
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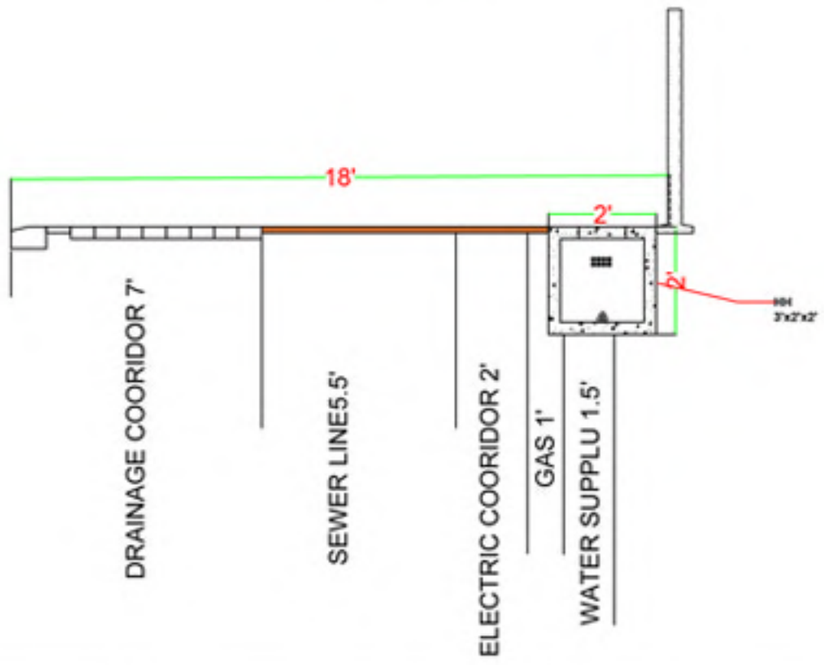

HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
18'
3'
2'
2'
TYPICAL X-SECTION 60' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA


HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
DRAINAGE COORIDOR 7'
18'
3'
2'
2'
TYPICAL X-SECTION 80' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA


HOUSE FRONT BOUNDARY WALL
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WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
11'
3'
2'
2'
TYPICAL X-SECTION 40' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA







REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

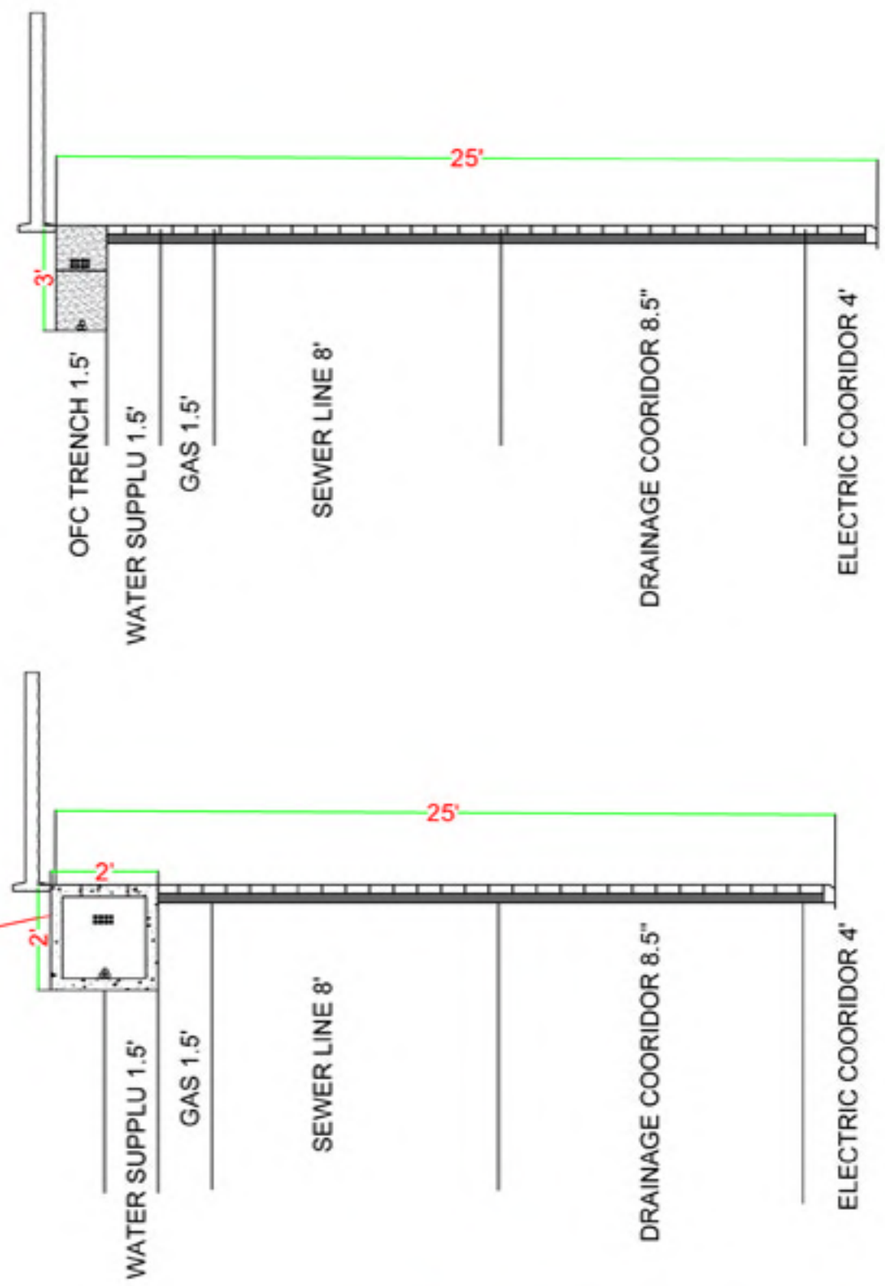
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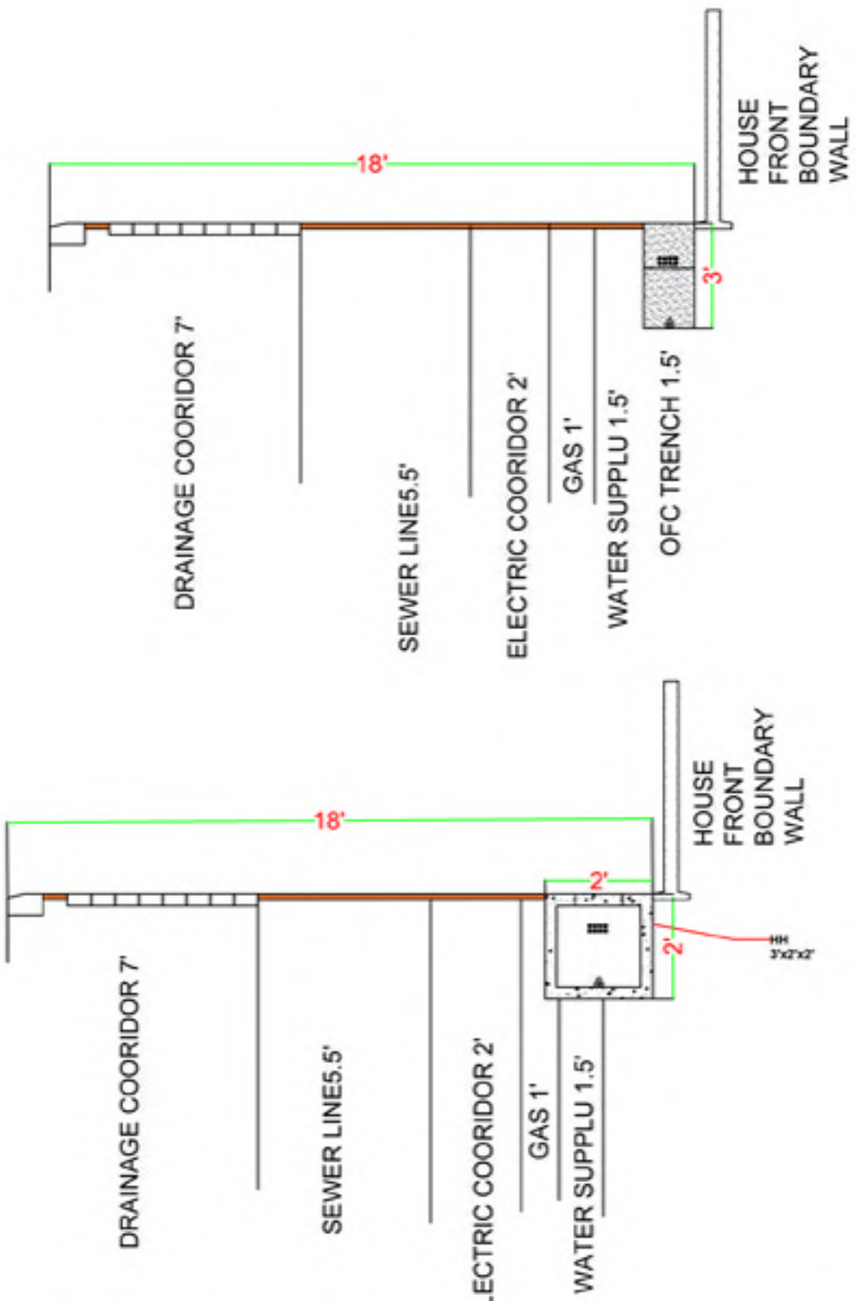
SCALE: N.T.S

DATE: SEPTEMBER, 2024

DWG. NO.: DHAQ-GPON-PN-v1.0

SHEET NO.: 01





REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

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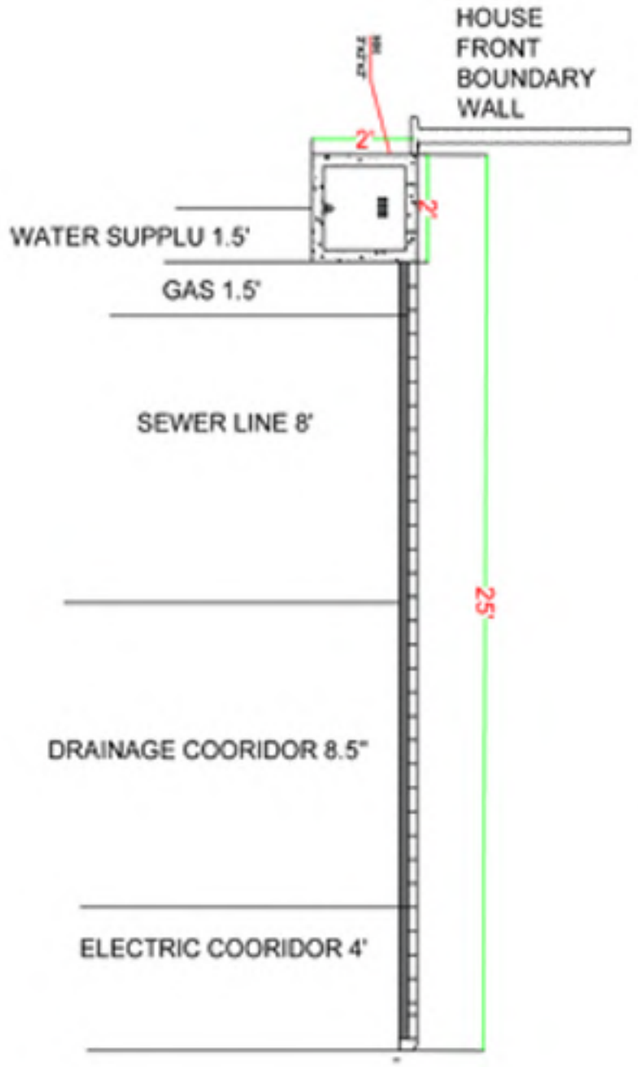
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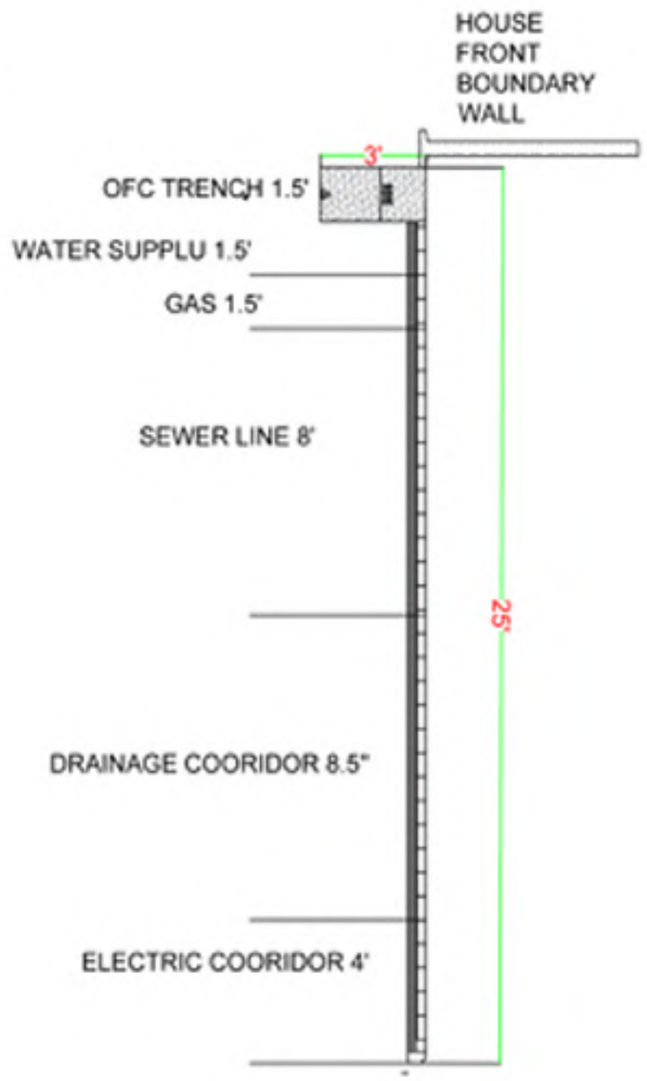
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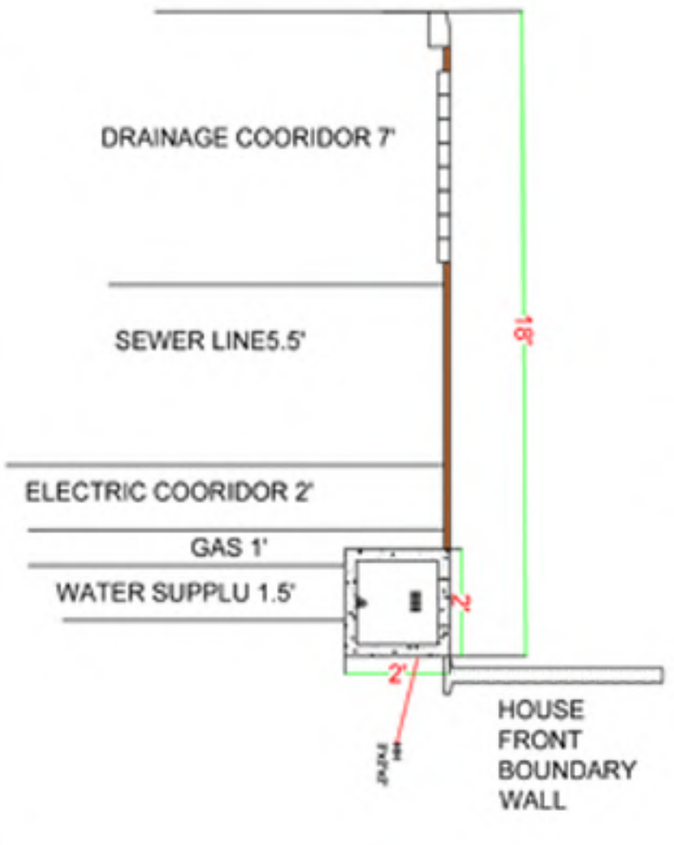
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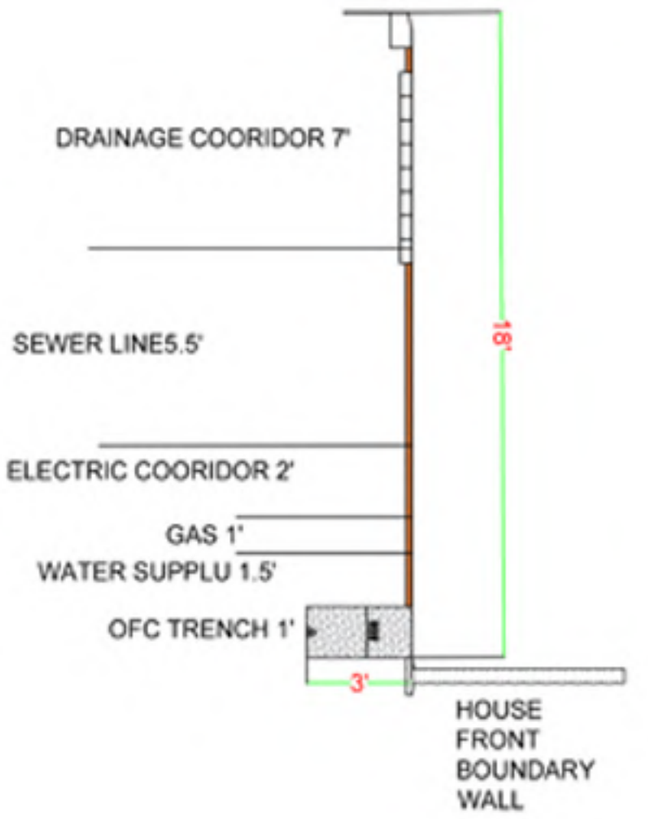
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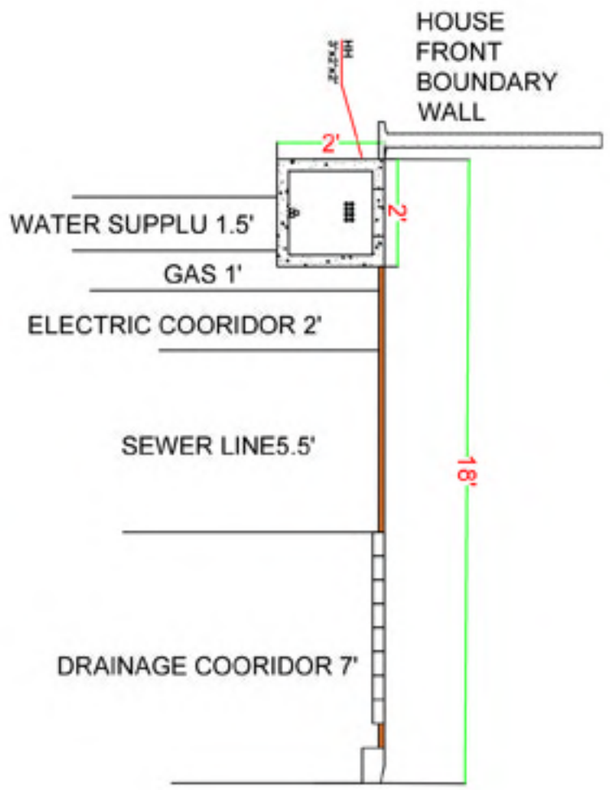
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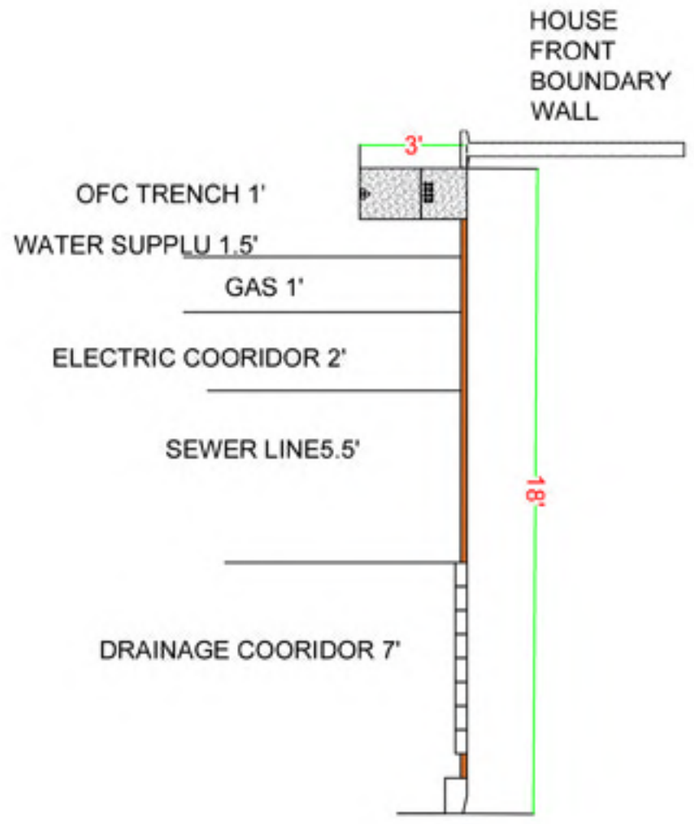


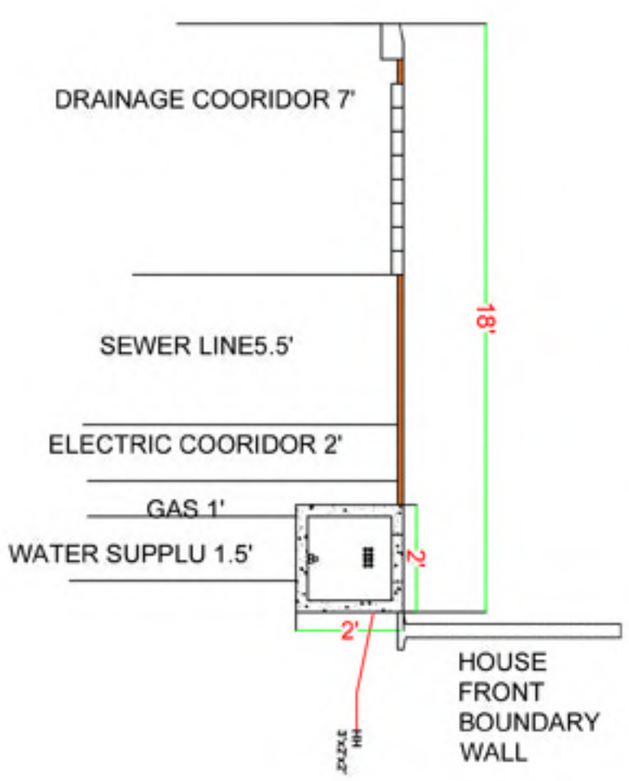


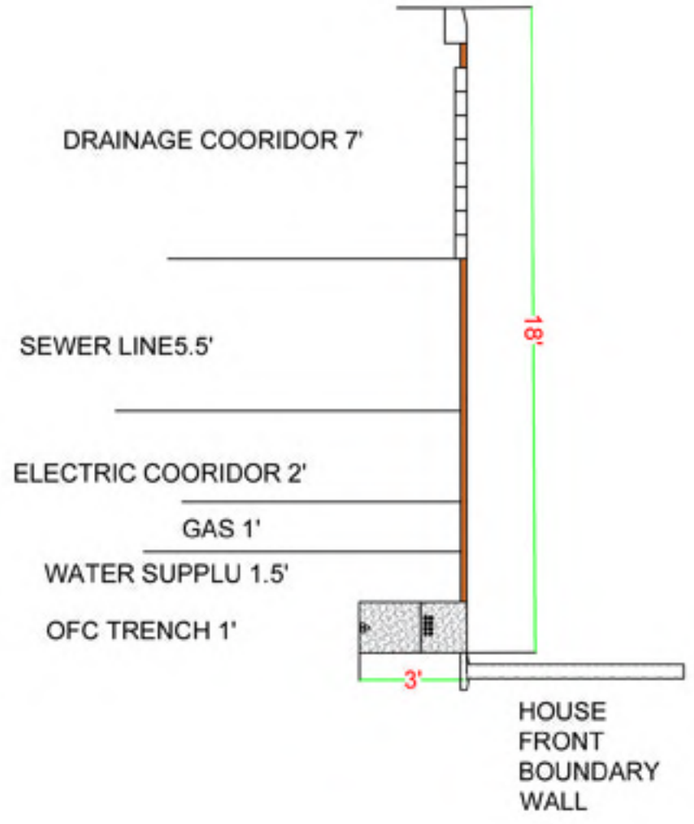












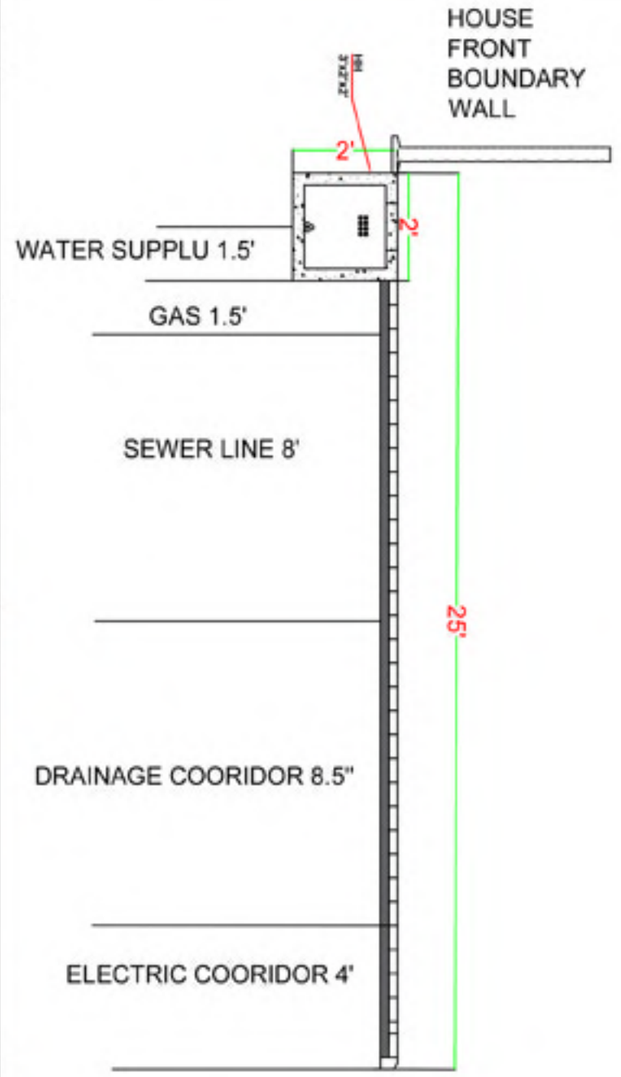
DEFENCE HOUSING AUTHORITY QUETTA

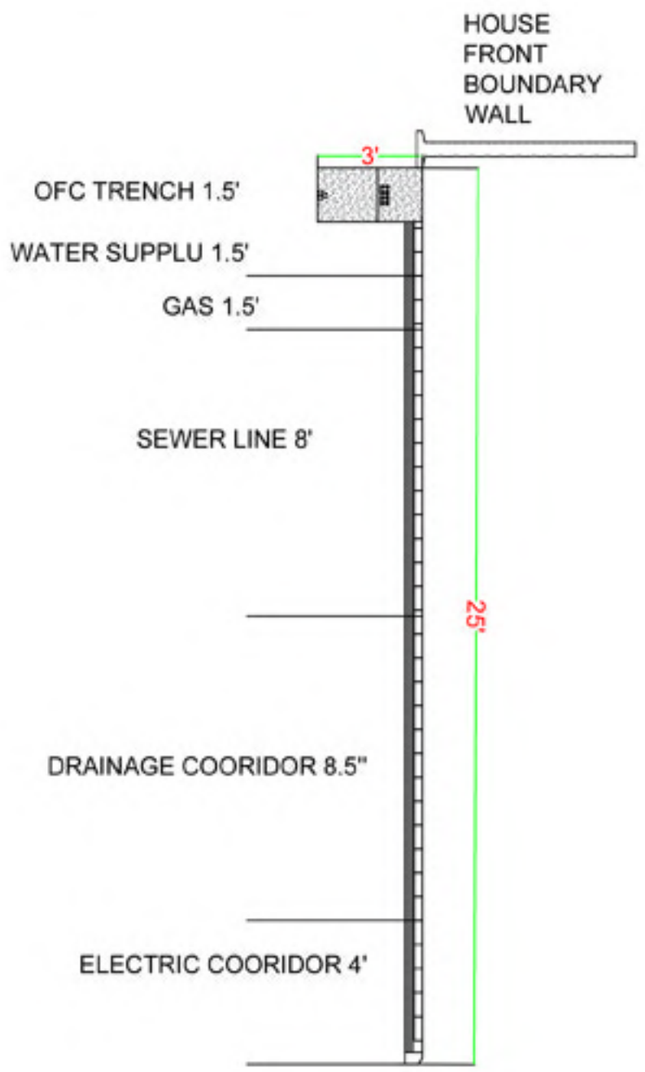
Highrise Private Limited

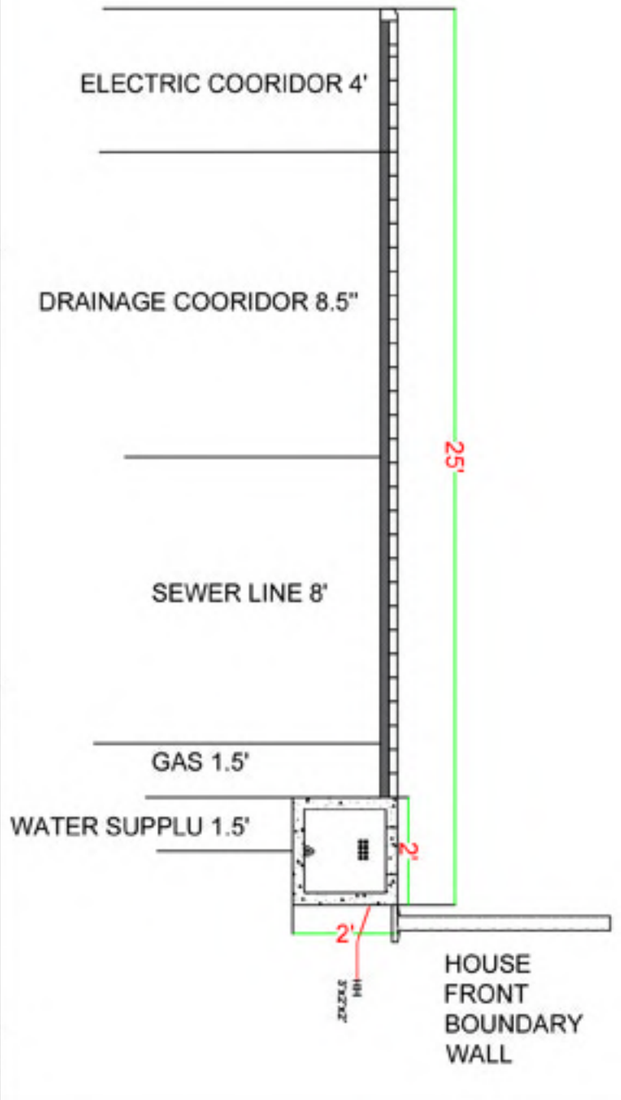
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

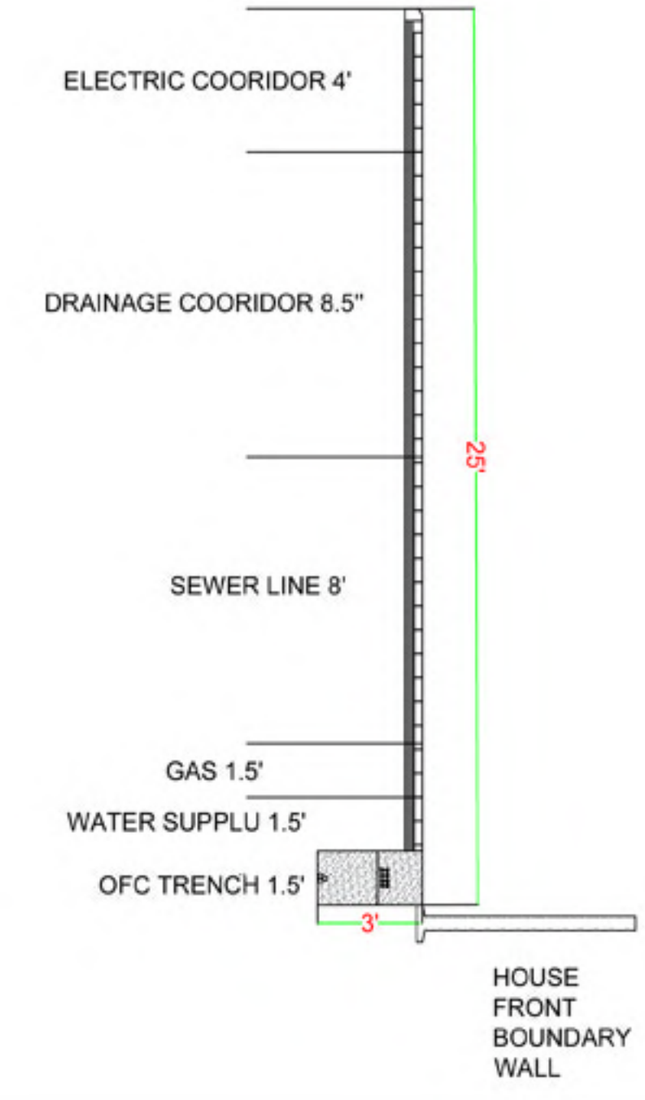
TYPICAL X-SECTION 295' R.O.W LOCAL STREET

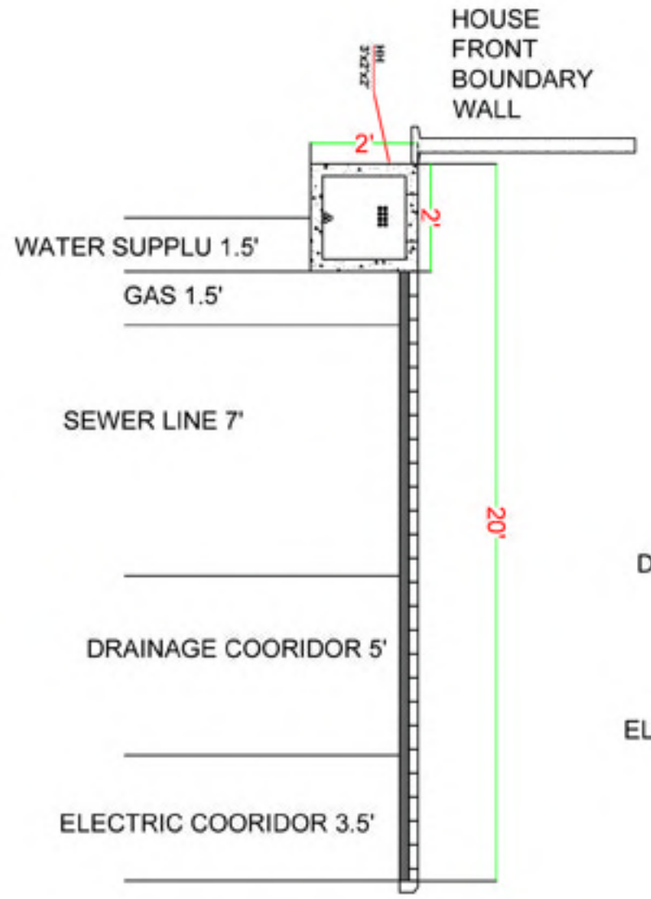
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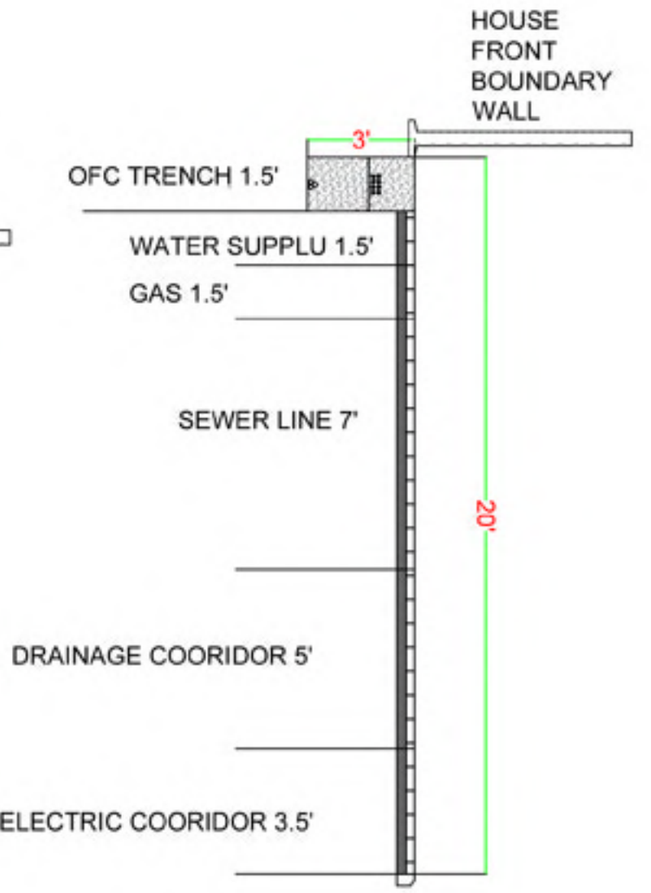


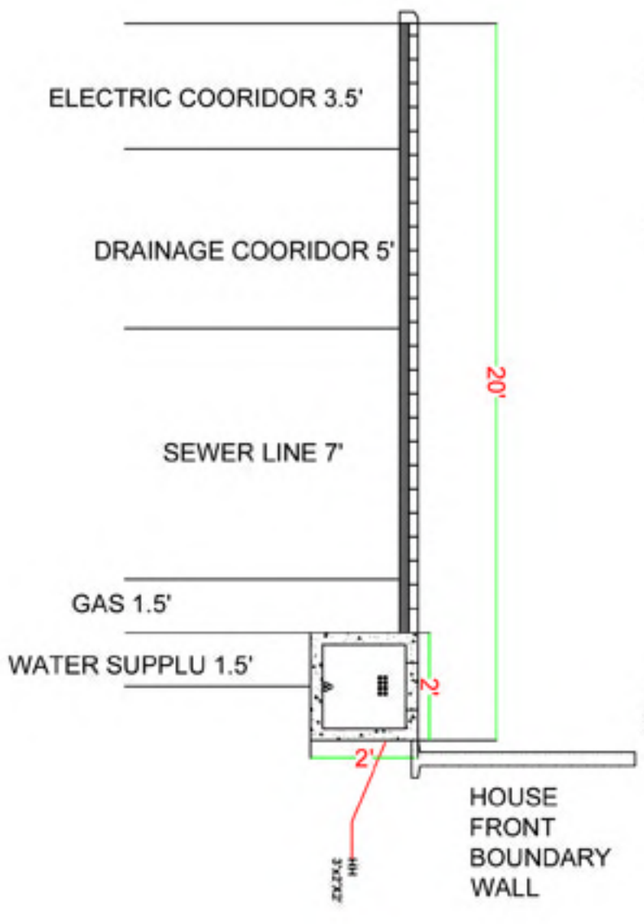


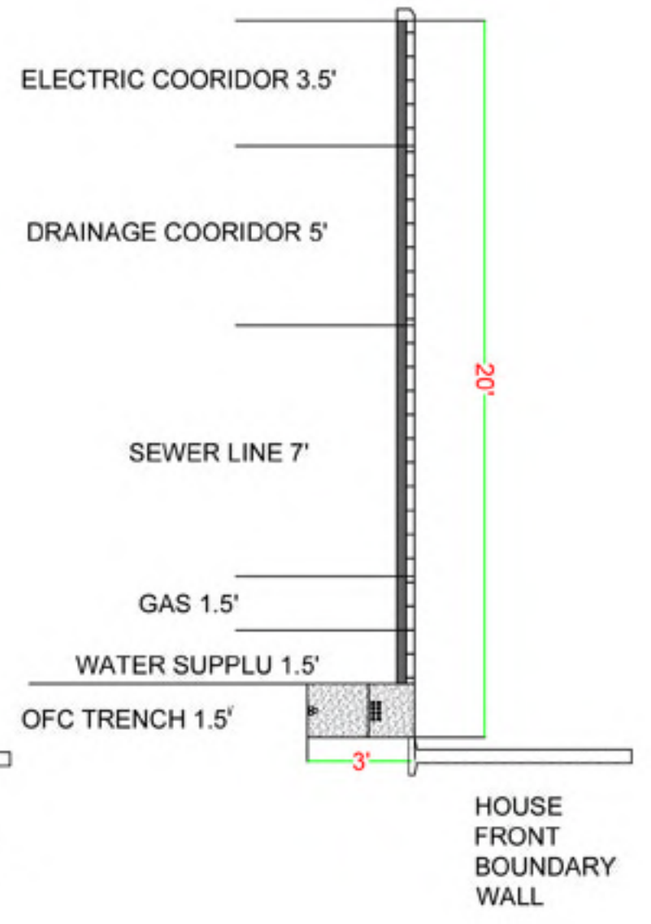












DEFENCE HOUSING AUTHORITY
QUETTA

Highrise Private Limited

DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

TYPICAL X-SECTION 350' R.O.W LOCAL STREET

SEPTEMBER, 2024

N.T.S

OPTICAL FIBER NETWORK PLAN

FOR

DHA QUETTA SMART & SAFE CITY

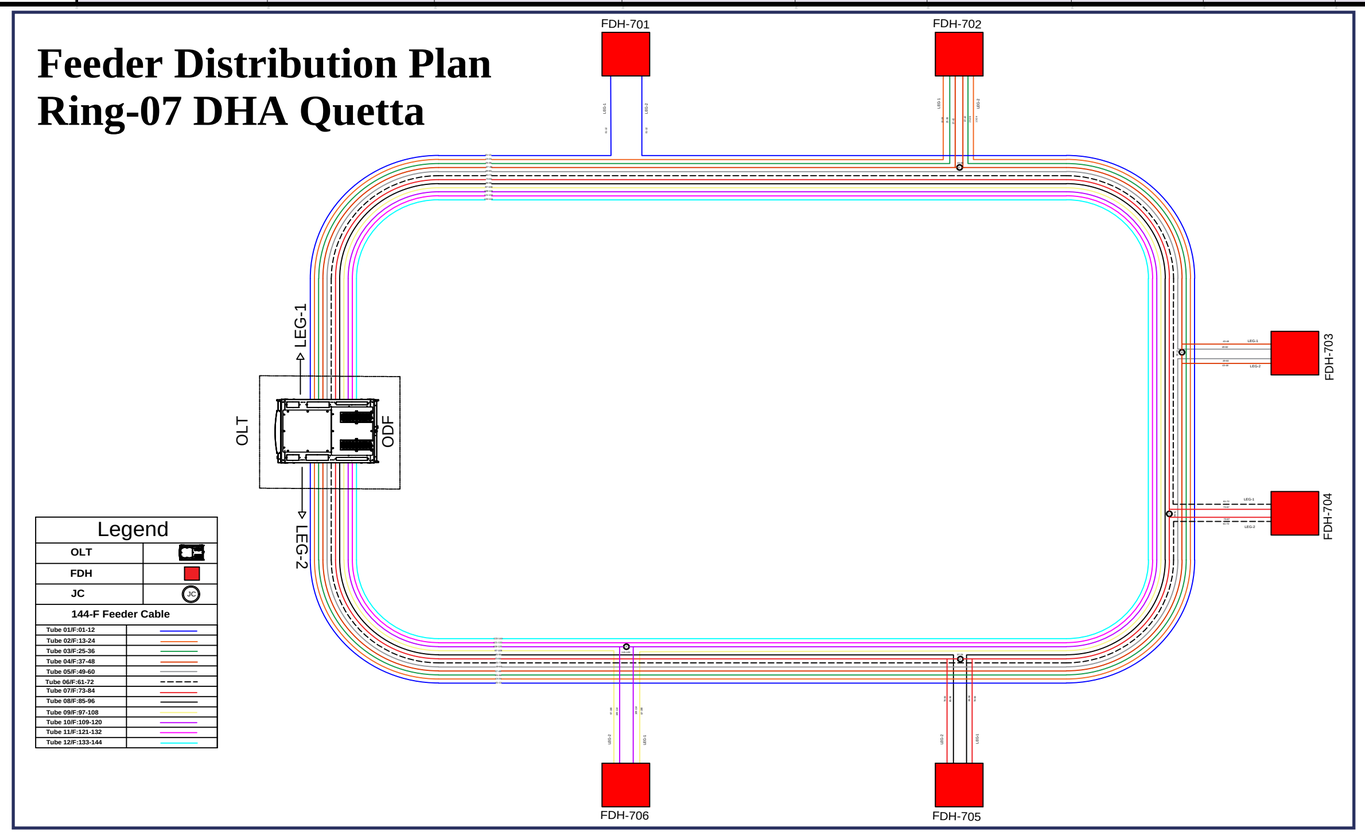
RING-07 SECTOR A3

BOQ Ring-07,Sector A3 DHA Quetta

Connection Summary										ODN Ports			Feeder BOQ										DISTRIBUTION BOQ																			
Exchange Ring No/ Route Area	OLT Location	FDH List	FDH 144	Plots	Residential		Commercial		Total Users	Design Residential ODN Ports	Design Commercial ODN Ports	Total Design ODN Ports	Feeder Fiber Length(Meter)			JOINT ENCLOUSURE	Duct Length(HDPE 57/63mm)			Feeder Civil Work (Trench)/Mtr)			HandHole		Distribution Cable (MTR)			Duct HDPE Pipe 57mm/63mm (Meter)		Civil Work (Trench)/Mtr)		RNAP+CNAP			Total NAP 8P	Total FAT 8P	No Of ISP	FDH Spiltters		Feeder Core	Used Cores
					Total Residential Plots	User	Total Commercial Plots	User					144F	48F	24F	144F	2 Way Duct (Feeder)	3 Way Duct (Feeder+Dist)	Feeder Common Route Duct (3 Way)	Trench 2 Ways	Trench (3 Way) Feeder+Dist	Feeder Common Trench 3 Way	FDH-Base 3x4x3	HandHole 3x2x2	48F	24F	12F	1 Way 57mm	2 Ways 57mm	Trench (3ft) 1 Way	Trench (3ft) (2 Way)	*JOINT BOX*						Residential Splitter Level 2	Commercial Splitter Level 2		
																															48F	24F	12F				2x4	2x4		
Ring-07/Sector A3	DHA-Quetta	FDH701	1	149	149	149	0	0	149	192	0	192	7163	0	600	8	1856	7695	1929	928	2565	643	6	164	0	844	711	688	0	688	0	0	24	0	24	0	1	6	0	12	6
		FDH702	1	234	174	174	60	60	234	192	512	704													0	2229	1194	2575	294	2575	147	0	24	0	24	64	1	6	16	30	22
		FDH703	1	196	196	196	0	0	196	256	0	256													0	776	1284	1824	112	1824	56	0	32	0	32	0	1	8	0	12	8
		FDH704	1	206	206	206	0	0	206	256	0	256													0	486	2000	2019	0	2019	0	0	32	0	32	0	1	8	0	12	8
		FDH705	1	255	255	255	0	0	255	256	0	256													0	1917	75	1794	122	1794	61	0	32	0	32	0	1	8	0	12	8
		FDH706	1	214	200	200	14	14	214	256	128	384													0	1219	1132	1721	0	1721	0	0	32	0	32	16	1	8	4	18	12
			6	1254	1180	1180	74	74	1254	1408	640	2048	7163	0	600	8	9551			928	2565		6	164	0	7471	6396	10621	528	10621	264	0	176	0	176	80	1	44	20	96	64
TOTAL SUMMARY			6	1254	1180	1180	74	74	1254	1408	640	2048	7163	0	600	8	9551			928	2565	643	6	164	0	7471	6396	10621	528	10621	264	0	176	0	176	80	1	44	20	96	64
																				4136		170																			

Loss Budget Ring 07 DHA Quetta

		Feeder Distance(KM)		Attenuation Loss / KM	A side Per Kilometer Attenuation Loss	B side Per Kilometer Attenuation Loss	Splice Loss	Connector Loss	Splitter Loss @ FDH	Total Loss at FDH Side A	Total Loss at FDH Side B	2 Connector + 2splice+Drop Cable Loss	Loss at Customer From A Side	Loss at Customer From B Side
FDH_No	SFP Class B+ Tx Power	A side	B side				0.05*6	4*0.5	Splitter 2:32					
FDH 701	2	3.877	3.251	0.35	1.36	1.14	0.3	2	15.05	18.7	18.5	1	**-17.8**	-17.6
FDH 702	2	4.527	2.607	0.35	1.58	0.91	0.3	2	15.05	18.9	18.3	1	**-18.0**	-17.4
FDH 703	2	4.543	2.585	0.35	1.59	0.90	0.3	2	15.05	18.9	18.3	1	**-18.0**	-17.4
FDH 704	2	4.575	2.553	0.35	1.60	0.89	0.3	2	15.05	19.0	18.2	1	**-18.1**	-17.3
FDH 705	2	5.622	1.506	0.35	1.97	0.53	0.3	2	15.05	19.3	17.9	1	**-18.4**	-17.0
FDH 706	2	6.054	1.074	0.35	2.12	0.38	0.3	2	15.05	19.5	17.7	1	**-18.6**	-16.8



DHA-QUETTA
Feeder Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2
  - 1 Ways, 1', HomePass
  - 1 Ways, 3', Distribution
  - 2 Ways, 3', Distribution
  - 2 Ways, 3', Feeder
  - 3 Ways, 3', FDR+DIST
  - Note: 1 CORE FIBER FOR FEEDER & 01 WIRE PAIR FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

Ring-01
Ring-02
Ring-03
Ring-04
Ring-05
Ring-06
Ring-07

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
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- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

HAND HOLE 3x2'x2'
For Feeder/Distribution

HAND HOLE/FDH Base 3'x4'x3'



REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FEEDER DUCT PLAN RING 07

SCALE: 1:2,600

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



DHA-QUETTA CABLE Plan

Legend

- OLT
- **FDH-Cabinet** FDH HandHole with Base, 3x4x3
- **CNAP** CNAP(Commercial NAP) HandHole, 3x2x2
- **RNAP** RNAP(Residential NAP) HandHole, 3x2x2
- **FCNAP** FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- **FRNAP** FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- **FEEDER** HandHole, 3x2x2
- **DISTRIBUTION** HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST *Note: 2 MORE PIPE FOR FEEDER & 01 MORE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH*
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

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04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FEEDER CABLE PLAN RING-07

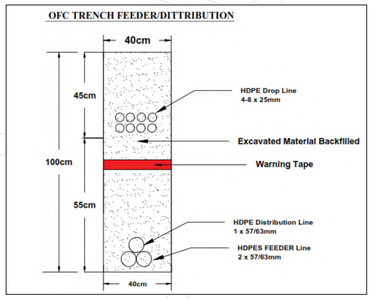
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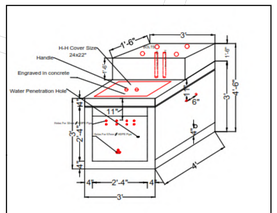
DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

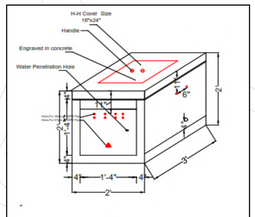
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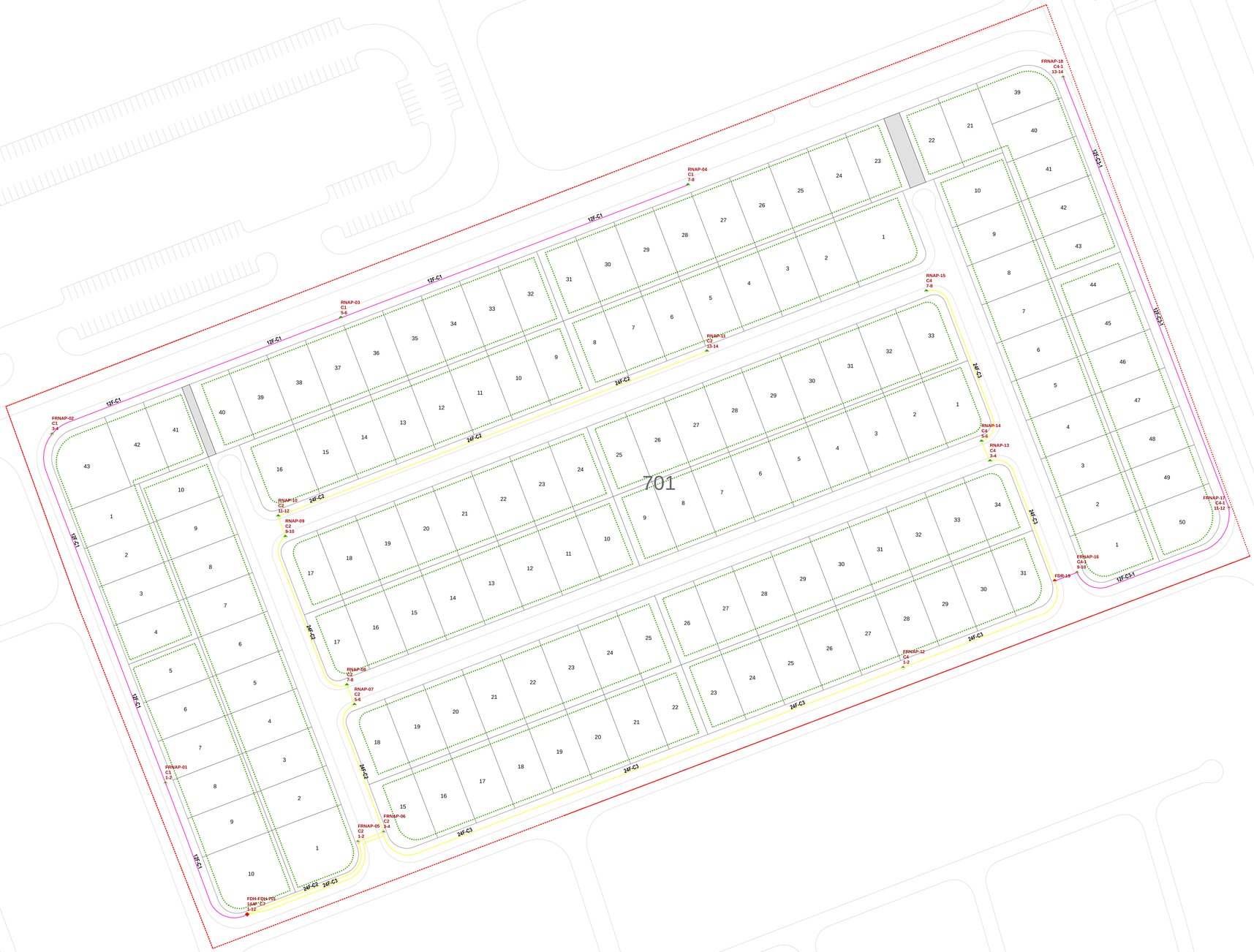


HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution


1 Ways Feeder
1 Ways, 144F
1 Ways, 24F
1 Ways, 12F
1 Ways, Duct
1 Ways, Duct Duct
1 Ways, Duct Duct
1 Ways, 12F
1 Ways, 24F
1 Ways, 144F
1 Ways, Duct



DHA-QUETTA CABLE Plan

Legend

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- DISTRIBUTION — HandHole, 1x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
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- 12F
- 24F
- 48F
- Drop Cable

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- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
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CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-701 CABLE PLAN RING-07

SCALE: 1:590

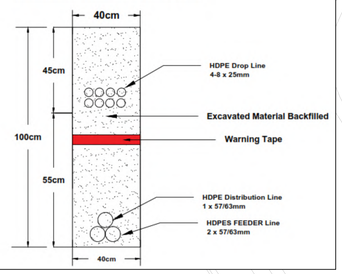
DATE: 15.01.25

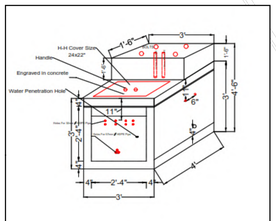
DWG NO.: DHAQ-GPON-PNI-v1.0

General Guidelines

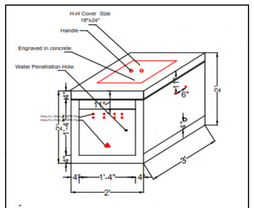
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OFC TRENCH FEEDER/DITTRIBUTION





HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution



DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH HandHole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
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- 144F Ring-03
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Ring-01
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CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-702 DUCT PLAN RING-07

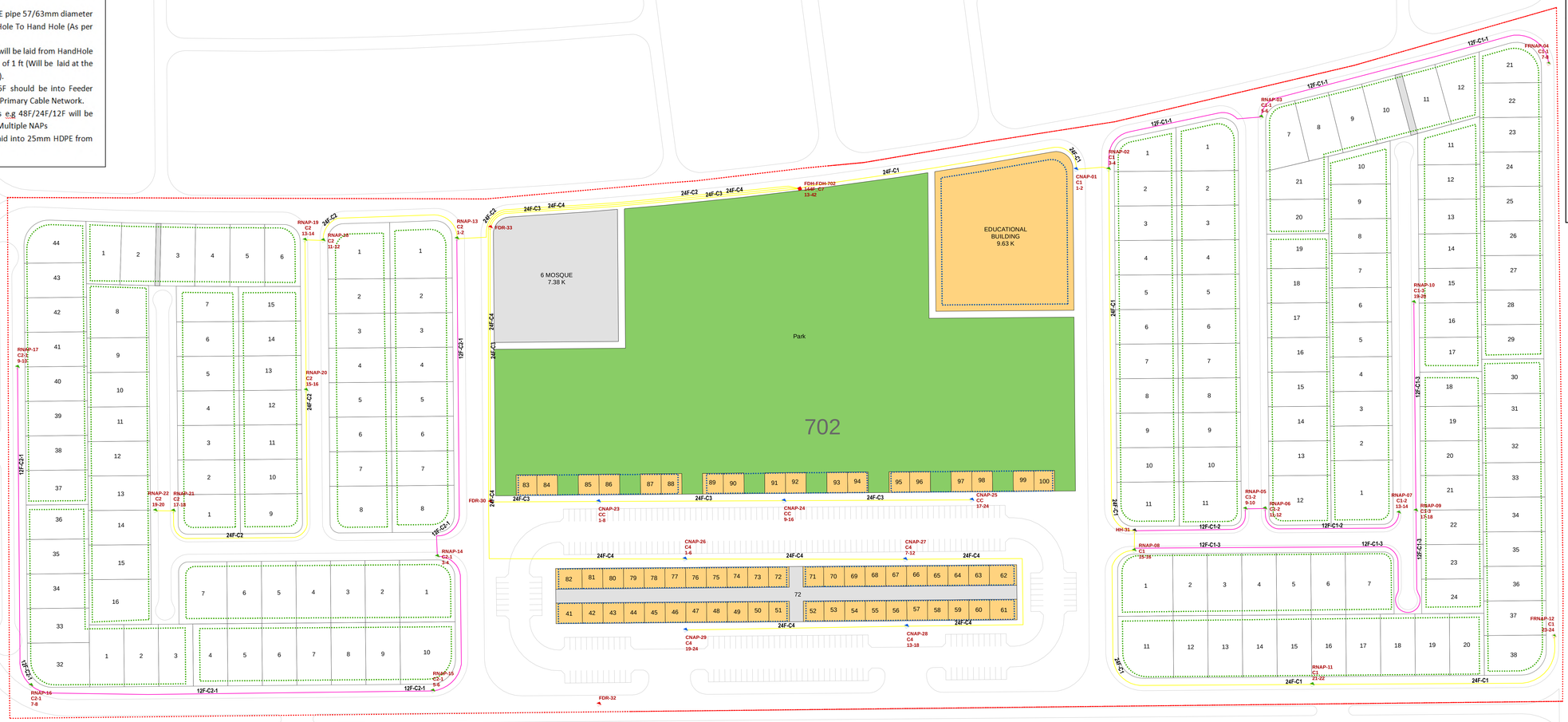
SCALE: 1:1,070

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

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- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cable**: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.



DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 3 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable: 12F, 24F, 48F, Drop Cable

Feeder OFC Cable: 144F Ring-01, 144F Ring-02, 144F Ring-03, 144F Ring-04, 144F Ring-05, 144F Ring-06, 144F Ring-07

Ring-01, Ring-02, Ring-03, Ring-04, Ring-05, Ring-06, Ring-07

REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-702 CABLE PLAN RING-07

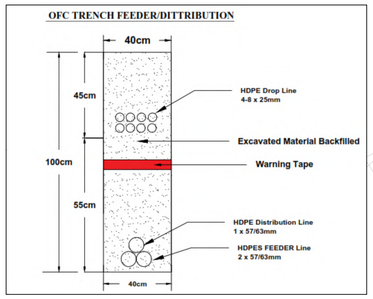
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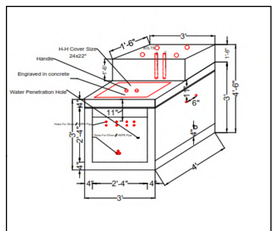
DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

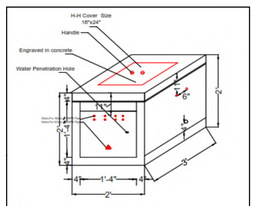
General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
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- **Drop Cab**le: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

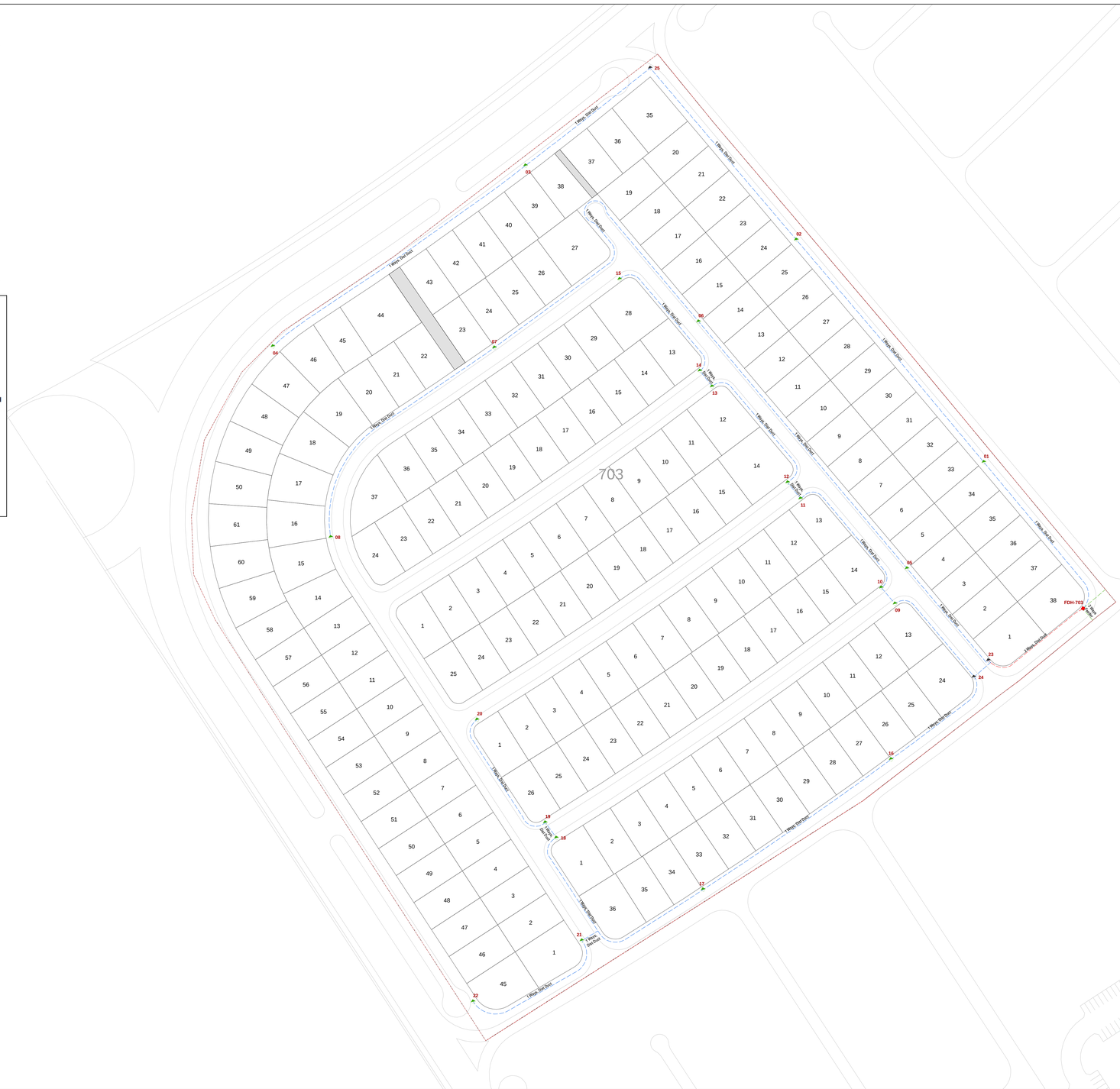




HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution



DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH HandHole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2

- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — *Note:2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH*
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

Ring-01
Ring-02
Ring-03
Ring-04
Ring-05
Ring-06
Ring-07

REV	DATE	DESCRIPTION	APPROVED		
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-703 DUCT PLAN RING-07

SCALE: 1:790

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP(Residential NAP) Handhole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- FEEDER — Handhole, 3x2x2
- DISTRIBUTION — Handhole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST

Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH

- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
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02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-703 CABLE PLAN RING-07

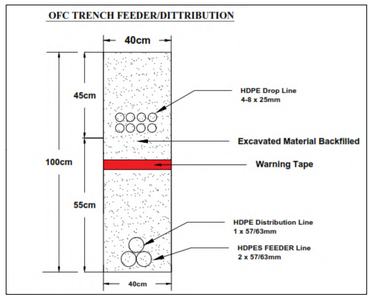
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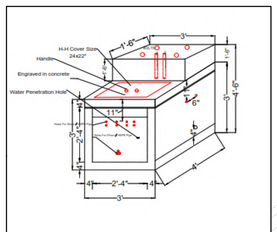
DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

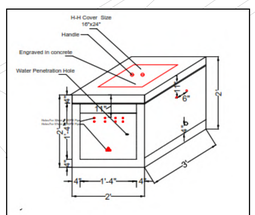
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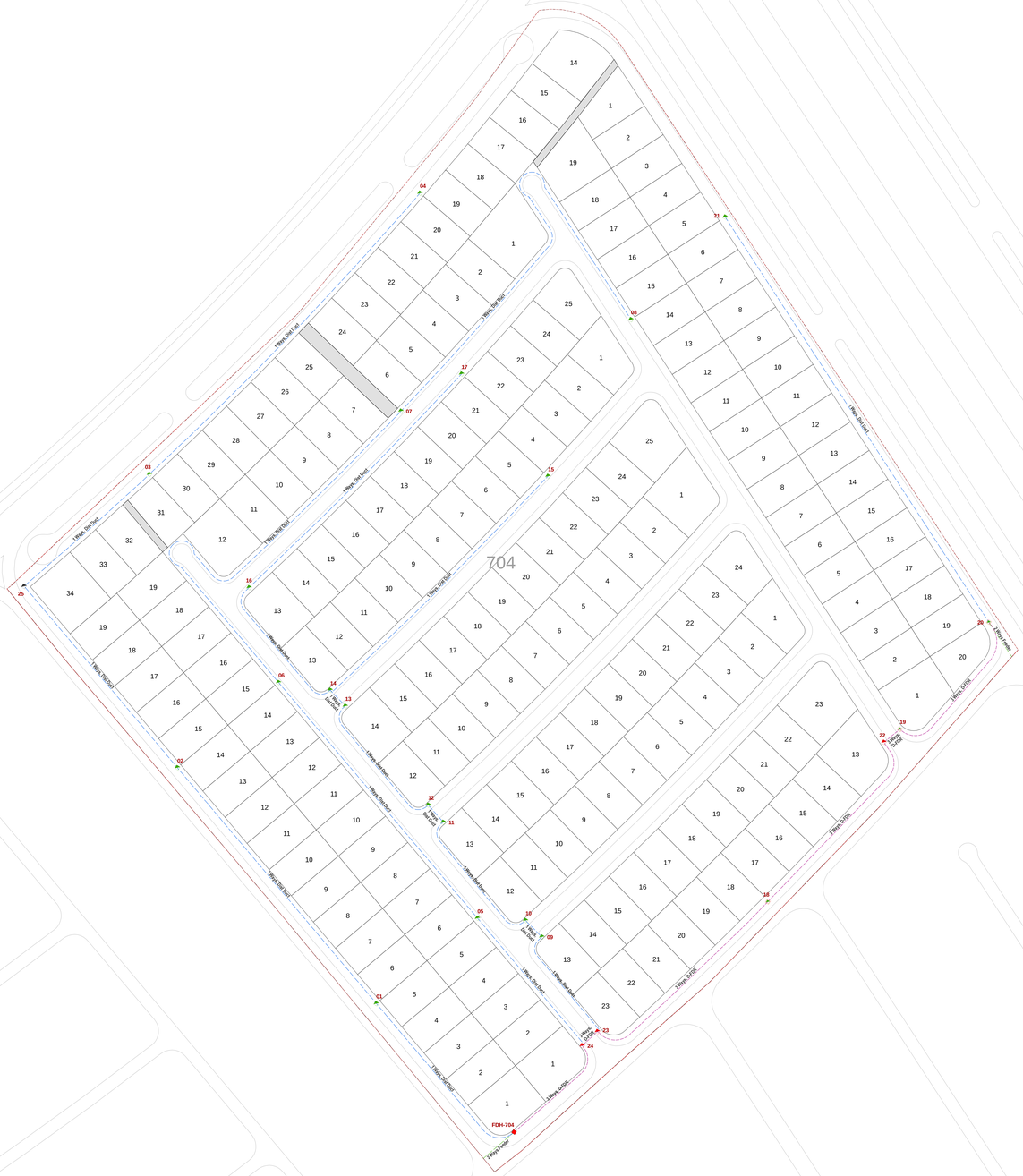


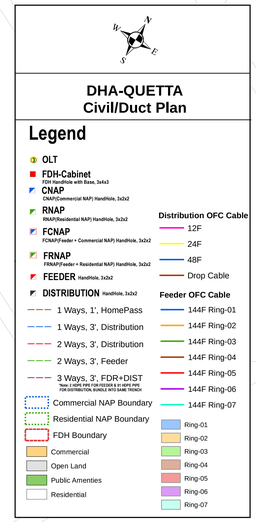


HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution





REV	DATE	DESCRIPTION	APPROVED		
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
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CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

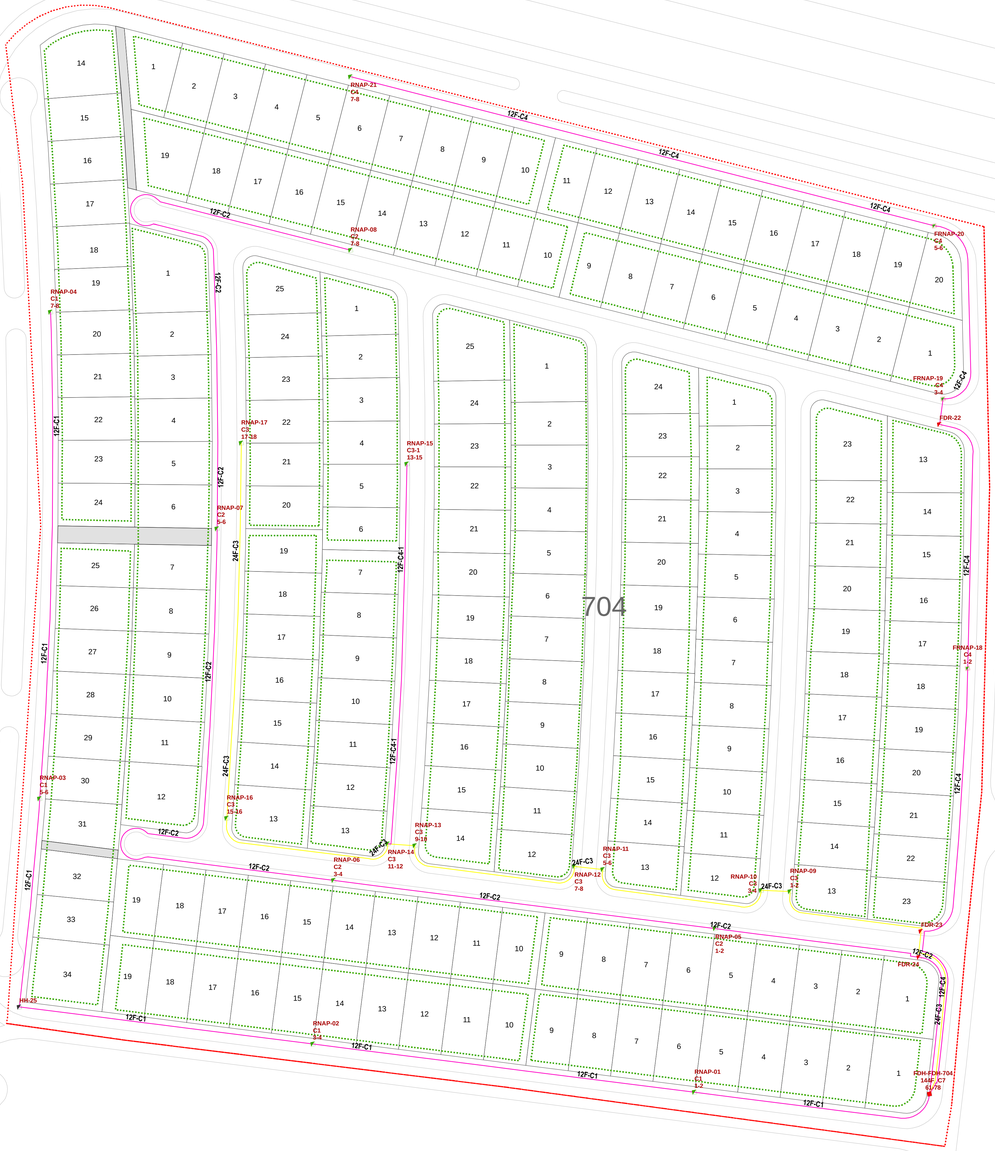
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-704 DUCT PLAN RING-07

SCALE: 1:870

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) Handhole, 3x2x2
- RNAP — RNAP(Residential NAP) Handhole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) Handhole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) Handhole, 3x2x2
- FEEDER — Handhole, 1x2x2
- DISTRIBUTION — Handhole, 1x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note: 1 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

General Guidelines

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REV	DATE	DESCRIPTION	APPROVED		
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
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01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-704 CABLE PLAN RING-07

SCALE: 1:780

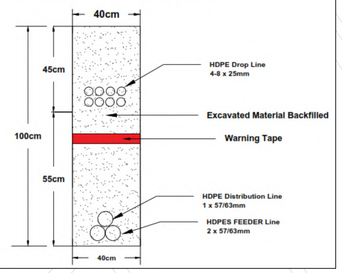
DATE: 15.01.25

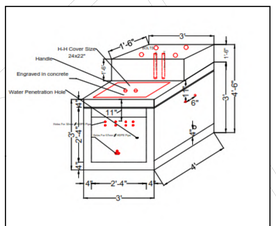
DWG NO.: DHAQ-GPON-PNI-v1.0

General Guidelines

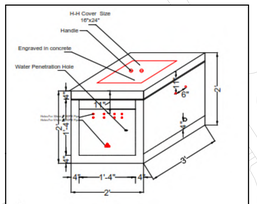
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- **Drop Cab**le: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.

OFC TRENCH FEEDER/DITTRIBUTION

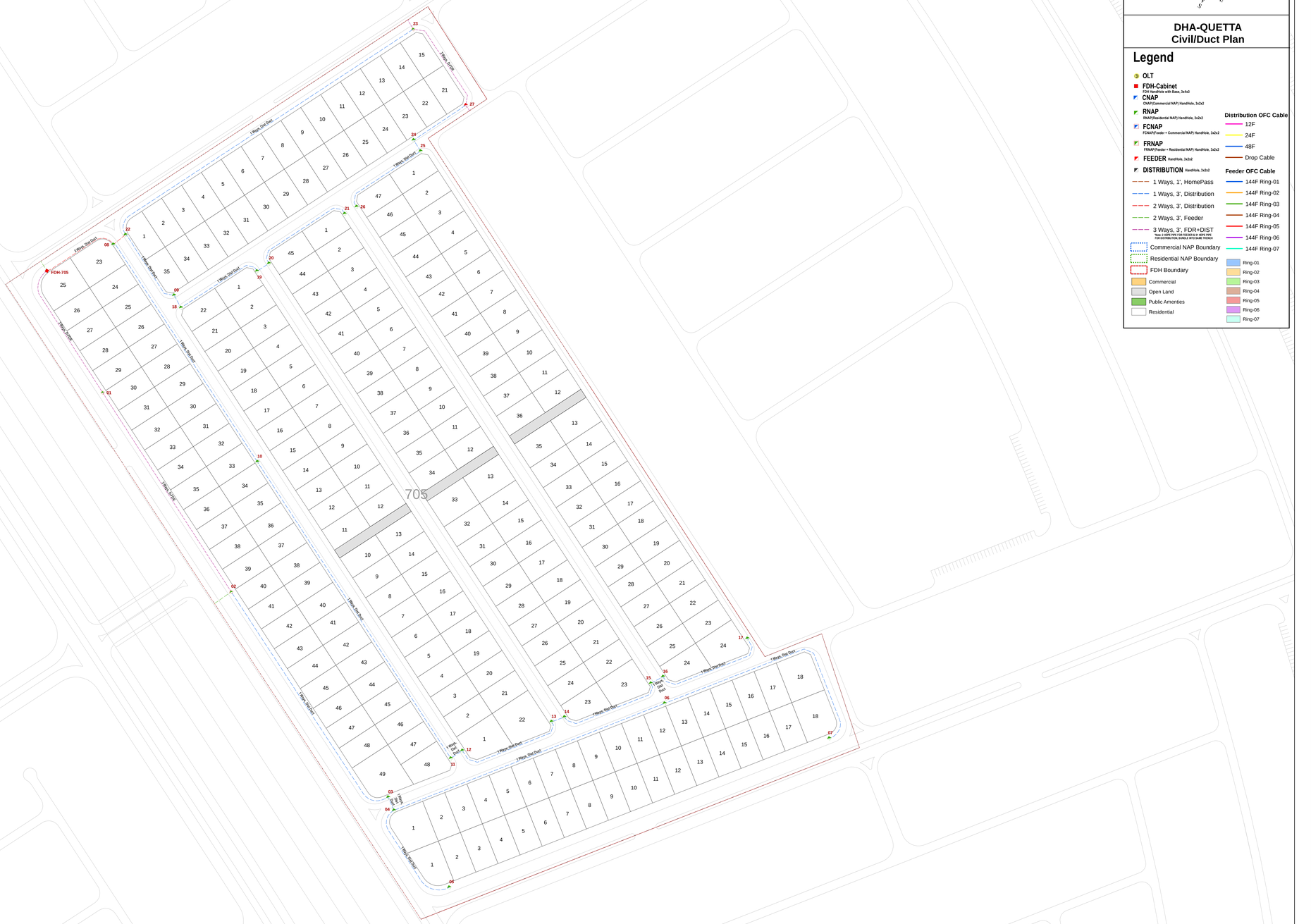




HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution



DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH HandHole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER HandHole, 3x2x2
- DISTRIBUTION HandHole, 3x2x2

- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST
  *Note: 2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH

- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
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- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

REV	DATE	DESCRIPTION	APPROVED		
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

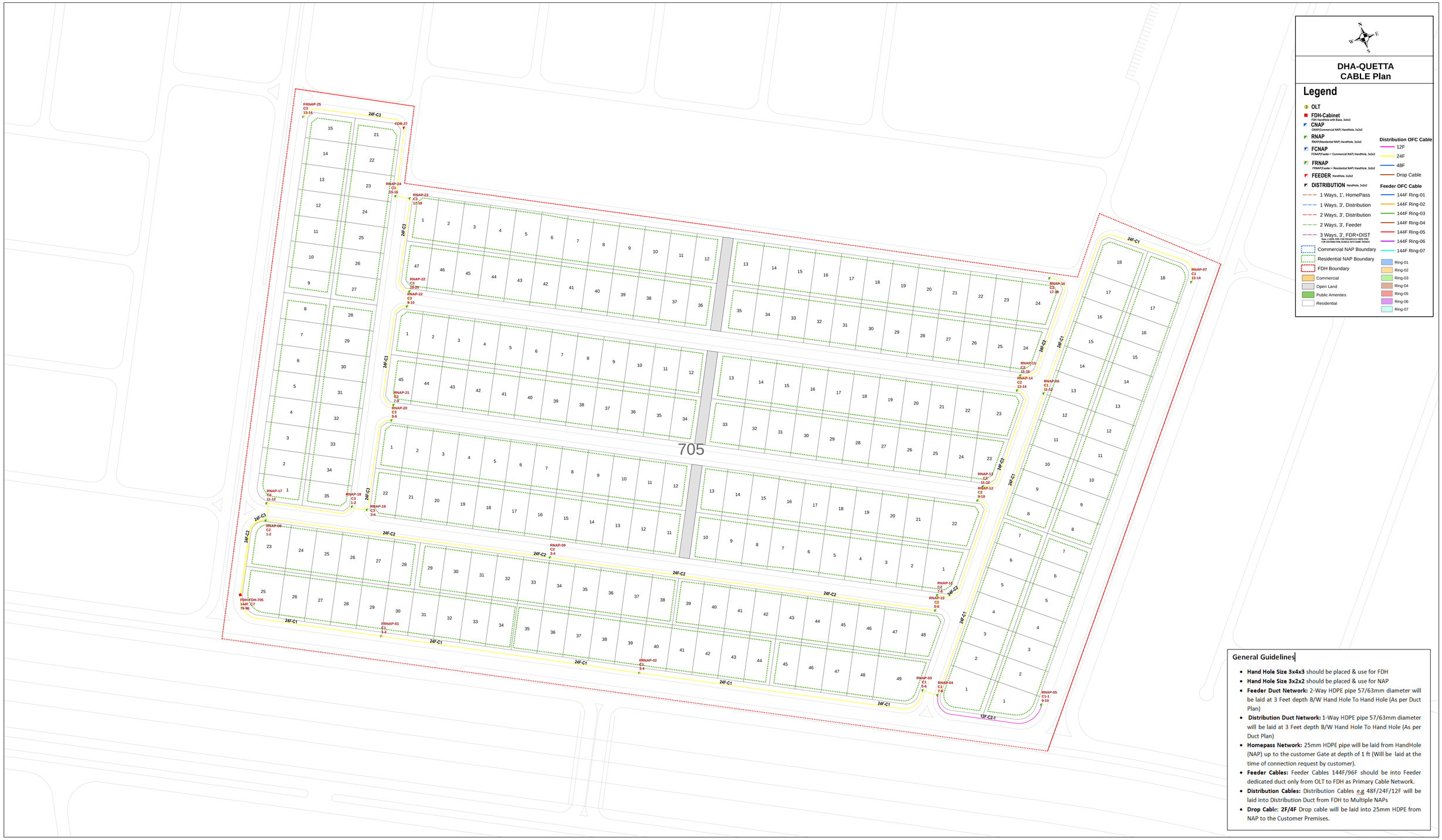
PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-705 DUCT PLAN RING-07

SCALE: 1:990

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0



DHA-QUETTA CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) Handhole, 3x2x2
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Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

Ring-01
Ring-02
Ring-03
Ring-04
Ring-05
Ring-06
Ring-07

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CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-705 CABLE PLAN RING-07

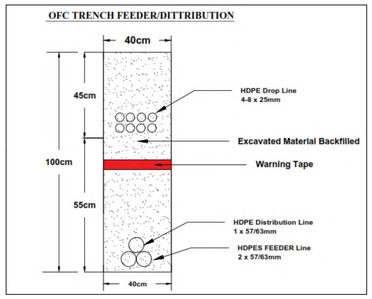
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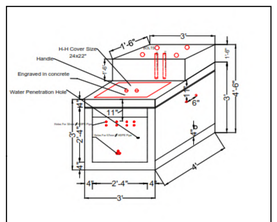
DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

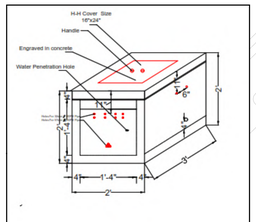
General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Distribution Duct Network:** 1-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
- **Feeder Cables:** Feeder Cables 144F/96F should be into Feeder dedicated duct only from OLT to FDH as Primary Cable Network.
- **Distribution Cables:** Distribution Cables e.g 48F/24F/12F will be laid into Distribution Duct from FDH to Multiple NAPs
- **Drop Cab**le: **2F/4F** Drop cable will be laid into 25mm HDPE from NAP to the Customer Premises.





HAND HOLE/FDH Base 3'x4'x3'



HAND HOLE 3x2'x2'
For Feeder/Distribution



DHA-QUETTA
Civil/Duct Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER HandHole, 3x2x2
- DISTRIBUTION HandHole, 3x2x2

- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST — Note:2 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable
- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable
- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

Ring-01
Ring-02
Ring-03
Ring-04
Ring-05
Ring-06
Ring-07

REV	DATE	DESCRIPTION	APPROVED	APPROVED	
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-706 DUCT PLAN RING-07

SCALE: 1:1,130

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

OUTSIDE PLANT OSP

Core Network

Central Office

Feeder Network

Distribution Network

Customer Premises

TELEPHONE

IPTV

INTERNET

Surveillance

Smart Metering

A

B

OLT

FDH-101

144F Feeder Ring

Feeder JC

FDH-102

FDH-103

Splitter

Distribution Cable 12/24/48F

Distribution Cable 12/24/48F

FDH-106

FDH-105

144F Feeder Ring

Feeder JC

FDH-104

Cable 12F

Surveillance Cameras

Pole

Cable 12F

Surveillance Cameras

Pole

R-NAP

Joint Box

ONT

Drop Cable 2F

C-NAP

FAT-1 (2:8)

Drop Cable 2F

FAT-2 (2:8)

FAT-3 (2:8)

Legend

OLT	
FDH	
Splitter	
CNAP	
RNAP	
FAT	
ONT	
Feeder Cable	
Distribution Cable	
Drop Cable	

REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

TITLE: Single Line Diagram (SLD) Plan A

SCALE: N.T.S

DATE: October 2025

DWG. NO.: DHAQ–GPON–PNI–v1.0

SHEET NO.: 01

OUTSIDE PLANT OSP

Core Network | Central Office | Feeder Network | Distribution Network | Customer Premises

TELEPHONE
IPTV
INTERNET
Surveillance
Smart Metering

A
B

OLT

FDH-101
FDH-102
144F Feeder Ring
FDH-103
FDH-104
FDH-105
FDH-106
144F Feeder Ring

Splitter

Distribution Cable
12/24/48F
Distribution Cable
12/24/48F

ONT
Drop Cable 2F
R-NAP
Joint Box
Drop Cable 2F
Surveillance Cameras
Pole

C-NAP
FAT-1
(2:8)
Drop Cable 2F
FAT-2
(2:8)
FAT-3
(2:8)

Legend

OLT	
FDH	
Splitter	
CNAP	
RNAP	
FAT	
ONT	
Feeder Cable	
Distribution Cable	
Drop Cable	

REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

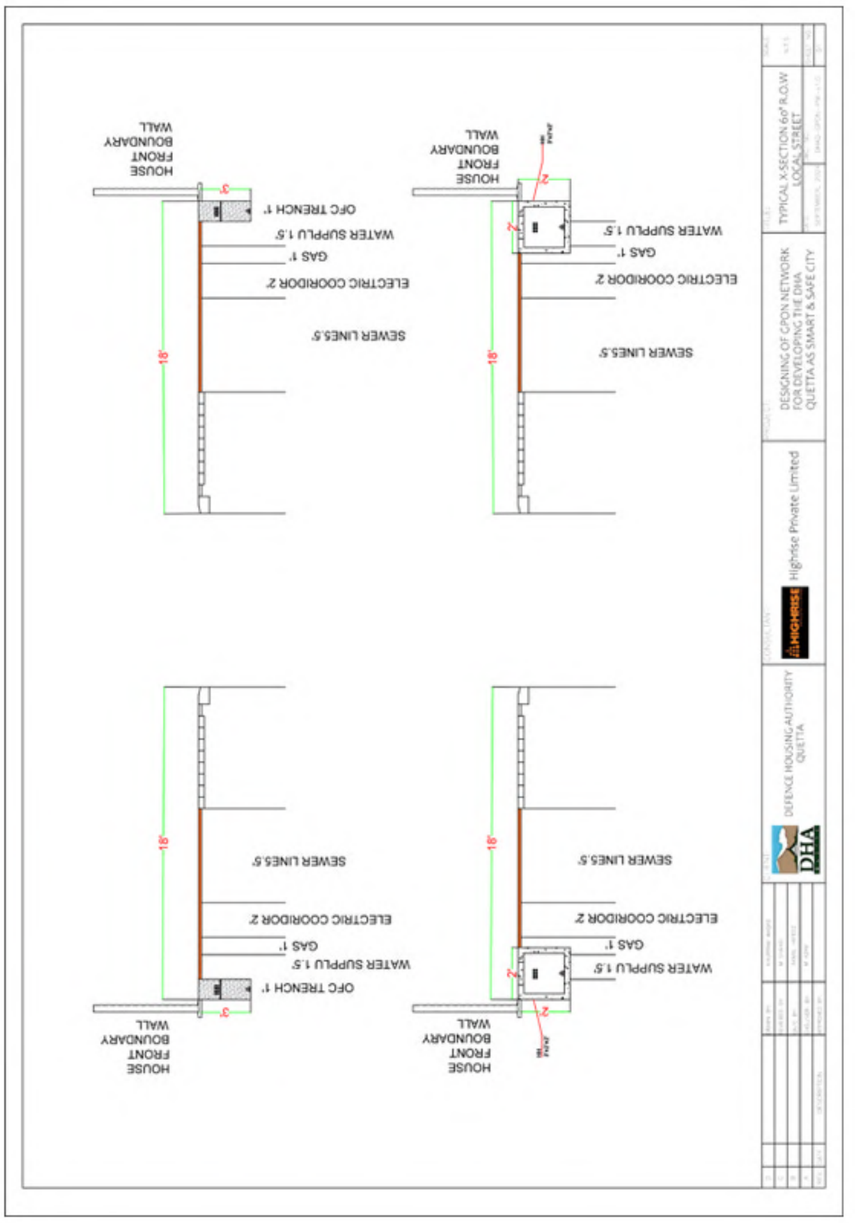
TITLE: Single Line Diagram (SLD) Plan B

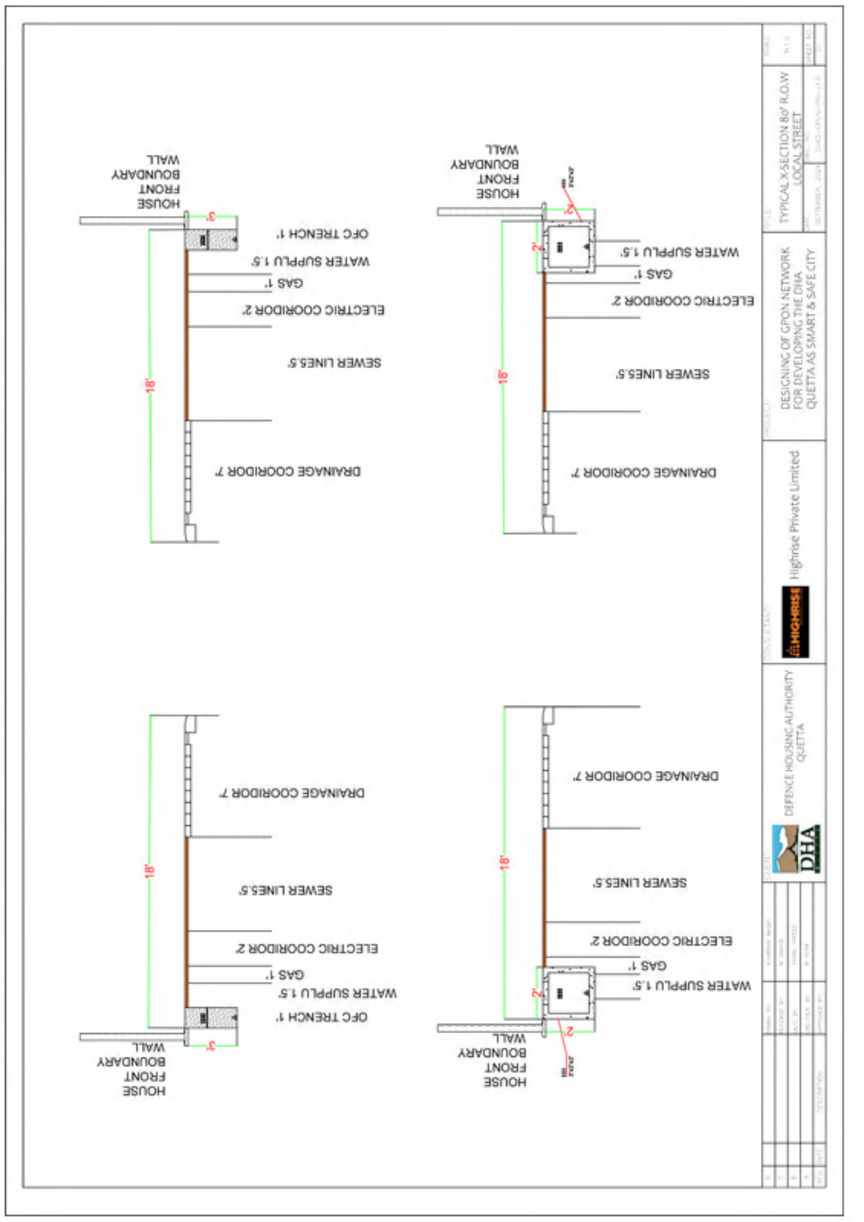
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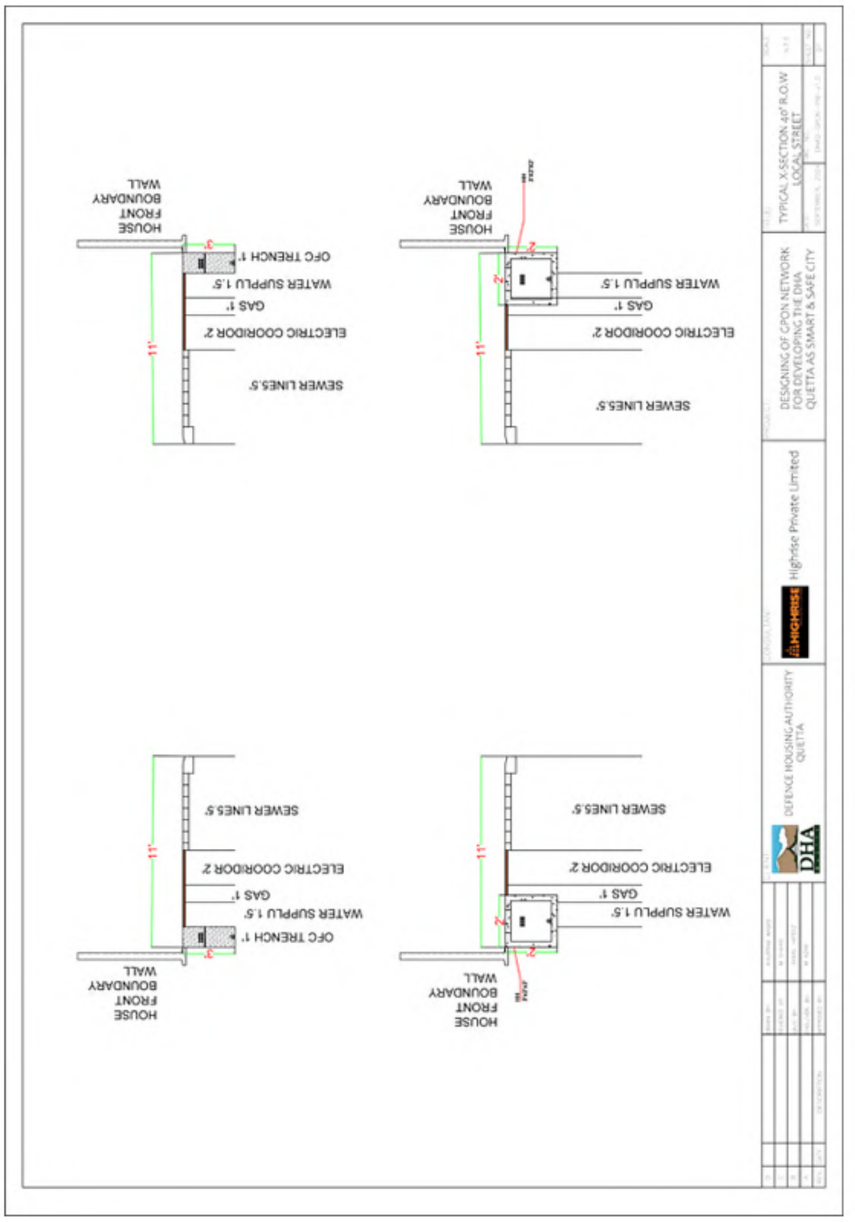
DATE: October 2025

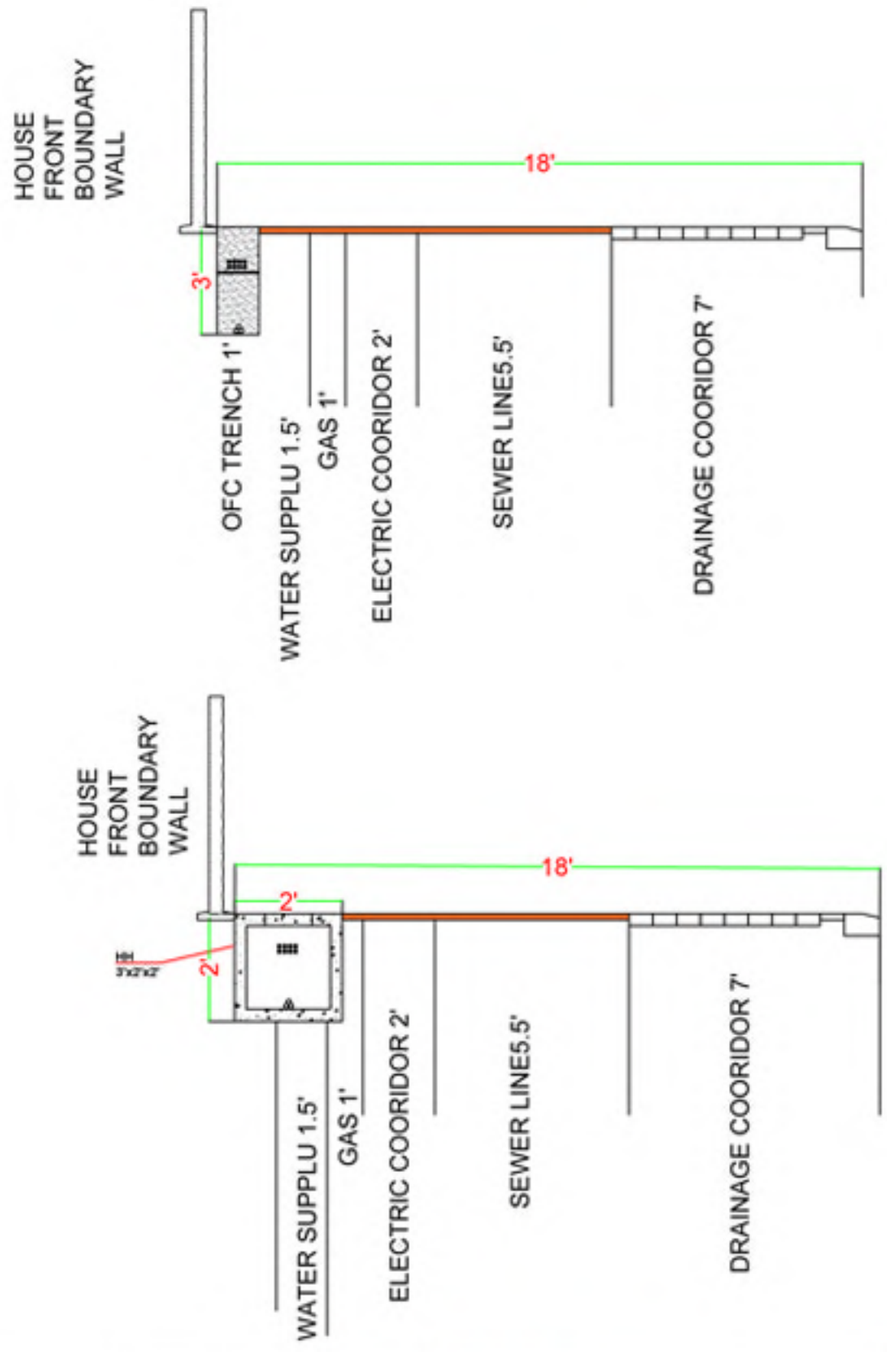
DWG. NO.: DHAQ–GPON–PNI–v1.0

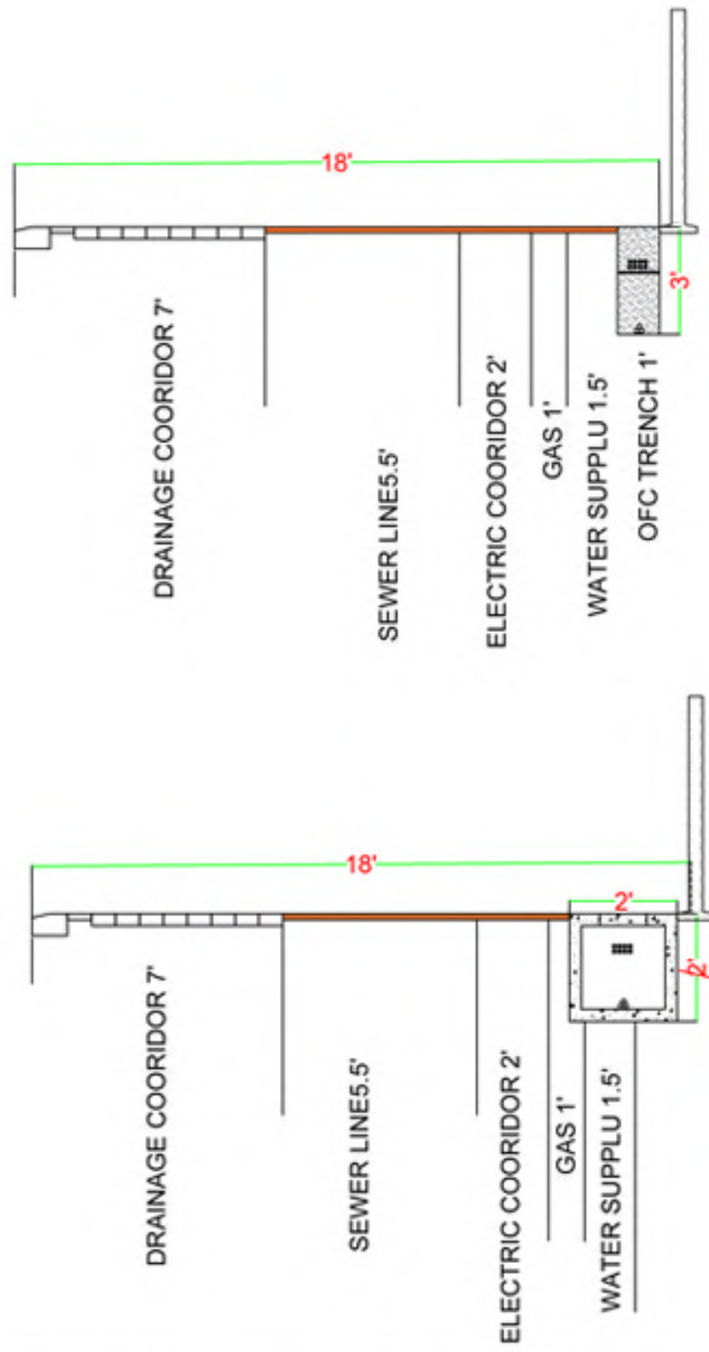
SHEET NO.: 01

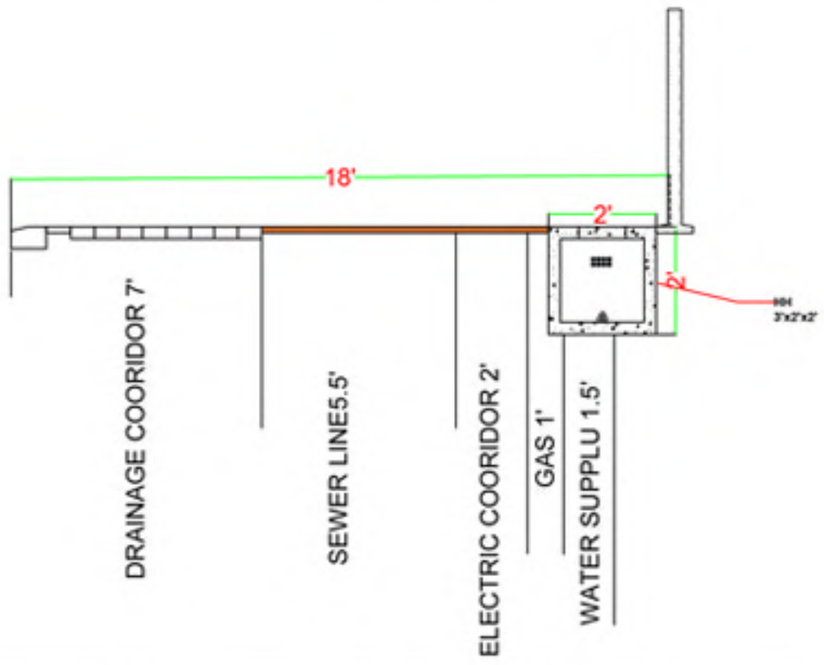

HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
18'
3'
2'
2'
TYPICAL X-SECTION 60' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA


HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
DRAINAGE COORIDOR 7'
18'
3'
2'
2'
TYPICAL X-SECTION 80' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA


HOUSE FRONT BOUNDARY WALL
OFC TRENCH 1'
WATER SUPPLU 1.5'
GAS 1'
ELECTRIC COORIDOR 2'
SEWER LINE5.5'
11'
3'
2'
2'
TYPICAL X-SECTION 40' R.O.W LOCAL STREET
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY
Highrise Private Limited
DEFENCE HOUSING AUTHORITY QUETTA
DHA







REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

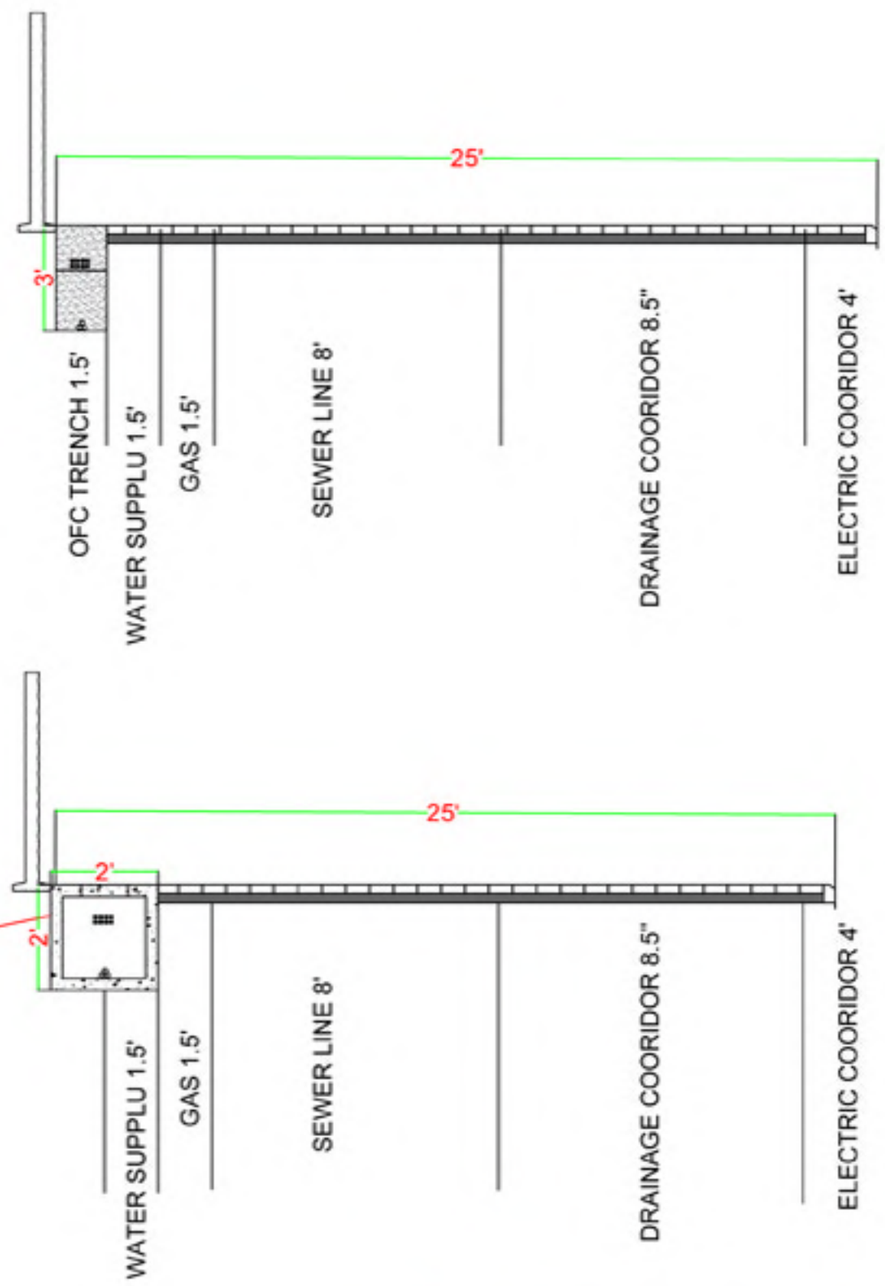
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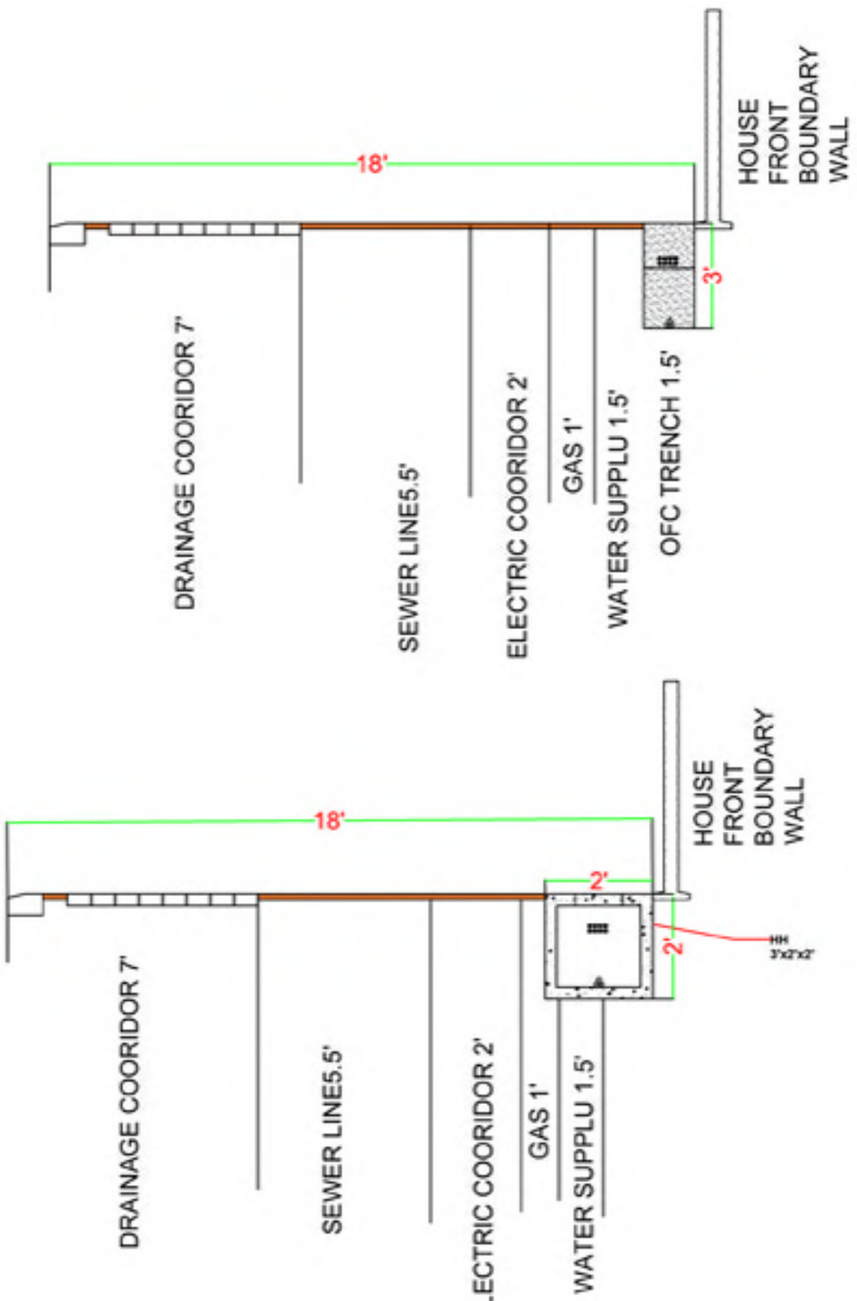
SCALE: N.T.S

DATE: SEPTEMBER, 2024

DWG. NO.: DHAQ-GPON-PN-v1.0

SHEET NO.: 01





REV.	DATE	DESCRIPTION		
D			DRAWN BY:	KHURRAM WAQAS
C			REVIEWED BY:	M SHAHID
B			QA/C BY:	AKMAL HAFEEZ
A			CHD./VER. BY:	M AZAM
			APPROVED BY:	

CLIENT: DEFENCE HOUSING AUTHORITY QUETTA

CONSULTANT: Highrise Private Limited

PROJECT: DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

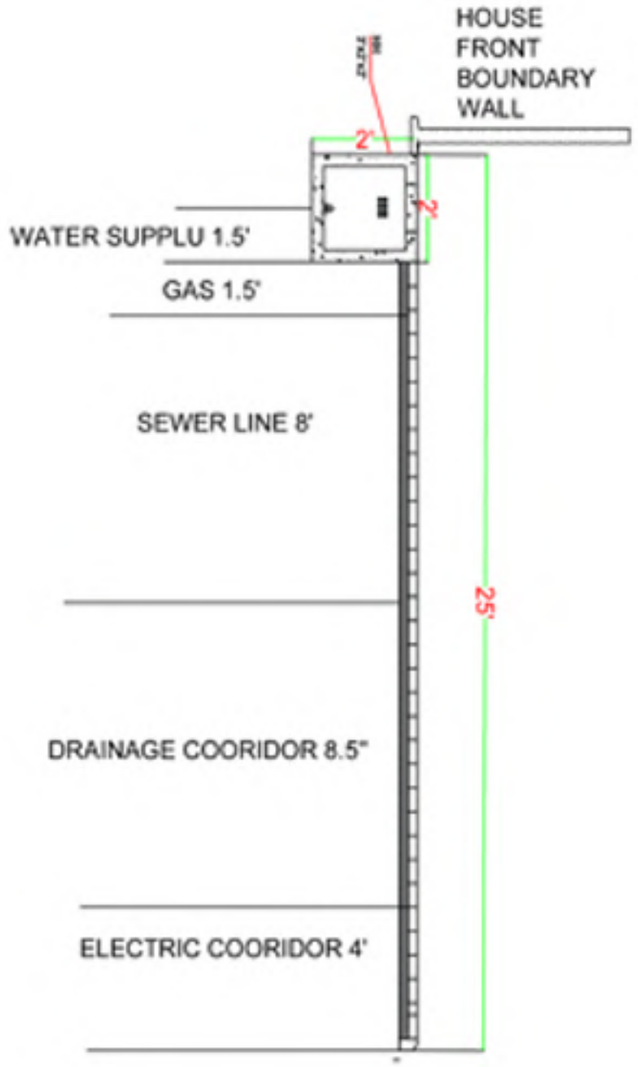
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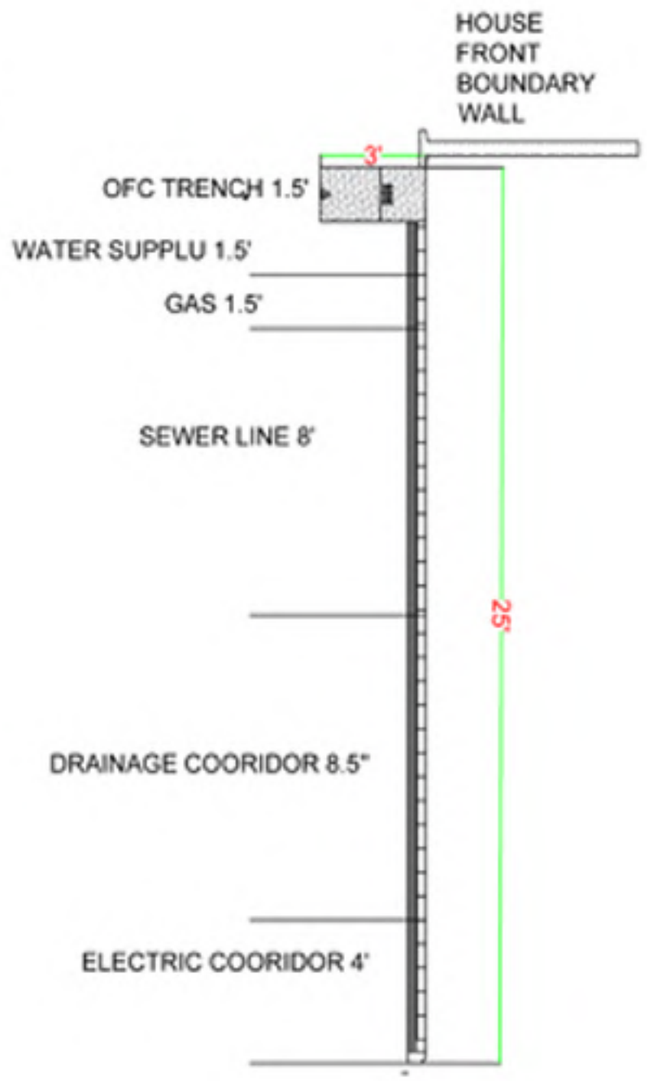
SCALE: N.T.S

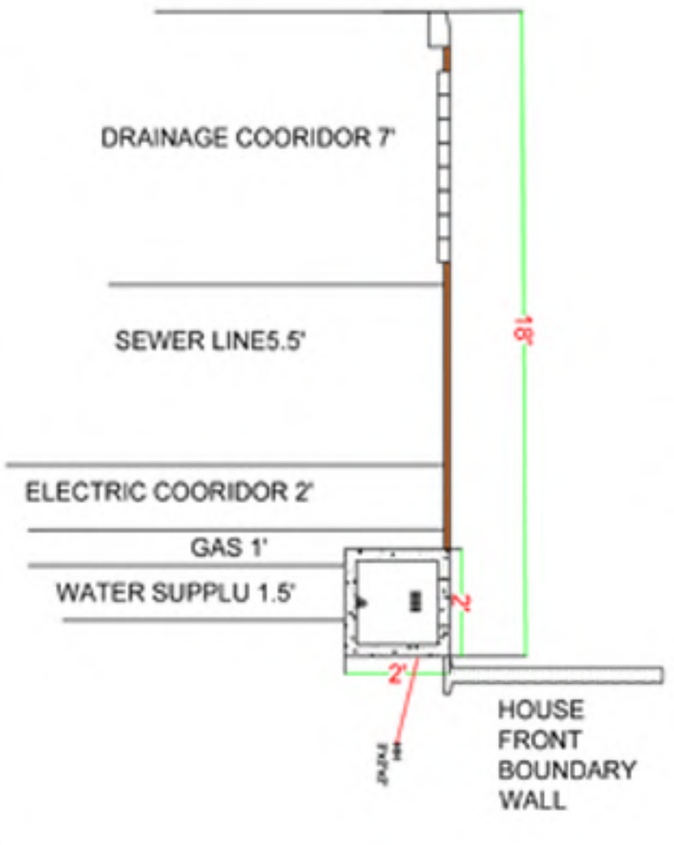
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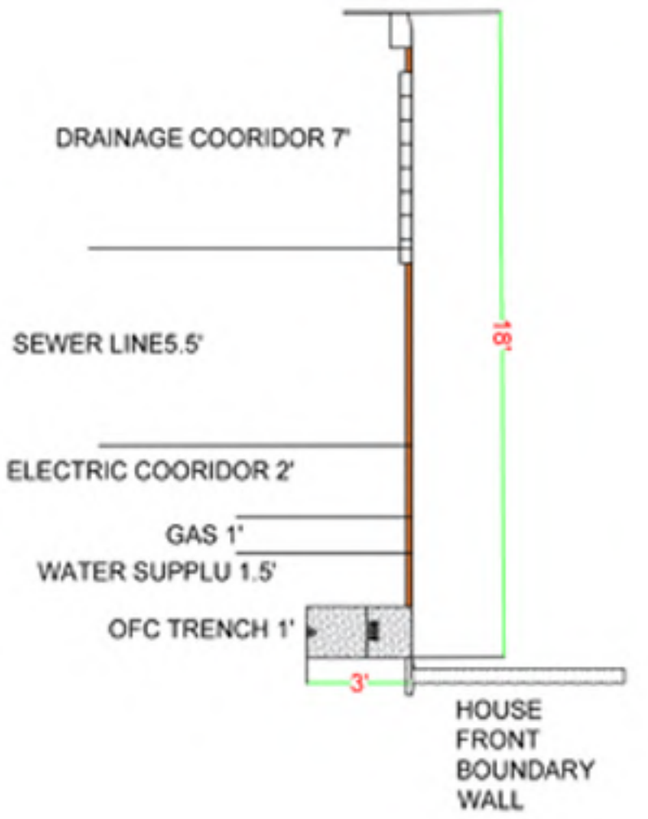
DWG. NO.: DHAQ-GPON-PN-v1.0

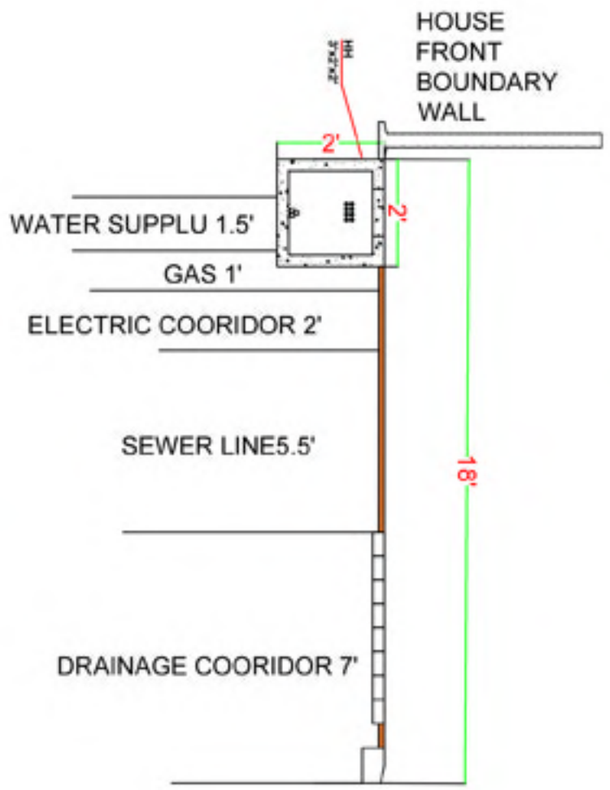
SHEET NO.: 01

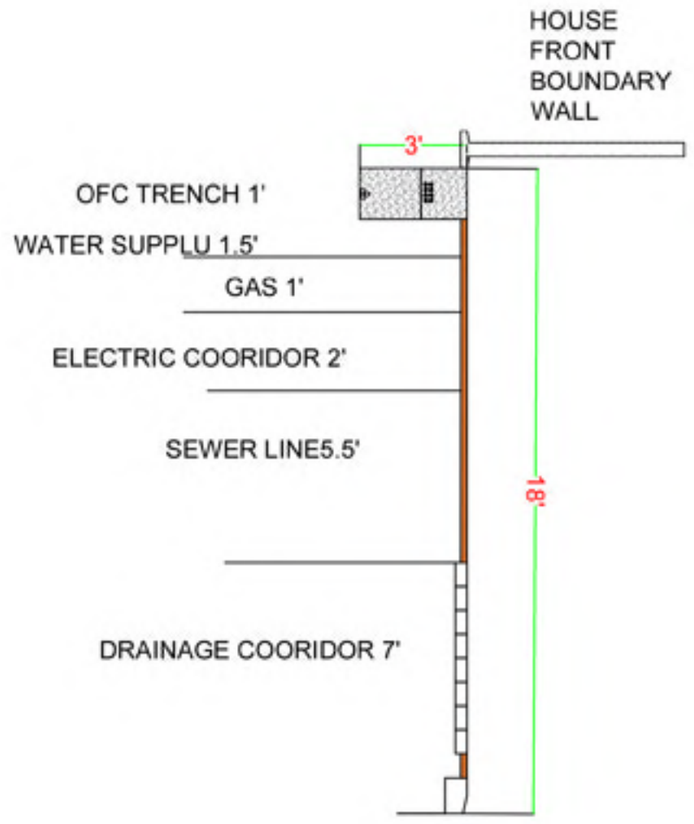


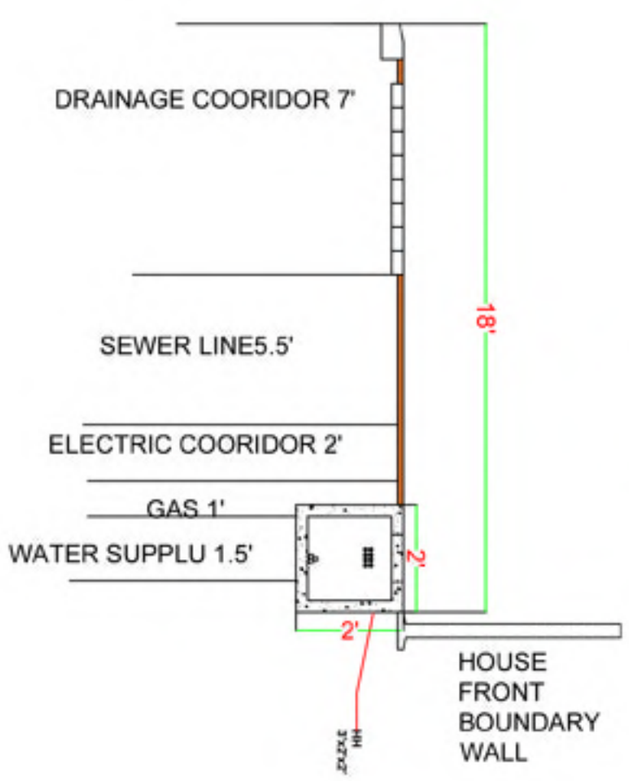


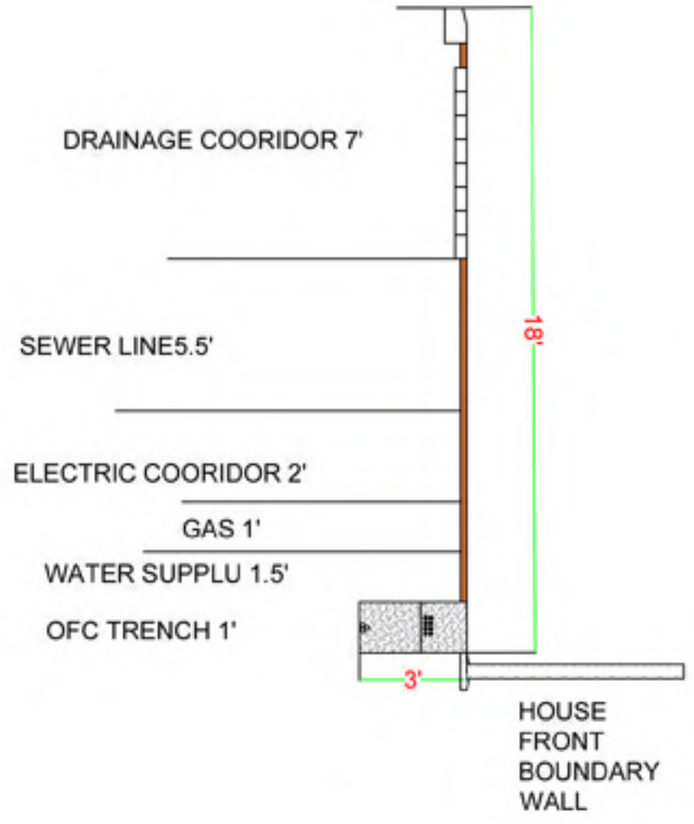












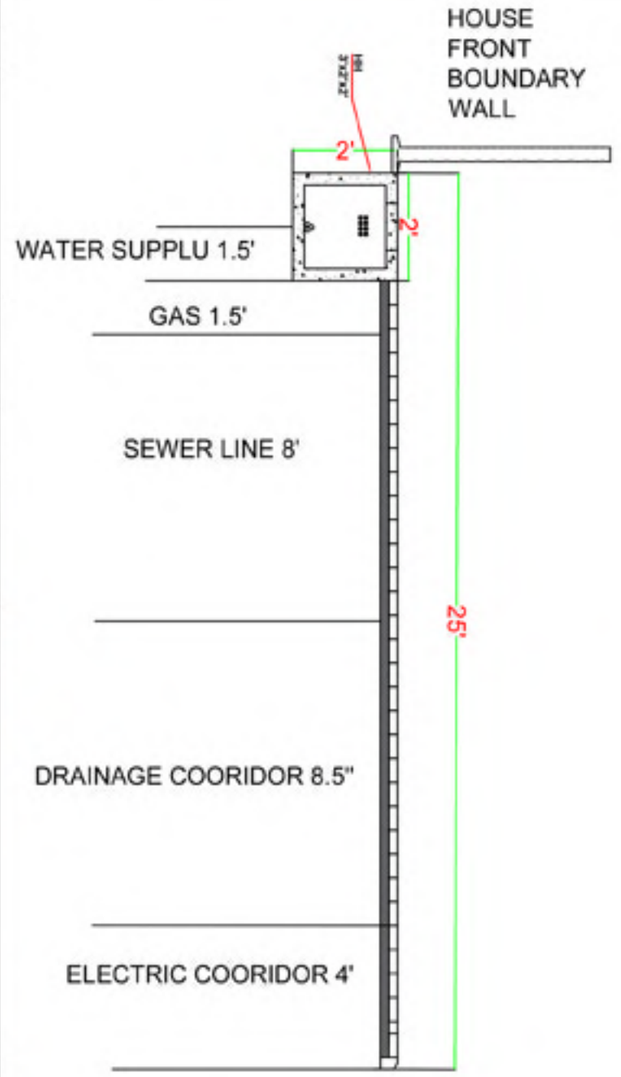
DEFENCE HOUSING AUTHORITY QUETTA

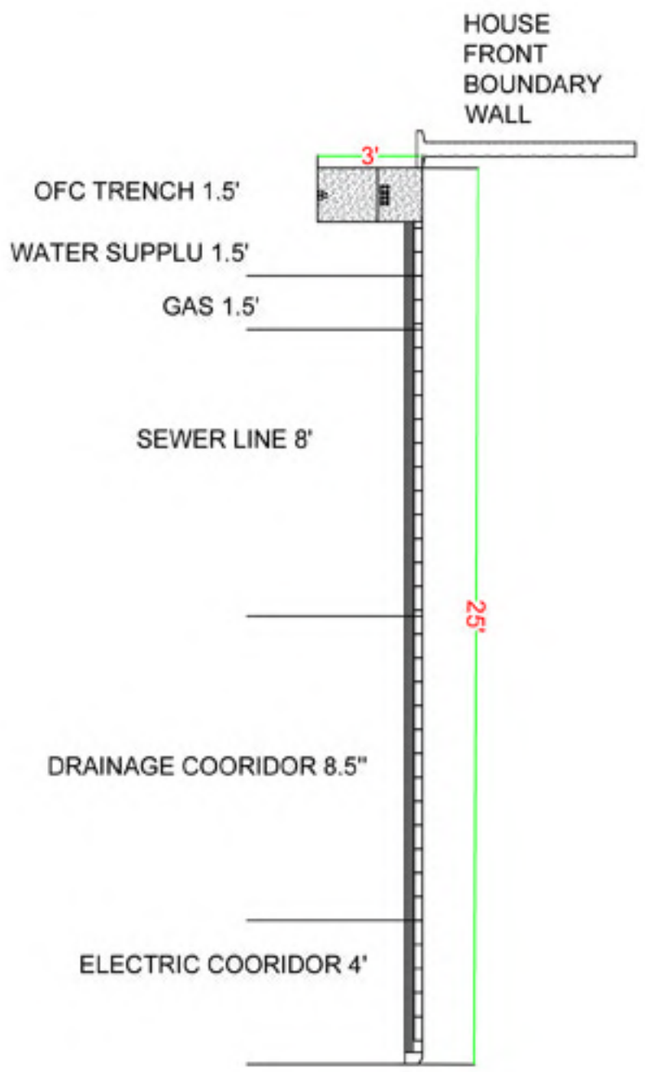
Highrise Private Limited

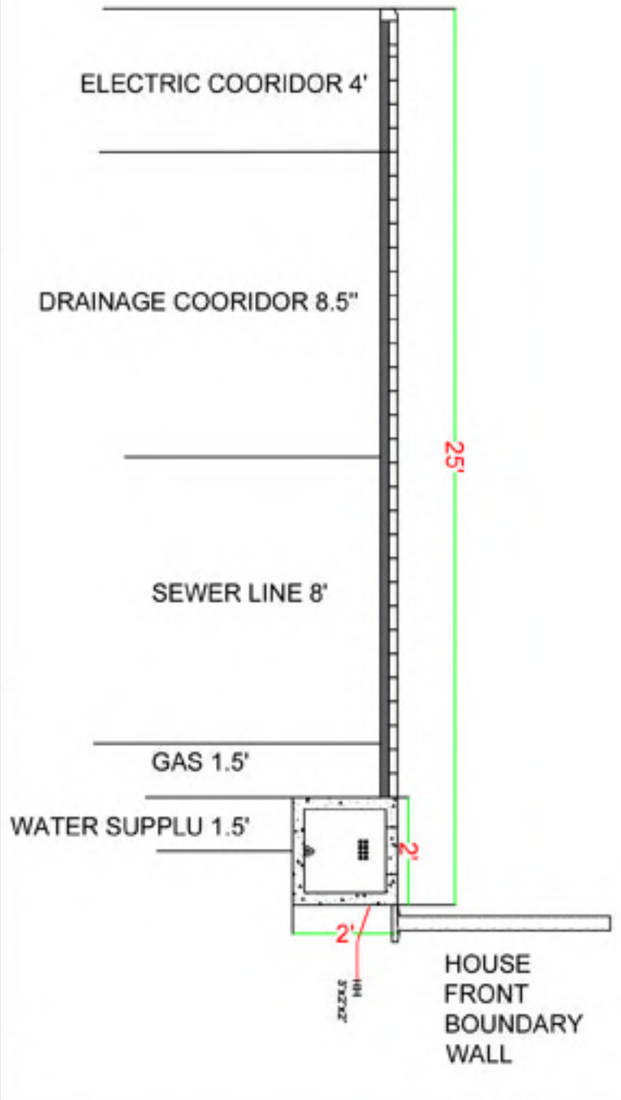
DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

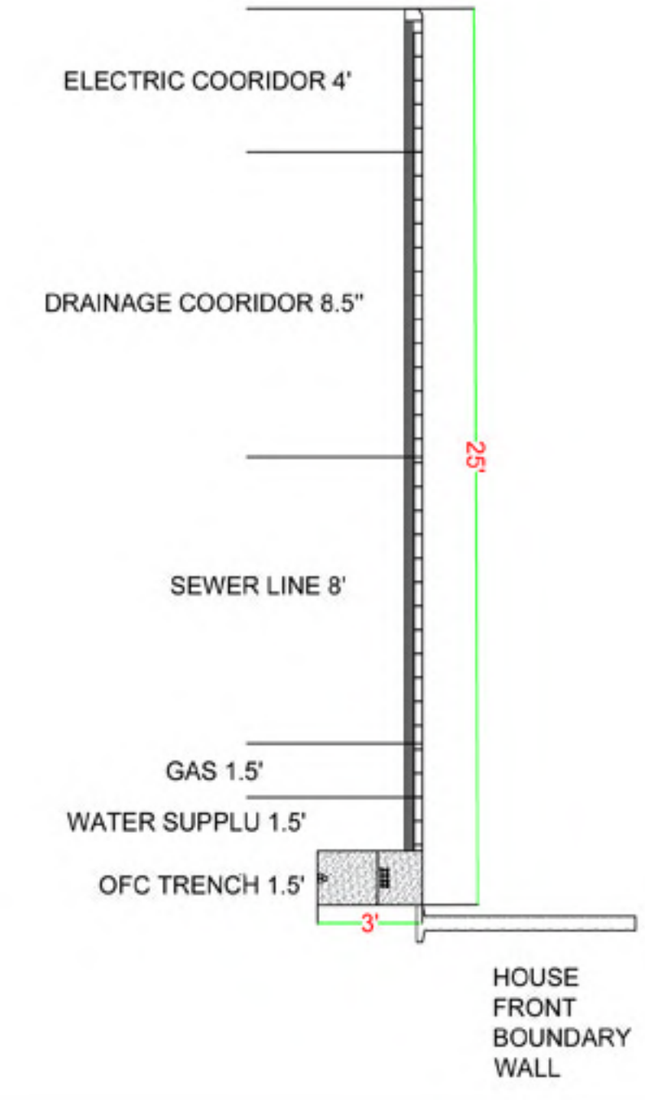
TYPICAL X-SECTION 295' R.O.W LOCAL STREET

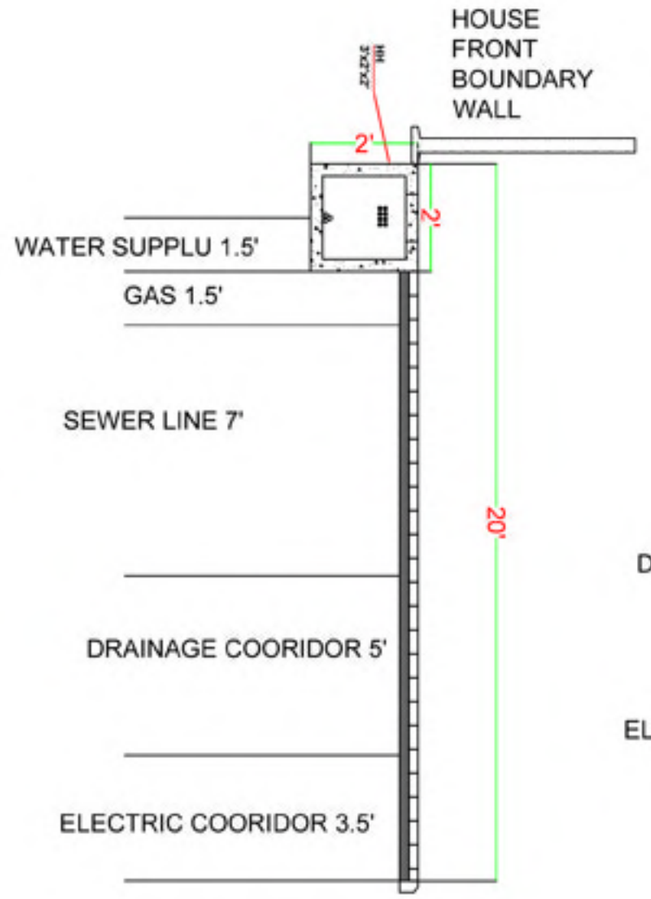
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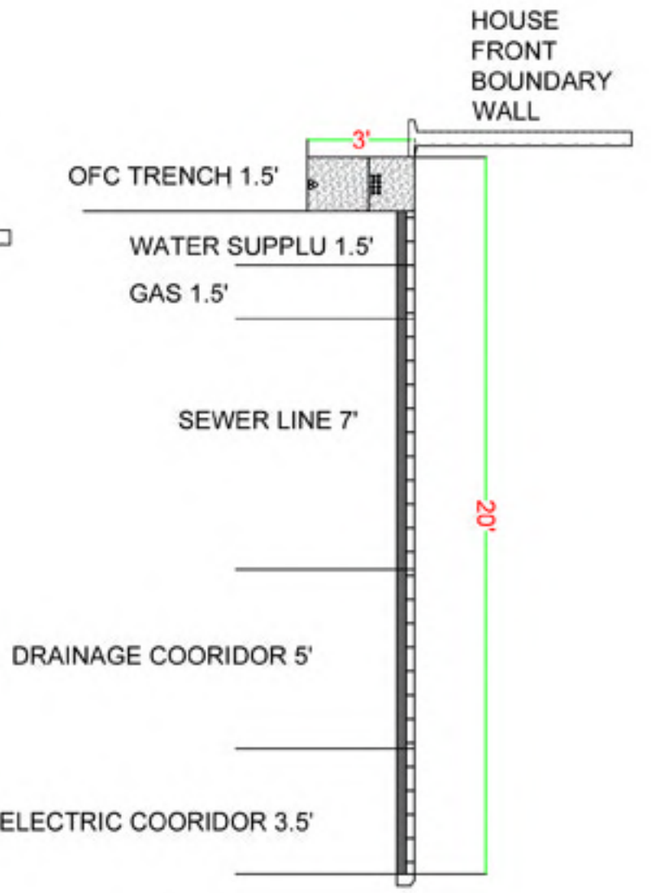


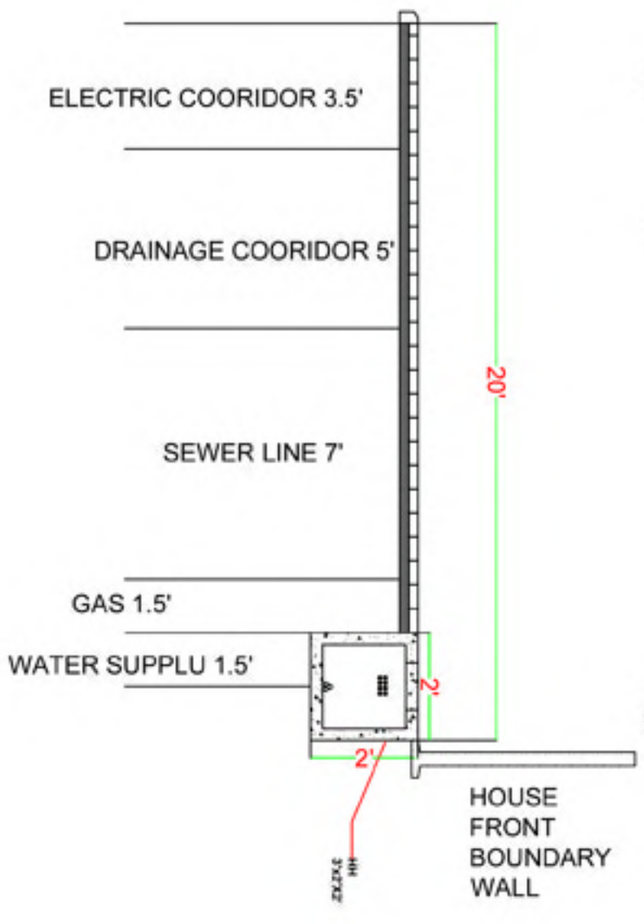


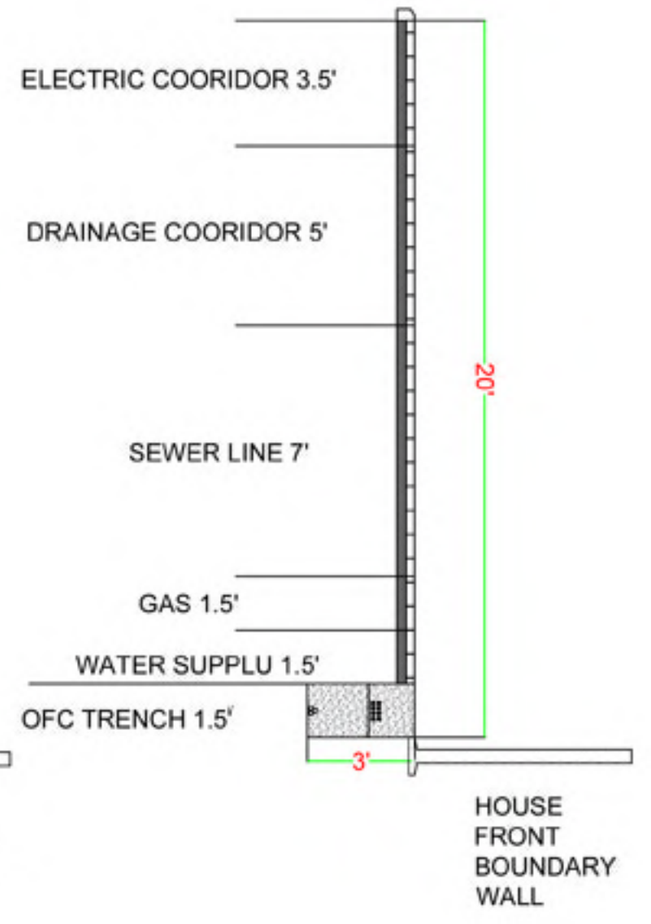












DEFENCE HOUSING AUTHORITY
QUETTA

Highrise Private Limited

DESIGNING OF GPON NETWORK FOR DEVELOPING THE DHA QUETTA AS SMART & SAFE CITY

TYPICAL X-SECTION 350' R.O.W LOCAL STREET

SEPTEMBER, 2024

N.T.S

DHA-QUETTA
CABLE Plan

Legend

- OLT
- FDH-Cabinet — FDH Handhole with Base, 3x4x3
- CNAP — CNAP(Commercial NAP) HandHole, 3x2x2
- RNAP — RNAP(Residential NAP) HandHole, 3x2x2
- FCNAP — FCNAP(Feeder + Commercial NAP) HandHole, 3x2x2
- FRNAP — FRNAP(Feeder + Residential NAP) HandHole, 3x2x2
- FEEDER — HandHole, 3x2x2
- DISTRIBUTION — HandHole, 3x2x2
- 1 Ways, 1', HomePass
- 1 Ways, 3', Distribution
- 2 Ways, 3', Distribution
- 2 Ways, 3', Feeder
- 3 Ways, 3', FDR+DIST
  Note: 3 HDPE PIPE FOR FEEDER & 01 HDPE PIPE FOR DISTRIBUTION, BUNDLE INTO SAME TRENCH
- Commercial NAP Boundary
- Residential NAP Boundary
- FDH Boundary
- Commercial
- Open Land
- Public Amenties
- Residential

Distribution OFC Cable

- 12F
- 24F
- 48F
- Drop Cable

Feeder OFC Cable

- 144F Ring-01
- 144F Ring-02
- 144F Ring-03
- 144F Ring-04
- 144F Ring-05
- 144F Ring-06
- 144F Ring-07

- Ring-01
- Ring-02
- Ring-03
- Ring-04
- Ring-05
- Ring-06
- Ring-07

706

General Guidelines

- **Hand Hole Size 3x4x3** should be placed & use for FDH
- **Hand Hole Size 3x2x2** should be placed & use for NAP
- **Feeder Duct Network:** 2-Way HDPE pipe 57/63mm diameter will be laid at 3 Feet depth B/W Hand Hole To Hand Hole (As per Duct Plan)
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- **Homepass Network:** 25mm HDPE pipe will be laid from HandHole (NAP) up to the customer Gate at depth of 1 ft (Will be laid at the time of connection request by customer).
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REV	DATE	DESCRIPTION	APPROVED		
04	15.01.25	FINAL DESIGN		DRG DEVP	KHURRAM
03	21.11.24	PLAN RE-DESIGN		DRG REVIER	M SHAHID
02	25.10.24	DESIGN OPTIMIZED		QA & C	AKMAL HAFIZ
01	11.09.24	1st Submission		CHD/VER.	M AZAM

CLIENT: DHA QUETTA

CONSULTANT: HIGHRISE PRIVATE LIMITED

PROJECT: Designing of Optical Fiber Network For DHA Quetta Smart & Safe City

TITLE: DHA QUETTA GPON FDH-706 CABLE PLAN RING-07

SCALE: 1:1,190

DATE: 15.01.25

DWG NO.: DHAQ-GPON-PNI-v1.0

Bill of Quantities

Cost Summary ALL RINGS / SECTOR A1, A2 & A3 FOR DHA, QUETTA

S.No	Description	Cost Summary
1	Summary Cost of RING-01/SECTOR A1 DHA_QUETTA (Supply Items)	
2	Summary Cost of RING-02/SECTOR A2 DHA_QUETTA (Supply Items)	
3	Summary Cost of RING-03/SECTOR A2 DHA_QUETTA (Supply Items)	
4	Summary Cost of RING-04/SECTOR A2 DHA_QUETTA (Supply Items)	
5	Summary Cost of RING-05/SECTOR A3 DHA_QUETTA (Supply Items)	
6	Summary Cost of RING-06/SECTOR A3 DHA_QUETTA (Supply Items)	
7	Summary Cost of RING-07/SECTOR A3 DHA_QUETTA (Supply Items)	
	Sub Total (Supply Items)	
1	Summary Cost of RING-01/SECTOR A1 DHA_QUETTA (Services)	
2	Summary Cost of RING-02/SECTOR A2 DHA_QUETTA (Services)	
3	Summary Cost of RING-03/SECTOR A2 DHA_QUETTA (Services)	
4	Summary Cost of RING-04/SECTOR A2 DHA_QUETTA (Services)	
5	Summary Cost of RING-05/SECTOR A3 DHA_QUETTA (Services)	
6	Summary Cost of RING-06/SECTOR A3 DHA_QUETTA (Services)	
7	Summary Cost of RING-07/SECTOR A3 DHA_QUETTA (Services)	
	Sub Total (Services)	
	Grand Total (Supply + Services)	

BOM Summary RING-01/SECTOR A1 DHA_QUETTA

S.No	Supply Items		Unit	QTY	Unit Price	Total Price *Inc All Taxes
1	DUCT LENGTH FOR FEEDER		Meter	16905		
2	DUCT LENGTH FOR DISTRIBUTION		Meter	5540		
3	1152Port ODF Rack with 12port splice tray SC-UPC		Nos	2		
4	HandHole 3x4x3		Nos	5		
5	HandHole 3x2x2		Nos	140		
6	FIBER LENGTH FOR FEEDER	144F	Meter	10304		
7	FIBER LENGTH FOR DISTRIBUTION (Duct Typ)	48F	Meter	0		
		24F	Meter	7781		
		12F	Meter	3328		
8	Joint Box 144F		Nos	7		
9	Joint Box 24F (For NAP Dom Typ)		Nos	112		
10	FAT 8F with 2:8 Splitr SC/APC Wall Mount Cmpt Accessories		Nos	128		
11	Splitter 2:4 PLC SC/APC Cassete Typ Cmpt		Nos	60		
12	Splitter 2:8 blockless PLC SC/APC USB Typ Cmpt		Nos	112		
13	Nylon Dori		Meter	12187		
14	Warning Tape		Meter	11334		
15	Socket for HDPE Pipe 57mm		Nos	244		
S.No	Services Items					
1	CIVIL WORK/TRENCH FOR FEEDER	5ft Depth	Meter	0		
		3ft Depth	Meter	6599		
2	CIVIL WORK/TRENCH FOR DISTRIBUTION	3ft Depth	Meter	5396		
3	Laying HDPE Pipe		Meter	22445		
4	Cable Clamping, D-watering & Sealing of ManHole/HandHole Cover		Nos	145		
5	Pulling of Rope in duct		Meter	12187		
6	Hauling / Pulling of O.F Cable through Duct/HDPE Pipe/GI Pipe/PVC Pipe		Meter	21413		
7	Installation & Splicing of FDH 144 Ports with splitters &		Nos	5		
8	Installation & Splicing of ODF with pigtails and complete accessories (Rack Mounted) (144 Fiber)		Nos	2		
9	Installation and splicing of Optical Fiber Joint Enclsoure 144F- straight/Branch joint		Nos	7		
10	Placing and preparation of Joint Enclosure NAP		Nos	112		
11	FDH Comissioning & Testing		Nos	5		

Note: All Values has been taken from GIS Base measurement from Design, physically there may be change in value +/-10%

BOM Summary RING-02/SECTOR A2 DHA_QUETTA

S.No	Supply Items		Unit	QTY	Unit Price	Total Price *Inc All Taxes
1	DUCT LENGTH FOR FEEDER		Meter	10426		
2	DUCT LENGTH FOR DISTRIBUTION		Meter	9783		
3	1152Port ODF Rack with 12port splice tray SC-UPC		Nos	2		
3	HandHole 3x4x3		Nos	6		
4	HandHole 3x2x2		Nos	146		
5	FIBER LENGTH FOR FEEDER	144F	Meter	5844		
6	FIBER LENGTH FOR DISTRIBUTION (Duct Typ)	48F	Meter	0		
		24F	Meter	7790		
		12F	Meter	5472		
7	Joint Box 144F		Nos	8		
8	Joint Box 24F (For NAP Dom Typ)		Nos	112		
9	FAT 8F with 2:8 Splitr SC/APC Wall Mount Cmpt Accessories		Nos	128		
10	Splitter 2:4 PLC SC/APC Cassete Typ Cmpt		Nos	224		
11	Splitter 2:8 blockless PLC SC/APC USB Typ Cmpt		Nos	112		
12	Nylon Dori		Meter	10105		
13	Warning Tape		Meter	6428		
14	Socket for HDPE Pipe 57mm		Nos	203		
S.No	Services Items					
1	CIVIL WORK/TRENCH FOR FEEDER	5ft Depth	Meter	0		
		3ft Depth	Meter	3535		
2	CIVIL WORK/TRENCH FOR DISTRIBUTION	3ft Depth	Meter	8786		
3	Laying HDPE Pipe		Meter	20209		
4	Cable Clamping, D-watering & Sealing of ManHole/HandHole Cover		Nos	152		
5	Pulling of Rope in duct		Meter	10105		
6	Hauling / Pulling of O.F Cable through Duct/HDPE Pipe/GI Pipe/PVC Pipe		Meter	19106		
7	Installation & Splicing of FDH 144 Ports with splitters &		Nos	6		
8	Installation & Splicing of ODF with pigtails and complete accessories (Rack Mounted) (144 Fiber)		Nos	2		
9	Installation and splicing of Optical Fiber Joint Enclsoure 144F- straight/Branch joint		Nos	8		
10	Placing and preparation of Joint Enclosure NAP		Nos	112		
11	FDH Comissioning & Testing		Nos	6		

Note: All Values has been taken from GIS Base measurement from Design, physically there may be change in value +/-10%

BOM Summary RING-03/SECTOR A2 DHA_QUETTA

S.No	Supply Items		Unit	QTY	Unit Price	Total Price *Inc All Taxes
1	DUCT LENGTH FOR FEEDER		Meter	9907		
2	DUCT LENGTH FOR DISTRIBUTION		Meter	18284		
3	HandHole 3x4x3		Nos	8		
4	HandHole 3x2x2		Nos	212		
5	FIBER LENGTH FOR FEEDER	144F	Meter	5859		
6	FIBER LENGTH FOR DISTRIBUTION (Duct Typ)	48F	Meter	0		
		24F	Meter	9936		
		12F	Meter	11370		
7	Joint Box 144F		Nos	8		
8	Joint Box 24F (For NAP Dom Typ)		Nos	224		
9	FAT 8F with 2:8 Splitr SC/APC Wall Mount Cmpt Accessories		Nos	56		
10	Splitter 2:4 PLC SC/APC Cassete Typ Cmpt		Nos	70		
11	Splitter 2:8 blockless PLC SC/APC USB Typ Cmpt		Nos	224		
12	Nylon Dori		Meter	15060		
13	Warning Tape		Meter	6445		
14	Socket for HDPE Pipe 57mm		Nos	302		
S.No	Services Items					
1	CIVIL WORK/TRENCH FOR FEEDER	5ft Depth	Meter	0		
		3ft Depth	Meter	4101		
2	CIVIL WORK/TRENCH FOR DISTRIBUTION	3ft Depth	Meter	17913		
3	Laying HDPE Pipe		Meter	28191		
4	Cable Clamping, D-watering & Sealing of ManHole/HandHole Cover		Nos	220		
5	Pulling of Rope in duct		Meter	15060		
6	Hauling / Pulling of O.F Cable through Duct/HDPE Pipe/GI Pipe/PVC Pipe		Meter	27165		
7	Installation & Splicing of FDH 144 Ports with splitters &		Nos	8		
8	Installation & Splicing of ODF with pigtails and complete accessories (Rack Mounted) (144 Fiber)		Nos	2		
9	Installation and splicing of Optical Fiber Joint Enclsoure 144F- straight/Branch joint		Nos	8		
10	Placing and preparation of Joint Enclosure NAP		Nos	224		
11	FDH Comissioning & Testing		Nos	8		

Note: All Values has been taken from GIS Base measurement from Design, physically there may be change in value +/-10%

BOM Summary RING-04/SECTOR A2 DHA_QUETTA

S.No	Supply Items		Unit	QTY	Unit Price	Total Price *Inc All Taxes
1	DUCT LENGTH FOR FEEDER		Meter	9087		
2	DUCT LENGTH FOR DISTRIBUTION		Meter	4591		
3	HandHole 3x4x3		Nos	5		
4	HandHole 3x2x2		Nos	102		
5	FIBER LENGTH FOR FEEDER	144F	Meter	4634		
6	FIBER LENGTH FOR DISTRIBUTION (Duct Typ)	48F	Meter	0		
		24F	Meter	5960		
		12F	Meter	3792		
7	Joint Box 144F		Nos	7		
8	Joint Box 24F (For NAP Dom Typ)		Nos	48		
9	FAT 8F with 2:8 Splitr SC/APC Wall Mount Cmpt Accessories		Nos	328		
10	Splitter 2:4 PLC SC/APC Cassete Typ Cmpt		Nos	94		
11	Splitter 2:8 blockless PLC SC/APC USB Typ Cmpt		Nos	48		
12	Nylon Dori		Meter	7804		
13	Warning Tape		Meter	5097		
14	Socket for HDPE Pipe 57mm		Nos	157		
S.No	Services Items					
1	CIVIL WORK/TRENCH FOR FEEDER	5ft Depth	Meter	0		
		3ft Depth	Meter	3906		
2	CIVIL WORK/TRENCH FOR DISTRIBUTION	3ft Depth	Meter	4311		
3	Laying HDPE Pipe		Meter	13678		
4	Cable Clamping, D-watering & Sealing of ManHole/HandHole Cover		Nos	107		
5	Pulling of Rope in duct		Meter	7804		
6	Hauling / Pulling of O.F Cable through Duct/HDPE Pipe/GI Pipe/PVC Pipe		Meter	14386		
7	Installation & Splicing of FDH 144 Ports with splitters &		Nos	5		
8	Installation & Splicing of ODF with pigtails and complete accessories (Rack Mounted) (144 Fiber)		Nos	2		
9	Installation and splicing of Optical Fiber Joint Enclsoure 144F- straight/Branch joint		Nos	7		
10	Placing and preparation of Joint Enclosure NAP		Nos	48		
11	FDH Comissioning & Testing		Nos	5		

Note: All Values has been taken from GIS Base measurement from Design, physically there may be change in value +/-10%

BOM Summary RING-05/SECTOR A3 DHA_QUETTA

S.No	Supply Items		Unit	QTY	Unit Price	Total Price *Inc All Taxes
1	DUCT LENGTH FOR FEEDER		Meter	13641		
2	DUCT LENGTH FOR DISTRIBUTION		Meter	8283		
3	HandHole 3x4x3		Nos	6		
4	HandHole 3x2x2		Nos	88		
5	FIBER LENGTH FOR FEEDER	144F	Meter	6742		
6	FIBER LENGTH FOR DISTRIBUTION (Duct Typ)	48F	Meter	0		
		24F	Meter	7615		
		12F	Meter	4524		
7	Joint Box 144F		Nos	8		
8	Joint Box 24F (For NAP Dom Typ)		Nos	136		
9	FAT 8F with 2:8 Splitr SC/APC Wall Mount Cmpt Accessories		Nos	176		
10	Splitter 2:4 PLC SC/APC Cassete Typ Cmpt		Nos	78		
11	Splitter 2:8 blockless PLC SC/APC USB Typ Cmpt		Nos	136		
12	Nylon Dori		Meter	10962		
13	Warning Tape		Meter	7416		
14	Socket for HDPE Pipe 57mm		Nos	220		
S.No	Services Items					
1	CIVIL WORK/TRENCH FOR FEEDER	5ft Depth	Meter	0		
		3ft Depth	Meter	5259		
2	CIVIL WORK/TRENCH FOR DISTRIBUTION	3ft Depth	Meter	8120		
3	Laying HDPE Pipe		Meter	21924		
4	Cable Clamping, D-watering & Sealing of ManHole/HandHole Cover		Nos	94		
5	Pulling of Rope in duct		Meter	10962		
6	Hauling / Pulling of O.F Cable through Duct/HDPE Pipe/GI Pipe/PVC Pipe		Meter	18881		
7	Installation & Splicing of FDH 144 Ports with splitters &		Nos	6		
8	Installation & Splicing of ODF with pigtails and complete accessories (Rack Mounted) (144 Fiber)		Nos	2		
9	Installation and splicing of Optical Fiber Joint Enclsoure 144F- straight/Branch joint		Nos	8		
10	Placing and preparation of Joint Enclosure NAP		Nos	136		
11	FDH Comissioning & Testing		Nos	6		

Note: All Values has been taken from GIS Base measurement from Design, physically there may be change in value +/-10%

BOM Summary RING-06/SECTOR A3 DHA_QUETTA

S.No	Supply Items		Unit	QTY	Unit Price	Total Price *Inc All Taxes
1	DUCT LENGTH FOR FEEDER		Meter	9504		
2	DUCT LENGTH FOR DISTRIBUTION		Meter	15229		
3	HandHole 3x4x3		Nos	8		
4	HandHole 3x2x2		Nos	205		
5	FIBER LENGTH FOR FEEDER	144F	Meter	7618		
6	FIBER LENGTH FOR DISTRIBUTION (Duct Typ)	48F	Meter	0		
		24F	Meter	5395		
		12F	Meter	12686		
7	Joint Box 144F		Nos	10		
8	Joint Box 24F (For NAP Dom Typ)		Nos	208		
9	FAT 8F with 2:8 Splitr SC/APC Wall Mount Cmpt Accessories		Nos	48		
10	Splitter 2:4 PLC SC/APC Cassete Typ Cmpt		Nos	64		
11	Splitter 2:8 blockless PLC SC/APC USB Typ Cmpt		Nos	208		
12	Nylon Dori		Meter	13714		
13	Warning Tape		Meter	8380		
14	Socket for HDPE Pipe 57mm		Nos	275		
S.No	Services Items					
1	CIVIL WORK/TRENCH FOR FEEDER	5ft Depth	Meter	0		
		3ft Depth	Meter	4068		
2	CIVIL WORK/TRENCH FOR DISTRIBUTION	3ft Depth	Meter	15229		
3	Laying HDPE Pipe		Meter	24733		
4	Cable Clamping, D-watering & Sealing of ManHole/HandHole Cover		Nos	213		
5	Pulling of Rope in duct		Meter	13714		
6	Hauling / Pulling of O.F Cable through Duct/HDPE Pipe/GI Pipe/PVC Pipe		Meter	25699		
7	Installation & Splicing of FDH 144 Ports with splitters &		Nos	8		
8	Installation & Splicing of ODF with pigtails and complete accessories (Rack Mounted) (144 Fiber)		Nos	2		
9	Installation and splicing of Optical Fiber Joint Enclsoure 144F- straight/Branch joint		Nos	10		
10	Placing and preparation of Joint Enclosure NAP		Nos	208		
11	FDH Comissioning & Testing		Nos	8		

Note: All Values has been taken from GIS Base measurement from Design, physically there may be change in value +/-10%

BOM Summary RING-07/SECTOR A3 DHA_QUETTA

S.No	Supply Items		Unit	QTY	Unit Price	Total Price *Inc All Taxes
1	DUCT LENGTH FOR FEEDER		Meter	9551		
2	DUCT LENGTH FOR DISTRIBUTION		Meter	11149		
3	HandHole 3x4x3		Nos	6		
4	HandHole 3x2x2		Nos	164		
5	FIBER LENGTH FOR FEEDER	144F	Meter	7163		
6	FIBER LENGTH FOR DISTRIBUTION (Duct Typ)	48F	Meter	0		
		24F	Meter	7471		
		12F	Meter	6396		
7	Joint Box 144F		Nos	8		
8	Joint Box 24F (For NAP Dom Typ)		Nos	176		
9	FAT 8F with 2:8 Splitr SC/APC Wall Mount Cmpt Accessories		Nos	80		
10	Splitter 2:4 PLC SC/APC Cassete Typ Cmpt		Nos	64		
11	Splitter 2:8 blockless PLC SC/APC USB Typ Cmpt		Nos	176		
12	Nylon Dori		Meter	11315		
13	Warning Tape		Meter	7879		
14	Socket for HDPE Pipe 57mm		Nos	227		
S.No	Services Items					
1	CIVIL WORK/TRENCH FOR FEEDER	5ft Depth	Meter	0		
		3ft Depth	Meter	4136		
2	CIVIL WORK/TRENCH FOR DISTRIBUTION	3ft Depth	Meter	15229		
3	Laying HDPE Pipe		Meter	20700		
4	Cable Clamping, D-watering & Sealing of ManHole/HandHole Cover		Nos	10885		
5	Pulling of Rope in duct		Meter	11315		
6	Hauling / Pulling of O.F Cable through Duct/HDPE Pipe/GI Pipe/PVC Pipe		Meter	21030		
7	Installation & Splicing of FDH 144 Ports with splitters &		Nos	6		
8	Installation & Splicing of ODF with pigtails and complete accessories (Rack Mounted) (144 Fiber)		Nos	2		
9	Installation and splicing of Optical Fiber Joint Enclsoure 144F- straight/Branch joint		Nos	8		
10	Placing and preparation of Joint Enclosure NAP		Nos	176		
11	FDH Comissioning & Testing		Nos	6		

Note: All Values has been taken from GIS Base measurement from Design, physically there may be change in value +/-10%

SECTION VI: STANDARD BIDDING FORMS

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Letter of Bid – Technical Proposal

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

Place this Letter of Bid in the first envelope "TECHNICAL PROPOSAL".

The Bidder must prepare the Letter of Bid on stationery with its letterhead clearly showing the Bidder's complete name and business address.

Note: All italicized text in black font is to help Bidders in preparing this form and Bidders shall delete it from the final document.

Date of this Bid submission: [*insert date (as day, month and year) of Bid submission*]
RFB No.: [*insert number of Bidding process*]
Alternative No.: [*insert identification No if this is a Bid for an alternative*]

To: **[*insert complete name of Procuring agency/Employer*]**

We, the undersigned Bidder, hereby submit the first part of our Bid, the Technical Proposal

In submitting our Bid we make the following declarations:

(a) **No reservations:** We have examined and have no reservations to the bidding document, including addenda issued in accordance with Instructions to Bidders **(ITB 9);**
(b) **Eligibility**: We meet the eligibility requirements and have no conflict of interest in accordance with ITB 3;
(c) **Bid/Proposal-Securing Declaration**: We have not been suspended nor declared ineligible by the Procuring agency/Employer based on execution of a Bid Securing Declaration or Bid Securing Declaration in the Procuring agency/Employer's country in accordance with **ITB 3;**
(d) **Conformity:** We offer to execute works in conformity with the bidding document and in accordance with the works requirements: [*insert a brief description of the WORKS*];
(e) **Bid Validity Period**: Our Bid shall be valid for the period specified in **BDS 18.1** (as amended, if applicable) from the date fixed for the Bid submission deadline specified in **BDS 24.1** (as amended, if applicable), and it shall remain binding upon us, and may be accepted at any time before the expiration of that period;
(f) **Performance Security**: If our Bid is accepted, we commit to obtain a performance security in accordance with the bidding document;
(g) One Bid per Bidder: We are not submitting any other Bid(s) as an individual Bidder, and we are not participating in any other bid(s) as a Joint Venture member or as a subcontractor, and meet the requirements, other than Alternative Bids submitted in accordance with **ITB 20;**
(h) **Suspension and Debarment**: We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the Procuring agency/Employer. Further, we are not ineligible under Pakistan laws;

(i) **State-owned enterprise or institution**: [*select the appropriate option and delete the other*] [*We are not a state-owned enterprise or institution*] / [*We are a state-owned enterprise or institution*];
(j) **Binding Contract**: We understand that this Bid, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;
(k) **Not Bound to Accept**: We understand that you are not bound to accept the Most Advantageous Bid or any other Bid that you may receive; and
(l) **Fraud and Corruption**: We hereby certify that we have taken steps to ensure that no person acting for us, or on our behalf, engages in any type of Fraud and Corruption.

Name of the Bidder: *[*insert complete name of Bidder*]

Country of Origin of the Bidder: *[insert country of origin, in case of JV country of origin of lead member]*

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

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

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

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

*****: In the case of the Bid submitted by a Joint Venture specify the name of the Joint Venture as Bidder.
**: Person signing the Bid shall have the power of attorney given by the Bidder. The power of attorney shall be attached with the Bid Schedules.

Letter of Bid - Financial Proposal

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

Place this Letter of Bid - Financial Proposal in the second envelope marked "FINANCIAL PROPOSAL".

The Bidder must prepare the Letter of Bid - Financial Proposal on stationery with its letterhead clearly showing the Bidder's complete name and business address.

Note: All italicized text is to help Bidders in preparing this form.

Date of this Bid submission: [*insert date (as day, month and year) of Bid submission*]
Request for Bid No.: [*insert number of bidding process*]
Name of Project.: [*insert identification*]
Alternative No.: [*insert identification No if this is a Bid for an alternative*]

To: [*insert complete name of Procuring agency/Employer*]

We, the undersigned Bidder, hereby submit the second part of our Bid, the Financial Proposal

In submitting our Financial Proposal we make the following additional declarations:

(a) **Bid Validity Period**: Our Bid shall be valid for the period specified in **BDS 18.1** (as amended, if applicable) from the date fixed for the bid submission deadline specified in **BDS 24.1** (as amended, if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(b) **Total Price:** The total price of our Bid is:

In case of only one lot, the total price of the Bid is [*insert the total price of the bid in words and figures, indicating the various amounts and the respective currencies*];

In case of multiple lots, the total price of each lot is [*insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies*];

In case of multiple lots, total price of all lots (sum of all lots) [*insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies*];

(c) **Commissions, gratuities and fees:** We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract: [*insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity*].

Name of Recipient	Address	Reason	Amount

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

(d) **Binding Contract:** We understand that this Bid, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed.

Name of the Bidder:*[*insert complete name of the Bidder*]

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

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

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

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

*****: In the case of the Bid submitted by a Joint Venture specify the name of the Joint Venture as Bidder.

**: Person signing the Bid shall have the power of attorney given by the Bidder. The power of attorney shall be attached with the Bid Schedules.

FORM ELI 1
Bidder Information Form

[The Bidder shall fill in this Form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted.]

Date: *[insert date (as day, month and year) of Bid submission*]
RFB No.: *[insert number of Bidding process]*
Alternative No.: *[insert identification No if this is a Bid for an alternative]*

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1. Bidder's Name *[insert Bidder's legal name]*
2. In case of JV, legal name of each member : *[insert legal name of each member in JV]*
3. Bidder's actual or intended country of registration: *[insert actual or intended country of registration]*
4. Bidder's year of registration: *[insert Bidder's year of registration]*
5. Bidder's Address in country of registration: *[insert Bidder's legal address in country of registration]*
6. Bidder's Authorized Representative Information Name: *[insert Authorized Representative's name]* Address: *[insert Authorized Representative's Address]* Telephone/Fax numbers: *[insert Authorized Representative's telephone/fax numbers]* Email Address: *[insert Authorized Representative's email address]*
7. Attached are copies of original documents of *[check the box(es) of the attached original documents]* ☐ Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above. ☐ In case of JV, JV agreement, in accordance with ITB 3.3. ☐ Establishing that the Bidder is not under the supervision of the Procuring agency/Employer[in case of subsidiaries] 8. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

ELI2
Bidder's JV Members Information Form

[The Bidder shall fill in this Form in accordance with the instructions indicated below. The following table shall be filled in for the Bidder and for each member of a Joint Venture]].
Date: *[insert date (as day, month and year) of Bid submission*]
RFB No.: *[insert number of RFB process]*
Alternative No.: *[insert identification No if this is a Bid for an alternative]*

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1. Bidder's Name: *[insert Bidder's legal name]*
2. Bidder's JV Member's name: *[insert JV's Member legal name]*
3. Bidder's JV Member's country of registration: *[insert JV's Member country of registration]*
4. Bidder's JV Member's year of registration: *[insert JV's Member year of registration]*
5. Bidder's JV Member's legal address in country of registration: *[insert JV's Member legal address in country of registration]*
6. Bidder's JV Member's authorized representative information Name: *[insert name of JV's Member authorized representative]* Address: *[insert address of JV's Member authorized representative]* Telephone/Fax numbers: *[insert telephone/fax numbers of JV's Member authorized representative]* Email Address: *[insert email address of JV's Member authorized representative]*
7. Attached are copies of original documents of *[check the box(es) of the attached original documents]* ☐ Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above. 8. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

Appendix-A

Form of Bid Security

(Bank Guarantee)

[The bank shall fill in this Bank Guarantee Form in accordance with the instructions indicated.]

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[Purchaser to insert its name and address]*

No.: *[Purchaser to insert reference number for the Request for Bids]*

Alternative No.*: [Insert identification No if this is a Bid for an alternative]*

Date: *[Insert date of issue]*

BID GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that _____ *[insert name of the Bidder, which in the case of a joint venture shall be the name of the joint venture (whether legally constituted or prospective) or the names of all members thereof]* (hereinafter called "the Applicant") has submitted or will submit to the Beneficiary its Bid (hereinafter called "the Bid") for the execution of _____ under Request for Bids No. _____ _ ("the RFB").

Furthermore, we understand that, according to the Beneficiary's conditions, Bids must be supported by a Bid guarantee.

At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ (_____) upon receipt by us of the Beneficiary's complying demand, supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating that either the Applicant:

(a) has withdrawn its Bid during the period of Bid validity set forth in the Applicant's Letter of Bid ("the Bid Validity Period"), or any extension thereto provided by the Applicant; or

(b) having been notified of the acceptance of its Bid by the Beneficiary during the Bid Validity Period or any extension thereto provided by the Applicant, (i) has failed to sign the contract agreement, or (ii) has failed to furnish the performance security, in accordance with the Instructions to Bidders ("ITB") of the Beneficiary's bidding document.

This guarantee will expire: (a) if the Applicant is the successful Bidder, upon our receipt of copies of the Contract agreement signed by the Applicant and the performance security issued to the Beneficiary in relation to such Contract agreement; or (b) if the Applicant is not the successful

Bidder, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Bidding process; or (ii) twenty-eight days after the end of the Bid Validity Period.

Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

_____

[Signature(s)]

Note: All italicized text is for use in preparing this form and shall be deleted from the final product.

Appendix-B

Form of Bid-Securing Declaration

[The Bidder shall fill in this Form in accordance with the instructions indicated.]

Date: *[date (as day, month and year)]*
No.: *[number of bidding process]*
Alternative No.: *[insert identification No if this is a Bid for an alternative]*

To: *[complete name of Procuring agency/Employer]*

We, the undersigned, declare that:

We understand that, according to your conditions, Bids must be supported by a Bid-Securing Declaration.

We accept that we will be blacklisted and henceforth cross debarred for participating in respective category of public procurement proceedings for a period of (not more than) six months, if fail to abide with a bid securing declaration, however without indulging in corrupt and fraudulent practices, if we are in breach of our obligation(s) under the Bid conditions, because we:

(a) have withdrawn our Bid during the period of Bid validity specified in the Letter of Bid; or

(b) having been notified of the acceptance of our Bid by the Procuring agency/Employer during the period of Bid validity, (i) fail or refuse to sign the Contract; or (ii) fail or refuse to furnish the Performance Security (or guarantee), if required, in accordance with the ITB.

We understand this Bid Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of our Bid.

Name of the Bidder*****_____

Name of the person duly authorized to sign the Bid on behalf of the Bidder******_____

Title of the person signing the Bid_____

Signature of the person named above_____

Date signed _____ day of _____, _____

*****: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder
******: Person signing the Bid shall have the power of attorney given by the Bidder attached to the Bid

[Note: In case of a Joint Venture, the Bid-Securing Declaration must be in the name of all members to the Joint Venture that submits the Bid.]

Appendix-C

Formula for Price Adjustment (Not Applicable)