HOUSING DEVELOPMENT CORPORATION

HOUSING DEVELOPMENT CORPORATION LTD.

REQUEST FOR PROPOSAL (RFP)

DEVELOPMENT AND SALE OF MIXED RESIDENTIAL BUILDING

PROPOSAL REFERENCE NUMBER: HDC (161)-EM/IU/2020/133

ANNOUNCEMENT DATE: 23rd July 2020

PROPOSAL SUBMISSION DEADLINE: 24th September 2020

REQUEST FOR PROPOSAL (RFP)

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Reference No: HDC (161)-EM/IU/2020/133

1. Housing Development HDC Ltd. (HDC) is seeking local contractor/ developer for the **"Development and Sale of Mixed Residential Building"** (hereinafter called the "Works"). This request for proposal (RFP) states the instructions for submitting proposals, procedure and criteria by which a proponent may be selected and the terms of the lease.
2. A complete set of the RFP Documents may be obtained by eligible interested parties from HDC website www.hdc.com.mv
3. Proposal must be submitted no 24th September 2020 and must be accompanied by a Bid Security, in accordance with the Instructions to Proponents.
4. Process and Schedule of Critical Dates:

Process	Date and Venue	Details of the Process
Announcement	23rd July 2020	- Will be uploaded to HDC's corporate website and properties website along with RFP
Registration	Before 13th August 2020 12:00 PM	- Interested parties can register during this period - Only the registered parties shall be invited to clarification webinar and proposal submission. - For registration, fill out the following form: https://bit.ly/3jvZyaP
Information clarification	**Date and Time shall be shared with the registered parties**	- Only the registered parties will be invited for the Clarification Session.
Enquiries	Before 27th August 2020, 13:00 hrs.	- Enquiries are to be submitted via email to sales@hdc.com.mv
Submission of Proposal	24th September 2020 **Venue and Time to be announced at a later date** **Proposal Opening time and process will be informed later**	- The Bid Security form and the Price Proposal form must be submitted - **Details of the Proposal Submission and Submission Procedure shall only be shared with the registered parties.**
Proposal Opening	24th September 2020 **Venue and Time to be announced at a later date** **Proposal Opening time and process will be informed later**	- With respect to the ongoing COVID-19 pandemic, details of the proposal opening time will be shared with the registered parties only.

SECTION I. INSTRUCTIONS TO PROPONENTS (ITP)

A. GENERAL		
1. Scope of Proposal	1.1	The Lessor; HOUSING DEVELOPMENT CORPORATION LIMITED an incorporated limited liability company operating under the registration number C793/2008 and having its registered office at HDC Building, 3rd Floor, Hulhumalé Republic of Maldives (hereinafter called and referred to as "the Lessor",) issues this Request for Proposal (RFP) for the "Development and Sale of Mixed Residential Buildings (Plot no: S1-1, S1-3, S1-4 & D10-3B)". (hereinafter called the "Works") as specified in Section III Lessor's Requirements.
	1.2	The proposal reference number for this RFP is **HDC (161)-EM/IU/2020/133**
	1.3	Throughout this RFP Documents: (a) the term "in writing" means communicated in written form and delivered against receipt; (b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and (c) "day" means calendar day.
2. Corrupt and Fraudulent Practices	2.1	It is requirement of Lessor that proponents, suppliers, contractors and their agents (whether declared or not), sub-contractors, sub-consultants, service providers or suppliers, and any personnel thereof, observe the highest standard of ethics during RFP process and execution of Works. In pursuance of this policy, the Lessor: (a) defines, for the purposes of this provision, the terms set forth below as follows: (i) "Corrupt practice" means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution; and (ii) "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of HDC, and includes collusive practice among Proponent (prior to or after Proposal submission) designed to establish Proposal prices at artificial noncompetitive levels and to deprive HDC of the benefits of free and open competition.

		(b) will reject a proposal for award if it determines that the proponent recommended for award, or any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/or their employees, has, directly or indirectly, engaged in corrupt or fraudulent practices in competing for the contract in question. (c) will sanction a firm or individual, at any time including declaring such firm or individual ineligible, either indefinitely or for a stated period of time: to be awarded a contract from Lessor. (d) will terminate the contract after having given fourteen (14) days' notice to the Proponent.
3. Eligible Proponents	3.1	A Proponent must be a locally registered business (sole trader, partnership or limited liability company) – subject to ITP 3.2
	3.2	Should the Proponent be a Joint Venture (JV) Company, the proportion of local to foreign parties shall be a minimum of 30:70 respectively, and the JV shall remain unchanged till the project completion.
	3.3	A Proponent shall not have a conflict of interest. Any Proponent found to have a conflict of interest shall be disqualified. A Proponent may be considered to have a conflict of interest for the purpose of this RFP process, if the Proponent: (a) directly or indirectly controls, is controlled by or is under common control with another Proponent; or (b) receives or has received any direct or indirect subsidy from another Proponent; or (c) has the same legal representative as Owner; or (d) has a relationship with another Proponent, directly or through common third parties, that puts it in a position to influence the proposal of another Proponent, or influence the decisions of the Lessor regarding this RFP process; or (e) submit more than one proposal in this RFP process by business entity or shareholding company. Participation by a Proponent in more than one Proposal will result in the disqualification of all Proposal in which such Proponent is involved.
	3.4	A Proponent shall not be under suspension from proposal submission by the Lessor.

	3.5	Proponents shall not have consistent history of court/arbitral award decisions against the Proponent for the last five (5) years.
	3.6	Proponent shall not have occurrence of non-performance of a contract as a result of Proponent default for the last five (5) years.
	3.7	Proponent shall provide proof of funds for the full project value. Any proponent without proper proof of funding for the full project value would be considered ineligible.
	3.8	Any proponent that opts the Mortgage for the development and sales rights option, shall provide minimum 30% of the project value as proof of funding. Any proponent without proper proof of funding as aforementioned, would be considered as ineligible.
	3.9	A Proponent shall provide such evidence of eligibility satisfactory to the Lessor, as the Lessor shall reasonably request.
	3.10	Proponent shall not have any dues to HDC at the time of Proposal submission.
	3.11	Proponent shall not submit more than one Proposal for this RFP.
	3.12	Proponent shall not submit a Proposal for more than one plot under this RFP.
B. CONTENTS OF RFP DOCUMENTS		
4. Sections of RFP Documents	4.1	The RFP Documents include all the sections specified below, and should be read in conjunction with any addenda issued in accordance with ITP 6 • Section I. Instructions to proponents (ITP) • Section II. Evaluation and Qualification Criteria • Section III. Product Details and Conditions • Section IV. Business Proposal Requirement • Annexes
	4.2	Unless obtained directly from the Lessor, the Lessor is not responsible for the completeness of the RFP Documents, responses to requests for clarification, or Addenda to the RFP Documents in accordance with ITP 6. In case of any contradiction, documents obtained directly by the Lessor shall prevail.
	4.3	The Proponent is expected to examine all instructions, forms, terms, and specifications in the RFP Documents and to furnish with its proposal all information and documentation as is required by the RFP Documents.

5. Clarification of RFP Documents	5.1	A Proponent requiring any clarification of the RFP Documents shall contact the Lessor in writing at the Lessor's address specified in the ITP 5.2 or raise its enquiries during the Clarification Meeting if provided for in accordance with ITP 5.3. The Lessor will respond in writing to any request for clarification, provided that such request is received before the enquires deadline specified in point 4 of the table of process and schedule of critical dates. The Lessor shall promptly publish its response at the web page identified in the ITP 5.2. Should the clarification result in changes to the essential elements of the RFP Documents, the Lessor shall amend the RFP Documents following the procedure under ITP 6 and ITP 17.3.
	5.2	For **clarification purposes** only, the Lessor's address is: **Real Estate Management** Housing Development Corporation Ltd. Third Floor, HDC Building Hulhumalé, Maldives Tel: (+960)335 5259, (+960)335 5368, (+960)335 5134 Fax: (+960) 335 8892 E-mail: sales@hdc.com.mv Webpage: www.hdc.com.mv and www.properties.hdc.com.mv
	5.3	Interested parties can register for the Clarification Session during the specified period. Only the registered parties will be invited for the Clarification Session. The time, date and venue of the Clarification Session shall be announced at a later date.
6. Amendment of RFP Documents	6.1	At any time prior to the deadline for submission of proposal, the Lessor may amend the RFP Documents by issuing addenda.
	6.2	Any addendum issued shall be part of the RFP Documents and shall promptly publish the addendum on the Lessor's web page in accordance with ITP 5.2.
	6.3	To give Proponents reasonable time in which to take an addendum into account in preparing their proposal, the Lessor should extend the deadline for the submission of proposal, pursuant to ITP 17 .3
C. PREPARATION OF PROPOSALS		
7. Cost of Bidding	7.1	The Proponent shall bare all costs associated with the preparation and submission of its proposal, and the Lessor shall not be responsible or liable for those costs, regardless of the conduct or outcome of the RFP Process.

8. Language of Proposal	8.1	The RFP, as well as all correspondence and documents relating to the RFP exchanged by the Proponent and the Lessor, shall be written in the ENGLISH or DHIVEHI language.
9. Documents Comprising the Proposal	9.1	The Proposal shall comprise the following: (a) Letter of Price Proposal Form in accordance with Annex 08; (b) Bid Security in accordance with ITP 14; (c) Written confirmation authorizing the signatory of the Proposal to commit the Proponent, in accordance with ITP 15.2; (d) Business Proposal Requirement stipulated in Section IV (e) Any other document required in the ITP.
10. Letter of Price Proposal	10.1	The Letter of Price Proposal shall be prepared using the relevant forms furnished in Annex 08. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITP 15.2. All blank spaces shall be filled in with the information requested.
	10.2	The Proponent shall quote prices conforming to the requirements specified in Section II and Section III and fill in Price Proposal Form in accordance with Annex 08;
11. Documents Comprising the Business Proposal	11.1	The Proponent shall furnish all information as stipulated in Section IV, in sufficient detail to demonstrate the adequacy of the Proponent's proposal to meet the work requirements.
12. Currencies of Proposal	12.1	The currency(ies) of the proposal are to be quoted in Maldivian Rufiyaa (MVR)
13. Period of Validity of Proposals	13.1	Proposal shall remain valid for a period of **One Hundred and Eighty (180) days** after the proposal submission deadline date prescribed by the Lessor in accordance with ITP 17.2. A proposal valid for a shorter period shall be rejected by the Lessor as non-responsive.
14. Bid Security	14.1	The Bidder shall furnish as part of its proposal, a bid security in original form bid security, in the amount of: - If a local party, the Bid Security amount is **MVR 500,000.00 (Maldivian Rufiyaa Five Hundred Thousand)** - If majority share is owned by a foreign party, the Bid Security amount is **USD 100,000.00 (Hundred Thousand Dollars)**

	14.2	The Bid Security shall be valid for **180 (One Hundred and Eighty)** days from the deadline for submission of Proposals.
	14.3	The Bid Security shall be a demand guarantee in forms of an unconditional guarantee issued by a locally registered Bank or financial institution (such as an insurance, bonding or surety company). The Bid Security shall be submitted using the Bid Security Form included in Annex 06.
	14.4	Any proposal not accompanied by a substantially responsive bid security shall be rejected by the Lessor as non-responsive.
	14.5	The Bid Security of the successful Proponent shall be returned as promptly as possible once the successful Proponent has signed the Contract and furnished the required Performance Guarantee.
	14.6	The Bid Security of unsuccessful Proponents shall be returned as promptly as possible upon the successful Proponent's signing the Contract and furnishing the Performance Guarantee, if relevant.
15. Format and Signing of Proposal	15.1	The Proponent shall submit one original of the documents comprising the proposal as described in ITP 9.1.
	15.2	The original and all copies of the proposal shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Proponent. This authorization shall consist of a written confirmation of a Power of Attorney to sign on behalf of the Proponent. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the proposal where entries or amendments have been made shall be signed or initialed by the person signing the proposal.
	15.3	Any inter-lineation, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the proposal.
16. Sealing and Marking of Proposals	16.1	The Proponent shall enclose the proposal. These envelopes containing the original and the copies shall then be enclosed in one single envelope.

	16.2	The inner and outer envelopes shall: (a) Bear the name and address of the Proponent; (b) Bear the name of the works, to be addressed to the Lessor and bear specific identification of this RFP process: **"DEVELOPMENT OF MIXED RESIDENTIAL BUILDING FOR THE PLOT NO: _____"** **Housing Development Corporation Ltd.** **Third Floor, HDC Building** **Hulhumalé, Maldives** **Proposal Reference No: HDC (161)-EM/IU/2020/133** (c) Proposal Check list specified in Annex 10 must be attached with the envelope (d) Bear the name, address and contact number and contact person of the Proponent. (e) Bear the registration number and the stamp (where applicable) (f) Bear a warning not to open before the time and date for proposal opening.
	16.3	If all envelopes are not sealed and marked as required, the Lessor will assume no responsibility for the misplacement or premature opening of the proposal.
17. Deadline for Submission of Proposal	17.1	Proposals must be received by the Lessor at the address and no later than the date and time specified in the ITP 17.2. Proponents ***do not*** have the option to submit their proposals electronically.
	17.2	For **proposal submission purpose** only, **With respect to the ongoing COVID-19 pandemic, details of the proposal opening time and process will be shared with the registered parties only** **The deadline for proposal submission is:** Date: 24th September 2020
	17.3	The Lessor may, at its discretion, extend the deadline for the submission of proposals by amending the RFP Documents in accordance with ITP 6, in which case all rights and obligations of the Lessor and Proponents previously subject to the deadline shall thereafter be subject to the deadline as extended.
18. Late Proposal	18.1	The Lessor shall not consider any proposals that arrives after the deadline for submission of proposal specified in ITP 17.2. Any proposal received by the Lessor after the deadline for submission

		of proposal shall be declared late, rejected, and returned unopened to the Proponent.
19. Proposal Opening	19.1	Except in the cases specified in ITP 18.1, the Lessor shall publicly open and read out in accordance with ITP 19.3 all proposal received by the deadline, at the date, time and place specified in the ITP 19.2, in the presence of Proponents` designated representatives and anyone who choose to attend. However, if an unforeseen circumstance arises resulting in the delay of the proposal opening, the Lessor shall inform the attendees.
	19.2	The proposal opening shall take place at: **With respect to the ongoing COVID-19 pandemic, details of the proposal opening time and process will be shared with the registered parties only** Date: 24th September 2020
	19.3	Envelopes shall be opened one at a time, reading out: the name of the Proponent; the total price, the presence or absence of a bid security, if required; and any other details as the Lessor may consider appropriate. The Lessor shall neither discuss the merits of any proposal nor reject any proposal except for late proposal in accordance with ITP 18.1 and proposals that are not in accordance with Annex 10.
	19.4	The Lessor shall prepare a record of the proposal opening that shall include, as a minimum: the name of the Proponent; the Price; and the presence or absence of a bid security, if one was required. The Proponents' representatives who are present shall be requested to sign the record. The omission of a Proponent's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be publicly announced after the proposal opening.
	19.5	**Due to the COVID-19 pandemic and the safety measures implemented by the HPA and the Government of Maldives, the Proposal Submission Procedure is subject to change.** **Based on the situation by the date of proposal submission, a submission procedure that complies with the HPA guidelines will be announced on our website and shared with all the registered parties via email.**
D. EVALUATION AND COMPARISON OF PROPOSALS		
20. Confidentiality	20.1	Information relating to the evaluation of proposals, comparison of proposals and recommendation of contract award shall not be disclosed to Proponents or any other persons not officially concerned with the RFP process until information on Contract

		award is communicated to all Proponents in accordance with ITP 29.
	20.2	Any attempt by a Proponent to influence the Lessor in the evaluation of the Proposals or Contract award decisions may result in the rejection of its proposal.
	20.3	Notwithstanding ITP 20.2, from the time of proposal opening to the time of Contract award, if a Proponent wishes to contact the Lessor on any matter related to the RFP process, it shall do so in writing.
21. Clarification of Proposals	21.1	To assist in the examination, evaluation, and comparison of the proposals, and qualification of the Proponents, the Lessor may, at its discretion, ask any Proponent for a clarification of its proposal, giving a reasonable time for a response. Any clarification submitted by a Proponent that is not in response to a request by the Lessor shall not be considered. The Lessor's request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease, in the prices or substance of the proposal shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Lessor in the evaluation of the proposals, in accordance with ITP 24.
	21.2	If a Proponent does not provide clarifications of its proposal by the date and time set in the Lessor's request for clarification, its proposal may be rejected.
22. Deviations, Reservations, and Omissions	22.1	During the evaluation of proposal, the following definitions apply: (a) "Deviation" is a departure from the requirements specified in the RFP Documents; (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the RFP Documents; and (c) "Omission" is the failure to submit part or all of the information or documentation required in the RFP Documents.
23. Determination of Responsiveness	23.1	The Lessor's determination of a proposal's responsiveness is to be based on the contents of the proposal itself, as defined in ITP 9.1.
	23.2	A substantially responsive proposal is one that meets the requirements of the RFP Documents without material deviation, reservation, or omission.
	23.3	A substantially responsive proposal is one that meets the requirements of the RFP Documents without material deviation,

		reservation, or omission. A material deviation, reservation, or omission is one that, (a) if accepted, would (i) affect in any substantial way the scope, quality, or performance of the works specified in the Contract; or (ii) limit in any substantial way, inconsistent with the RFP Documents, the Lessor's rights or the Proponent's obligations under the proposed Contract; or (b) if rectified, would unfairly affect the competitive position of other Proponents presenting substantially responsive proposal.
	23.4	If a proposal is not substantially responsive to the requirements of the RFP Documents, it shall be rejected by the Lessor and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.
24. Correction of Arithmetical Errors	24.1	Provided that the proposal is substantially responsive, the Lessor shall correct arithmetical errors on the following basis: (a) if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Lessor there is an obvious misplacement of the decimal point in the unit price, in which case 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 subtotals, the subtotals shall prevail and the total shall be corrected; and (c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.
	24.2	Proponents shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with ITP 24.1, shall result in the rejection of the Proposal.
25. Evaluation of Proposal	25.1	The Lessor shall use the criteria and methodologies listed in Section II Evaluation and Qualification Criteria.

26. Lessor's Right to Accept Any Proposal, and to Reject Any or All Proposal	26.1	The Lessor reserves the right to accept or reject any proposal, and to annul the RFP process and reject all proposal at any time prior to contract award, without thereby incurring any liability to Proponents. In case of annulment, all proposals submitted and specifically, bid securities, shall be promptly returned to the Proponents.
E. AWARD OF CONTRACT		
27. Award Criteria	27.1	Subject to ITP 26.1, the Lessor shall conditionally award the Contract to the Proponents whose proposals has been determined to be substantially responsive to the RFP Documents and scored the highest marks from each category as specified in ITP 25.1, provided further that the Proponent is determined to be qualified to perform the Contract satisfactorily.
28. Notification of Conditional Award	28.1	Prior to the expiration of the period of proposal validity, the Lessor shall notify the successful Proponent, in writing, that its proposal has been accepted.
	28.2	Until a formal contract is prepared and executed, the successful Proponents' proposal and the notification of conditional award shall constitute a binding Contract.
29. Signing of Contract	29.1	Promptly upon notification of the conditional award, the Lessor shall send the successful Proponent the Contract Agreement.
	29.2	Agreement must be signed after the receipt of the Acquisition Fee and Performance Guarantee as per Clause 31 and 32 of this RFP, and after the approval of the detailed Concept Drawing submitted as per Clause 33 of this RFP.
	29.3	Within seven (7) days of receipt of the Contract Agreement, the successful Proponent shall sign, date, and return it to the Lessor.
30. Termination	30.1	In case of breach of any of the Contractual obligations by the Proponent, HDC shall have the right to terminate the contract with prior notice.
31. Acquisition Fee	31.1	Within 30 (Thirty) days of Notification of Conditional Award and prior to execution of the signing of agreement in accordance with ITP 29.1, the successful proponent shall pay Acquisition fee to the account which will be notified in the Letter of Award. Promptly upon notification of the payment, the Lessor shall send the successful Proponent the Contract Agreement. The rate for the Acquisition Fee is MVR. 210.00 (Two Hundred and Ten) per Sqft of plot area.

	31.2	Failure to pay the Acquisition fee within the specified time period as per Section I, sub clause 31.1 will result in the annulment of conditional award of contract.
32. Performance Guarantee	32.1	Within thirty (30) days of the receipt of notification of award from the lessor, the successful proponent shall furnish the Performance Guarantee.
	32.2	The Performance Guarantee amount shall be 5% of the estimated project value. The Performance Guarantee shall be valid for 12 (twelve) months from the date of Agreement signing, and shall be renewed annually until the completion of the construction period and for an additional two months.
	32.3	Failure to pay the Performance Guarantee within the specified time period as per Section I, sub clause 32.1 will result in the annulment of conditional award of contract.
33. Concept Drawing	33.1	Within 30 (Thirty) days of the receipt of the notification of award from the lessor, the successful proponent shall submit the Concept Drawings of the mixed residential building.
	33.2	HDC shall give comments on the submitted Concept Drawings within 14 (fourteen) working days from the date of submission. The Successful Proponent further undertakes to make any alterations to the revised Concept Drawings and submit within 14 (Fourteen) working days from the date of comments given by HDC, at the Proponent's sole cost. The revised Concept Drawings shall comply with all specific requirements of HDC mentioned in the comments and Guidelines of HDC.
	33.3	Upon the Concept Drawings being finalized and approved by the relevant authorities, the Proponent shall grant exclusive right to HDC to utilize the Concept Drawings in the event the Proponent fails to deliver the project as agreed between the parties. Under such circumstances, the Concept Drawings shall become the property of HDC and the Proponent shall not have any right or claim whatsoever in respect of the Concept Drawings.
	33.4	Failure to submit the Concept Drawing within the specified time period as per Section I, sub clause 33.1 will result in the annulment of conditional award of contract.

SECTION II. EVALUATION AND QUALIFICATION CRITERIA

This Section contains all the criteria that the Lessor shall use to evaluate proposals and qualify Proponents. In accordance with ITP 25, no other factors, methods or criteria shall be used. The Proponent shall provide all the information requested in the forms included in Section IV, Business Proposal Requirements and proposal shall fulfill requirements in accordance with ITP 9.1.

Proposal evaluation will be conducted based on the following categories and will be taken into account whilst allocating points;

Residential Sale Rate (Exclusive of GST)	40%
Experience	30%
Commercial Sale Rate (Exclusive of GST)	20%
Local Share Percentage	10%

1. Residential Sale Rate: 40%

1.1. The Residential Sale Rate is the rate at which the Proponent shall sell the completed "Price Capped Housing Units" (60% of the total residential GFA), which shall be exclusive of GST.

1.2. The Proponent shall settle the value of the land payable to HDC in terms of completed "Price Capped Housing Units" at the Residential Sale Rate.

1.3. The maximum acceptable Residential Sale Rate per square feet of the saleable area of a completed housing unit is MVR 2400 (Maldivian Rufiyaa Two Thousand and Four Hundred) (exclusive of GST) any proposal which is higher than the said maximum acceptable Residential Sale Rate shall be disqualified.

1.4. The proposed Residential Sale Rate should be in accordance with the Letter of Price proposal and should be clearly proposed for per square feet of the completed housing unit.

1.5. The proponent offering the lowest residential sale rate will be given a maximum score of 40% whereby points shall be given as prorated for the other proponents.

1.6. In evaluation of proposals procedure to eliminate the outliers as per Annex 05 shall be applied to eliminate any unreasonable Residential Sale Rates.

2. Experience: 30%

2.1. Maximum 30% will be given based on developers' experience in real estate development.

2.2. Maximum marks for development experience will be given based on the value of completed projects. Project completion letters shall be submitted as proof of completed projects. To achieve the maximum marks, the developer should have completed projects of value that is equal to or exceeds 150% of the estimated project cost.

2.3. For Joint Venture companies with a foreign contractor, experience will be accounted as follows:

2.3.1 Developments undertaken locally will be considered first when evaluating past experience. If no local projects are undertaken by the foreign contractor, points awarded for the contractor will be capped at 15%.

2.3.2 A maximum of 15% will be given for residential projects undertaken abroad. Marks beyond 15% cannot be allocated even if the developer has undertaken projects beyond the specified maximum value abroad.

2.3.3 15% (of experience) for projects undertaken in Maldives.

3 Commercial Sale Rate: 20%

3.1 The Commercial Sale Rate is the cost at which the developer shall hand over the completed commercial area in the mixed residential buildings to HDC.

3.2 The total cost of the commercial area will be offset with the total value of land (Land Cost) to be paid to HDC.

3.3 The maximum acceptable Commercial Sale Rate per square feet of the completed Commercial area is MVR 1,000 (Maldivian Rufiyaa One Thousand) (exclusive of GST), and any proposal which is higher than the said maximum acceptable Commercial Sale Rate shall be disqualified.

3.4 The proposed Commercial Sale Rate should be in accordance with the Letter of Price proposal and should be clearly proposed for per square feet of the completed housing unit.

3.5 The proponent offering the lowest commercial sale rate will be given a maximum score of 20% whereby points shall be given as prorated for the other proponents.

3.6 In evaluation of proposals procedure to eliminate the outliers as per Annex 05 shall be applied to eliminate any unreasonable Commercial Sale Rates.

4 Local Share 10%

4.1 Proponents with the highest local shareholding percentage will be given a score of 10% whereby points shall be given as prorated for the other proponents.

SECTION III. PRODUCT DETAILS & QUALIFICATIONS

HDC has announced RFP for locally registered business entities to undertake multi residential developments in Hulhumalé.

1. Product Specifications

DEVELOPMENT	PLOT AREA (SQFT)	MAX HEIGHT/ FLOORS	GFA (SQFT)
S1-1	24,098.22	14 Floors/ 47m	142,179.49
S1-3	30,047.97	14 Floors/ 47m	177,282.99
S1-4	26,969.06	14 Floors/ 47m	159,117.45
D10-3b	12,294.10	10 Floors/ 35.2m	77,329.86

2. Housing Segmentation

2.1 The target market for this housing project shall be essentially for mid income group

2.2 The developer must develop commercial units on the ground and first floor as per the development guidelines

2.3 The residential units shall comprise of units of 2 bedrooms and 3 bedrooms

2.4 3-5% of residential units should be allocated for people with disabilities.

2.5 Price Capped Housing Units: Minimum of 60% of the saleable area shall be priced at the proposed Residential Unite Sale Rate as per Section II, Clause 1 of this RFP.

2.6 Open Market Units: Maximum of 40% of the saleable area can be sold at open market price.

2.7 Price Capped units should have basic finishing and facilities should be as per the Development Guideline (Annex 02)

3. Commercial Units

3.1 The ground and first floor of the mixed residential development shall have commercial units

3.2 The developed commercial units shall be handed over to HDC at the proposed Commercial Sale Rate as per Section II, Clause 3 of this RFP.

3.3 The units must have finishing and other facilities as per the development guidelines.

3.4 The handed over Commercial units and common area should have Utilities connection (Electricity, Water, internet/telephone) as per the development guidelines.

3.5 The cost of the handed over of completed commercial units will be offset with the land cost which the developer has to pay to HDC

4. Parking

4.1 Parking has to be provided as per the development guidelines of the land plot in Annex 02

4.2 Car parking spots should be sold to the tenants linked to the sale of units

4.3 Developer cannot lease out parking spots. Any car parking spots unsold at the time completion of residential unit sale should be handed over to condominium society.

4.4 Motorbike parking shall be allocated to each unit as per the development guidelines in Annex 02.

4.5 Any additional motorbike parking spots can be sold to the tenants linked to the sale of units. Any motorbike parking spot unsold at the time completion of residential unit sale should be handed over to condominium society.

4.6 Developer should allocate car parking spots and motorbike parking spots to units handed over to HDC proportionately at the ratio of parking as per the development guidelines in Annex 02.

5. Cost of Development and Sale rights (Land Cost)

5.1 The consideration for development and sales rights is as follows:

Plot Details	Land Cost Per square feet of the Land Plot Area (Exclusive of GST)
S1-1	MVR 2,811.90
S1-3	MVR 2,811.90
S1-4	MVR 2,811.90
D10-3b	MVR 2,451.40

5.2 The Developer shall settle the value of land in terms of completed "Price Capped Housing Units" inclusive of the proportionate car parking area, at the proposed Residential Sale Rate as per Section II, Clause 1 of this RFP.

5.3 The units to HDC should be distributed to different floors and should have a mix of 2 bedrooms and 3 bedroom

5.4 If there is any difference in value while handing over developed units, it should be settled in cash on the day of unit handover

5.5 If the developer fails to handover Commercial and residential units or to settle the balance of land cost in cash to HDC as per the agreement and work schedule, the developer must pay delay damages to HDC as follows

5.5.1 Penalty for commercial area should be MVR 30 per sq.ft of the leasable floor area per month.

5.5.2 Penalty for residential area should be 0.05% per day of the outstanding amount

6. Sale of the housing units

6.1 The developer can sell the housing units to the individuals allowed under the Maldivian land law

6.2 Approval for pre-sale can be granted upon 20% completion civil of works.

6.3 Developer can start the marketing and promotion of the housing units after agreement signing

6.4 A booking fee of maximum MVR 50,000 can be collected from the customers when booking, however this has to be part of the price of the housing unit.

6.5 The developed properties should be listed on HDC's Properties Website for sale of units with details of facilities and units

6.6 When selling "Price Capped Units" developer should offer to customers the units at the proposed Residential Sale Rate as per Section II, Clause 1, which shall be applied per squre feet of the Saleable Floor Area. Any add-ons to upgrade the unit can be applied only if the customer voluntarily requests for it, and it should be communicated in written form as per "Annex 04" and should be submitted to HDC along with sale documents. Any common use area shall not be considered as part of the add-ons.

6.7 Developer shall submit details of sale price of "Open Market Units". Any amendments can be brought only if the customer voluntarily requests for it, and it should be communicated in written form "Annex 04" and should be submitted to HDC along with sale documents.

6.8 Developer shall not under any circumstance sell more than one unit to a single party

7. Independent Consultant

7.1 The developer shall employ a licensed independent consultant (approved by a regulatory body) to the Project, until completion of the construction and development.

8. Project Key Timelines

8.1 The Proponent shall submit the Performance Guarantee within thirty (30) days of the receipt of Notification of Conditional Award from the HDC.

8.2 The Proponent shall pay acquisition fees within thirty (30) days from the receipt of notification of conditional award from HDC.

8.3 The Proponent shall submit Concept Drawings of the mixed residential building for the approval of HDC within 30 calendar days from the receipt of Notification of Conditional Award. Thereafter, HDC will give comments on the submitted Concept Drawings within 14 (fourteen) working days from the date of submission. The Proponent further undertakes to make any alterations to the revised Concept Drawings and submit within 14 (Fourteen) working days from the date of comments given by HDC, at the Proponent's sole cost. The revised Concept Drawings shall comply with all specific requirements of HDC mentioned in the comments and Guidelines of HDC.

8.4 Upon the Concept Drawings being finalized and approved by the relevant authorities, the Proponent shall grant exclusive right to HDC to utilize the Concept Drawings in the event the Proponent fails to deliver the project as agreed between the parties. Under such circumstances, the Concept Drawings shall become the property of HDC and the Proponent shall not have any right or claim whatsoever in respect of the Concept Drawings.

8.5 The Agreement shall be signed within 7 (Seven) working days from the approval of the Concept Drawing by HDC.

8.6 The Proponent shall submit Detailed Drawings of the mixed residential building for the approval of HDC within 60 calendar days from the signing of the Agreement. Thereafter, HDC will give comments on the submitted Detailed Drawings within 14 (fourteen) working days from the date of submission. The Proponent further undertakes to make any alterations to the revised Detailed Drawings and submit within 14 (Fourteen) working days from the date of comments given by HDC, at the Proponent's sole cost. The revised Detailed Drawings shall comply with all specific requirements of HDC mentioned in the comments and Guidelines of HDC.

8.7 Upon the Detailed Drawings being finalized and approved by the relevant authorities, the Proponent shall grant exclusive right to HDC to utilize the Detailed Drawings in the event the Proponent fails to deliver the project as agreed between the parties. Under such circumstances, the Detailed Drawings shall become the property of HDC and the Proponent shall not have any right or claim whatsoever in respect of the Detailed Drawings.

8.8 The development site shall be handed over to the proponent within 7 (seven) working days from the approval of the detailed drawing.

8.9 The Proponent shall submit BOQ and Project Schedule for the project within 30 (thirty) calendar days from the approval of detailed drawings.

8.10 The Proponent shall mobilize the development land, within 30 calendar days from the handover of the development site. The development land will be handed over to the proponent in its current condition, and any clearance required on the development land shall be the sole responsibility of the proponent.

8.11 If required by EPA, EIA shall be submitted to HDC within 30 (thirty) calendar days from the approval of the detailed drawings.

8.12 The construction and development period for the project shall be 24 calendar months from the date of approval of Detailed Drawings, if Development and Sales Mortgage rights is granted. If the developer is opting for other financing models instead of obtaining mortgage rights, the construction and development period shall be 36 calendar months from the date of approval of Detailed Drawings.

8.12.1 20%, 50%, 75% civil work should be achieved on time as per the work schedule submitted.

8.13 The Defects liability period shall be 12 calendar months from the date of handover of units to customers

9. Reports to be submitted to HDC

9.1 Monthly sales reports shall be submitted to HDC once the pre-sale approval is granted by HDC as per Section III, Sub-clause 6.2 of this RFP.

9.2 Monthly Progress Report shall be submitted to HDC once the Project is mobilized as per Section III, Sub-clause 8.10 of this RFP.

9.3 HDC shall have the right to publish the sale and progress reports. Customers' information will be kept confidential and the information would not be disclosed to the public

9.4 Independent third party assessment shall be carried out as detailed below:

9.4.1 Verification through relevant test report to ensure design grade for concrete is achieved for 7 days and 28 days for the following structural components:

- Foundation
- Columns
- Beams
- Slabs
- Lift and Staircase

9.4.2 Water proofing assurance

9.4.3 Fire safety equipment

9.4.4 All MEP (Mechanical, Electrical and Plumbing) components to be verified and commissioned for quality and serviceability

10. Financing of the project

10.1 The developer has to secure finance for the Project.

10.2 Mortgage for the Development and Sales rights can be granted as per terms acceptable to the bank (the Lender) and HDC.

10.3 Any proponent without proper proof of funding for the full project value would be considered ineligible. Proof of funds will be evaluated based on current ratio (own financing) and bank letters (external financing).

10.4 Any proponent that opts the Mortgage for the development and sales rights option, shall provide minimum 30% of the project value as proof of funding. Any proponent without proper proof of funding as aforementioned, would be considered as ineligible.

SECTION IV. BUSINESS PROPOSAL REQUIREMENT

To establish its qualifications to perform the contract in accordance with Section II (Evaluation and Qualification Criteria) and to determine the proposal as substantially responsive proposal Proponent shall provide the information requested in the corresponding documents included hereunder.

1. Price Proposal Form (As in ANNEX 08)

2. Bid Security (As in ANNEX 06)

3. Legal Documents:

(a) Copy of Business Registration Certificate

(b) Copy of GST Registration certificate (for the relevant and similar work)

(c) Copy of Tax returns for the past 3 (three) years (GST & BPT)

(d) Copy of Trade permit (for the relevant and similar work).

(e) If a Partnership: partnership profile documents

(f) If a JV; JV documents must be submitted. Documents shall clearly state the stake holding proportions of the parties involved.

(g) If a Company; memorandum and Articles of Association of the Company.

(h) If a Company; Board Resolution of the Company confirming Board of Director's approval for proposed work.

(i) Information of the proponent's authorized representative employed to carry out the works, preferably fulltime personnel of the proponent. The proponent shall provide the name, address, contact number, email address and details of the authorized representative who will liaise with Lessor on behalf of the Proponent as in Annex 09

(j) Power of Attorney to sign on behalf of the Proponent in accordance with ITP 15.2.

4. Financial Documents;

(a) Bank statements of the past six (06) months of the Business Entity or the monthly balance or monthly average balance confirmation. The submitted statement shall be original, authorized and sealed by the Bank / Financial institution.

(b) Audited Financial Statements of the past three (03) years (authorized by a certified audit firm / individual)

(c) If Equity Finance, the company accounts should prove that the company has enough fund for the full project. (Cash and cash equivalents, receivables, payables and inventory of the company will be evaluated along with such relevant details of any related company or companies).

(d) If equity injection for the project, should provide proof of the fund

(e) If External funding the proponent should submit relevant documents

a. Bank Finance: should submit Bank Comfort letter, bank guarantee etc.

b. Partner Companies: should provide partner company details

(f) Other finance: Time Deposit, Tradable Bonds, etc.

(g) If part equity part external fund, the proponent should submit documents accordingly.

(h) Financial Plan; should include financial forecast, estimated project value and financial mechanism.

5. Experience

(a) Proponent shall submit documents proving their experience including project completion letters, list of projects and its' values.

6. Shareholding Structure

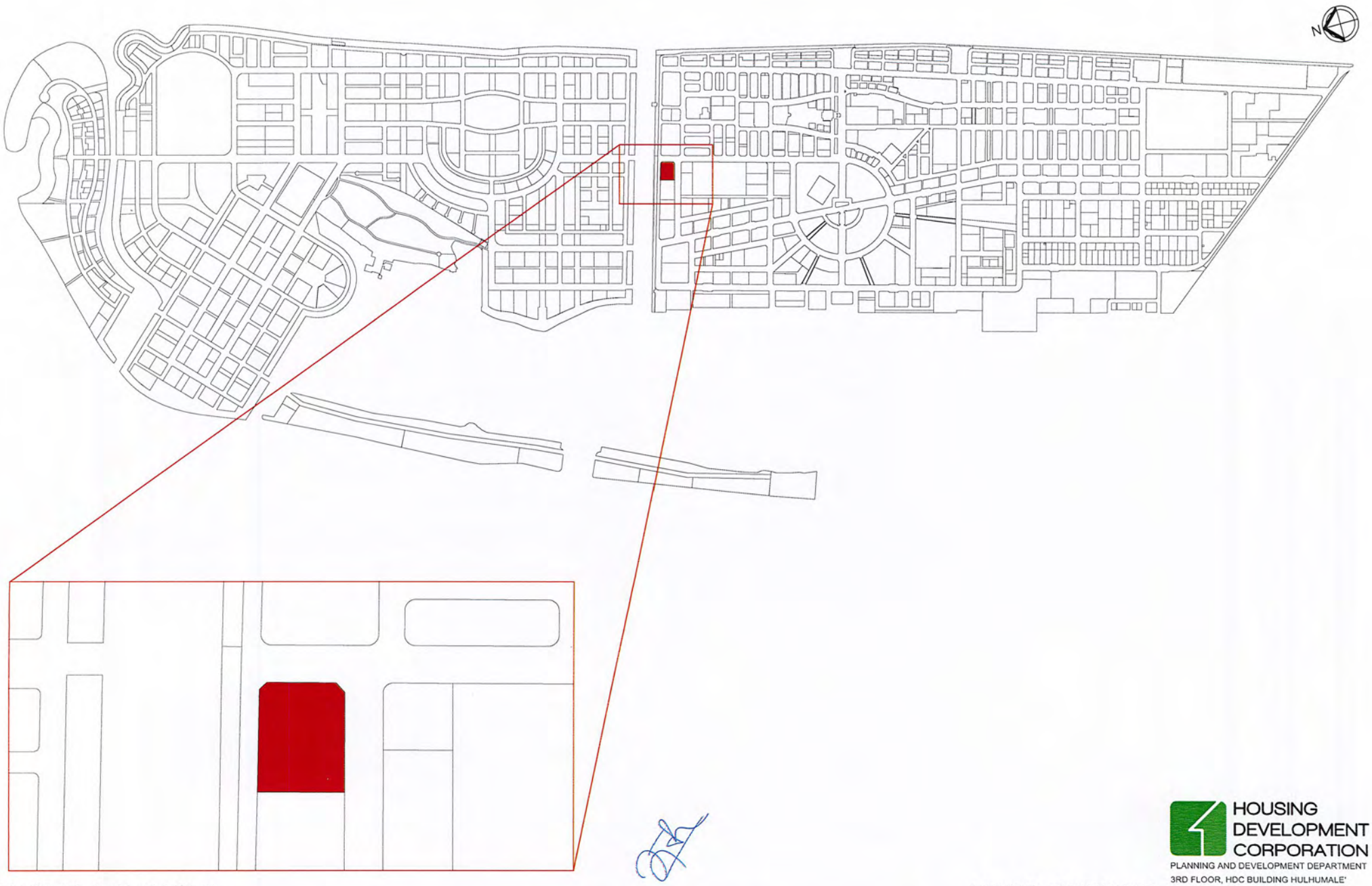
(a) Proponent shall submit documents indicating the shareholding structure.

7. RFP Document Checklist

(b) Checklist should be attached as per Annex 10 outside the sealed envelope

Annex 01
Drawings (Location map / Plot map)

** Areas given are subjected to minimal changes*



PROJECT: Mix-Residential (S1-1)

DRAWING: LOCATION MAP

Scale: N.T.S | Drawn by: Shahud | Checked by: | Date: 15th July 2020 | Remarks:

HOUSING DEVELOPMENT CORPORATION
PLANNING AND DEVELOPMENT DEPARTMENT
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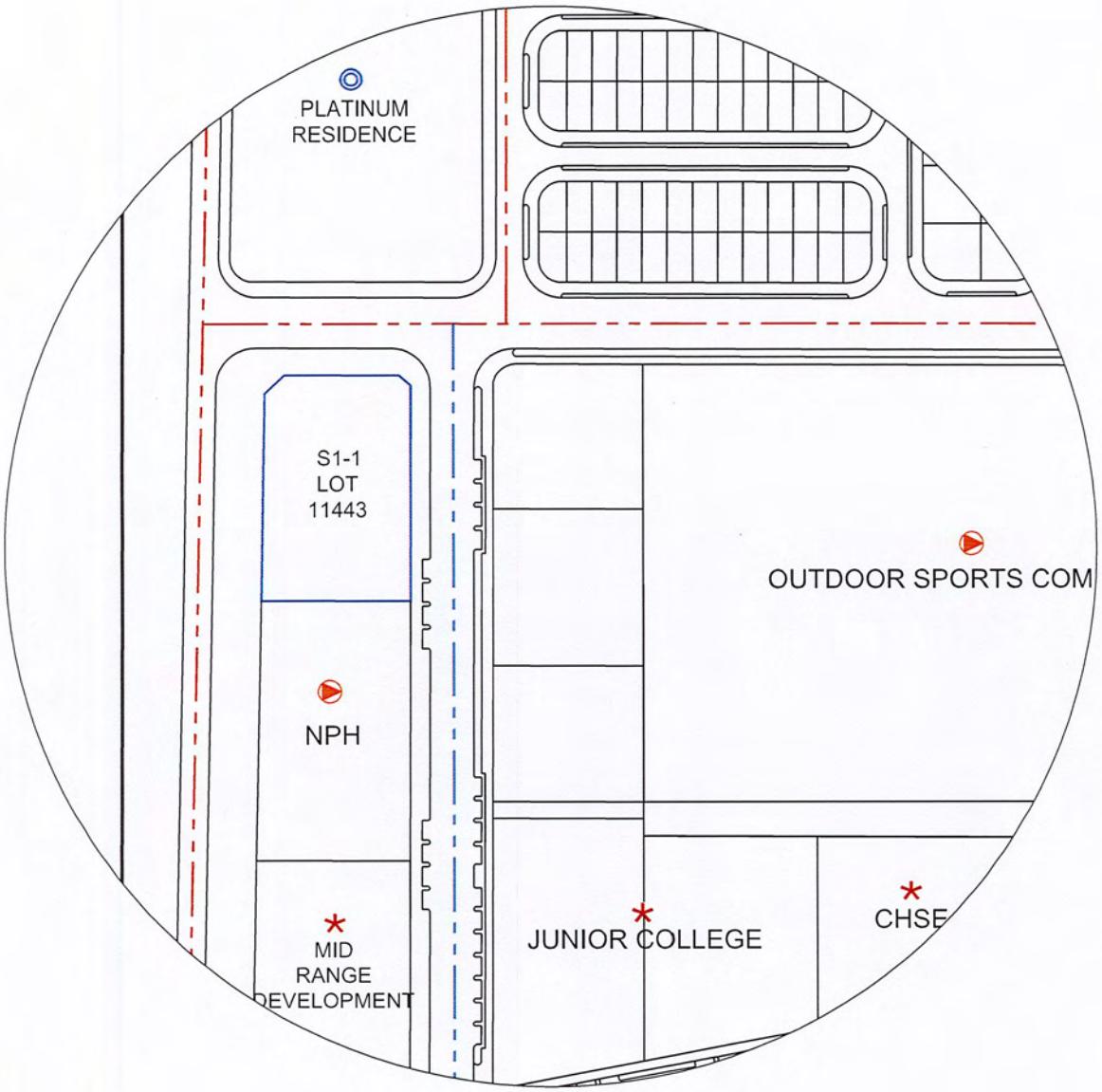
EMAIL : planning@hdc.com.mv



N

LEGEND:

- COMPLETED
- ONGOING
- PLANNED
- ROADS (COMPLETED)
- ROADS (PLANNED)
- GREEN LINK (PLANNED)

PROJECT: Mix-Residential (S1-1)

DRAWING: SITE CONTEXT

Scale: N.T.S | Drawn by: Shahud | Checked by: | Date: 15th July 2020 | Remarks:

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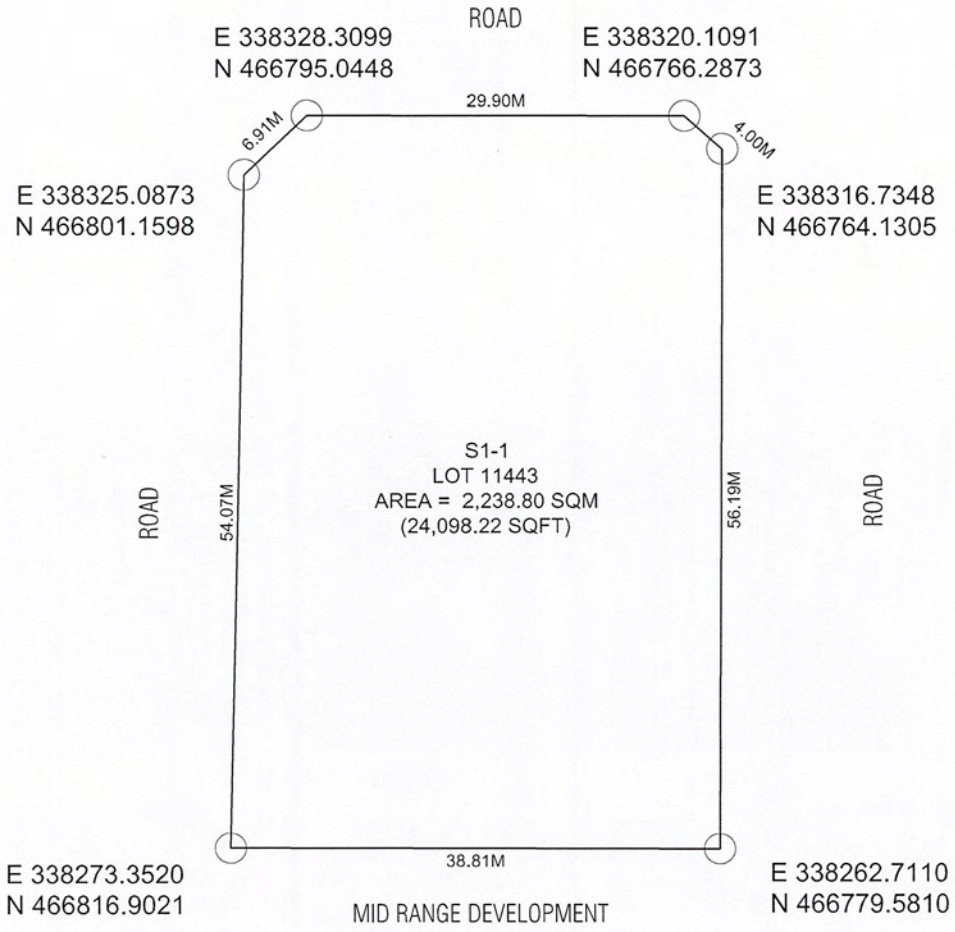

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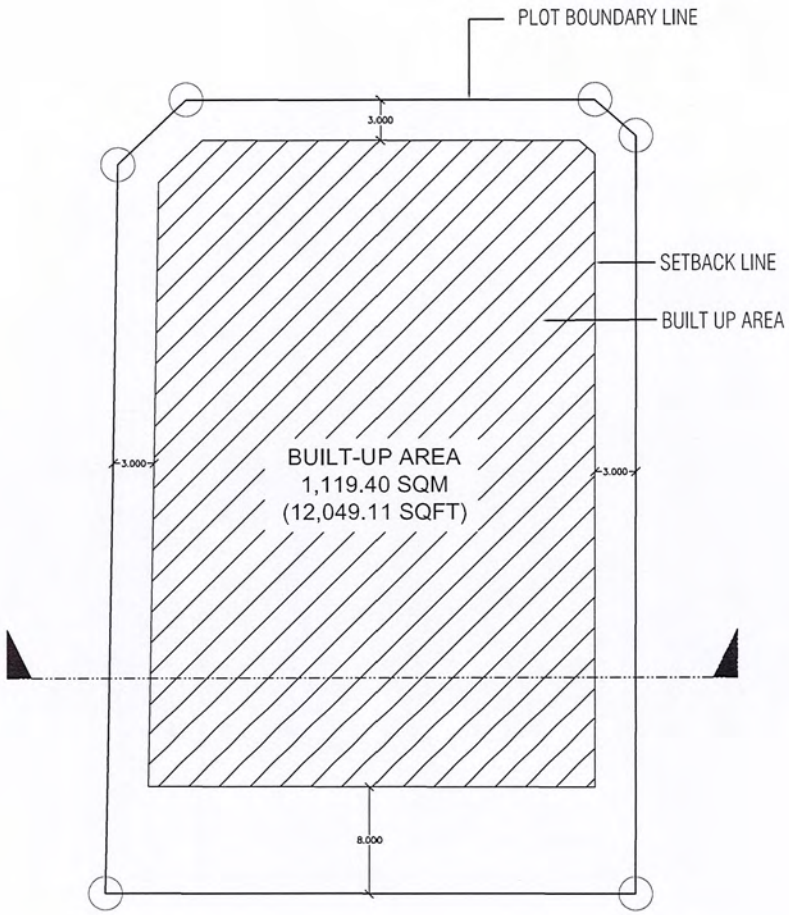
PROJECT: Mix-Residential (S1-1)

DRAWING: PLOT MAP

Scale: N.T.S | Drawn by: Shahud | Checked by: | Date: 15th July 2020 | Remarks:



Lot Number	Parcel Number	Description	Land Use	Plot Area	Foot Print	Gross Floor Area (G.F.A)	Plot Ratio (F.S.I)	Site Coverage	Max Height / Floors	Commercial GFA
11443	S1-1	Residential Development	Mix-Residential	2,238.80 SQM	1,119.40 SQM	13,208.92 SQM	5.90	50%	14 Floors / 47m	895.52 SQM
				24,098.22 SQFT	12,049.11 SQFT	142,179.49 SQFT			43m bldg + 4m Lift Machine Room	9,639.29 SQFT

PROJECT: Mix-Residential (S1-1)

DRAWING: SETBACK PLAN

Scale: N.T.S

Drawn by: Shahud

Checked by:

Date: 15th July 2020

Remarks:

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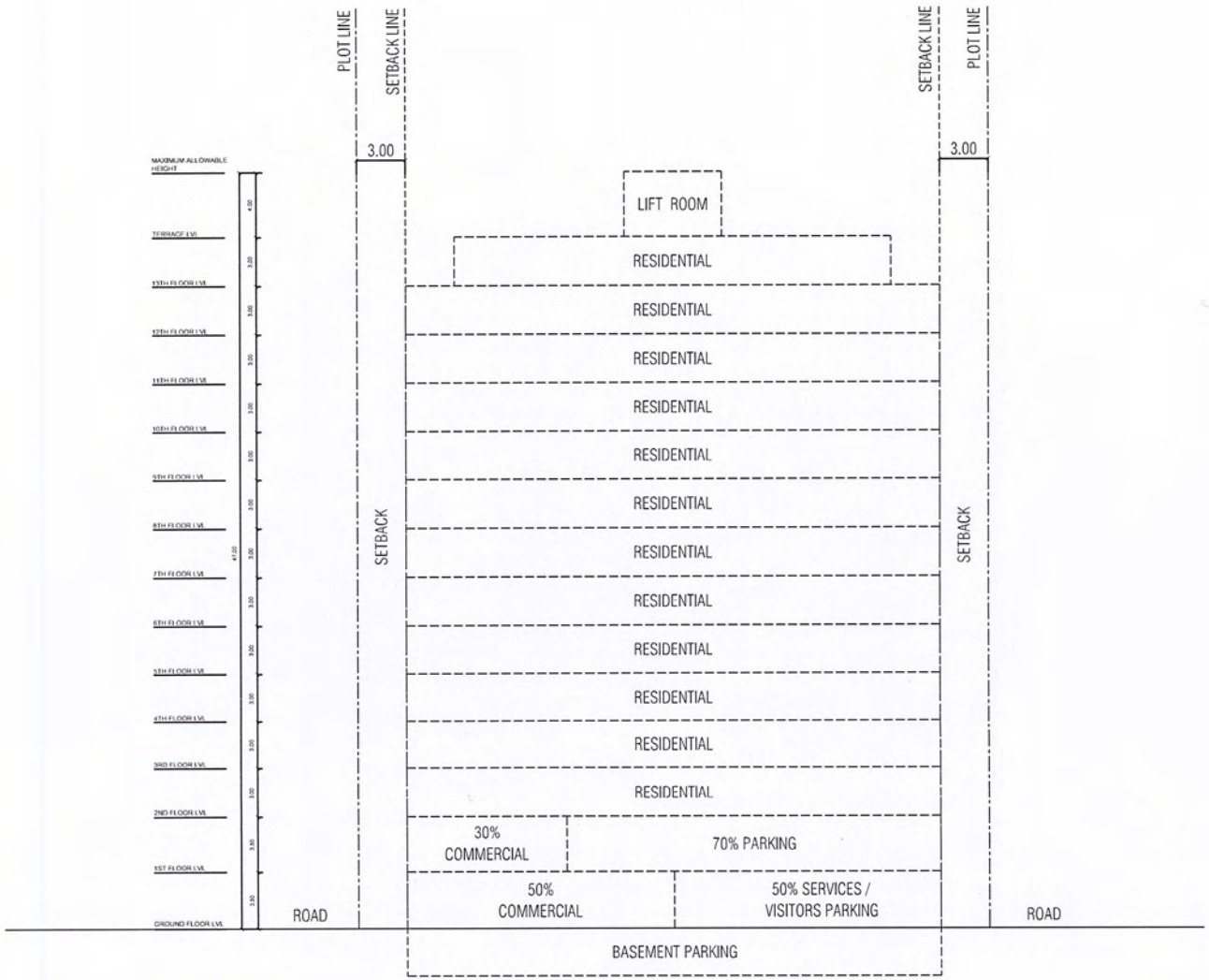

NOTE: The developer may use the 2nd floor and above to achieve the required parking if it is not attained from the allocated parking spaces

PROJECT: Mix-Residential (S1-1)

DRAWING: CONCEPTUAL SECTION

Scale: N.T.S | Drawn by: Shahud | Checked by: | Date: 15th July 2020 | Remarks:

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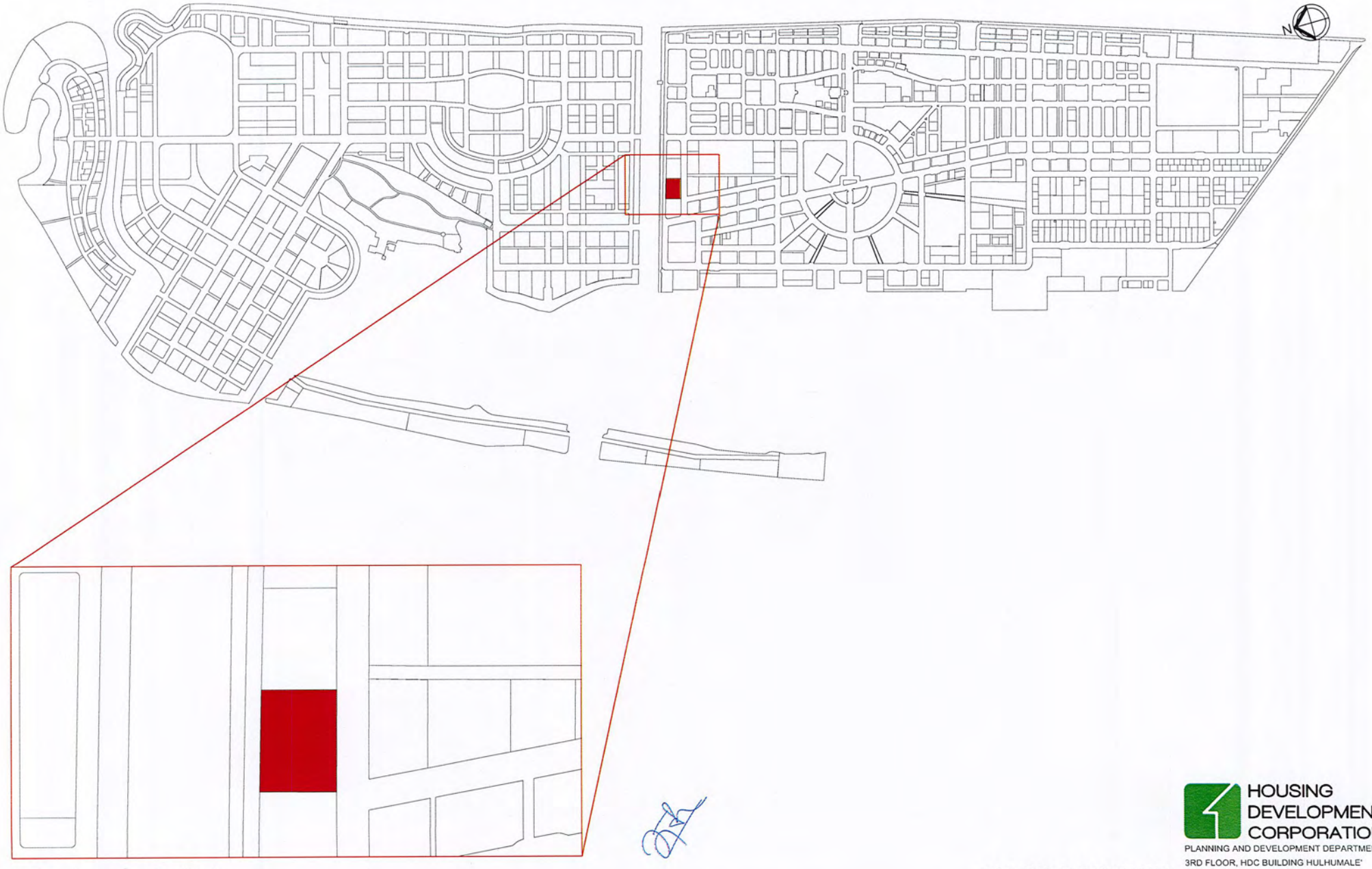

PROJECT: Mix-Residential (S1-3)

DRAWING: LOCATION MAP

Scale: N.T.S | Drawn by: Shahud | Checked by: | Date: 15th July 2020 | Remarks:

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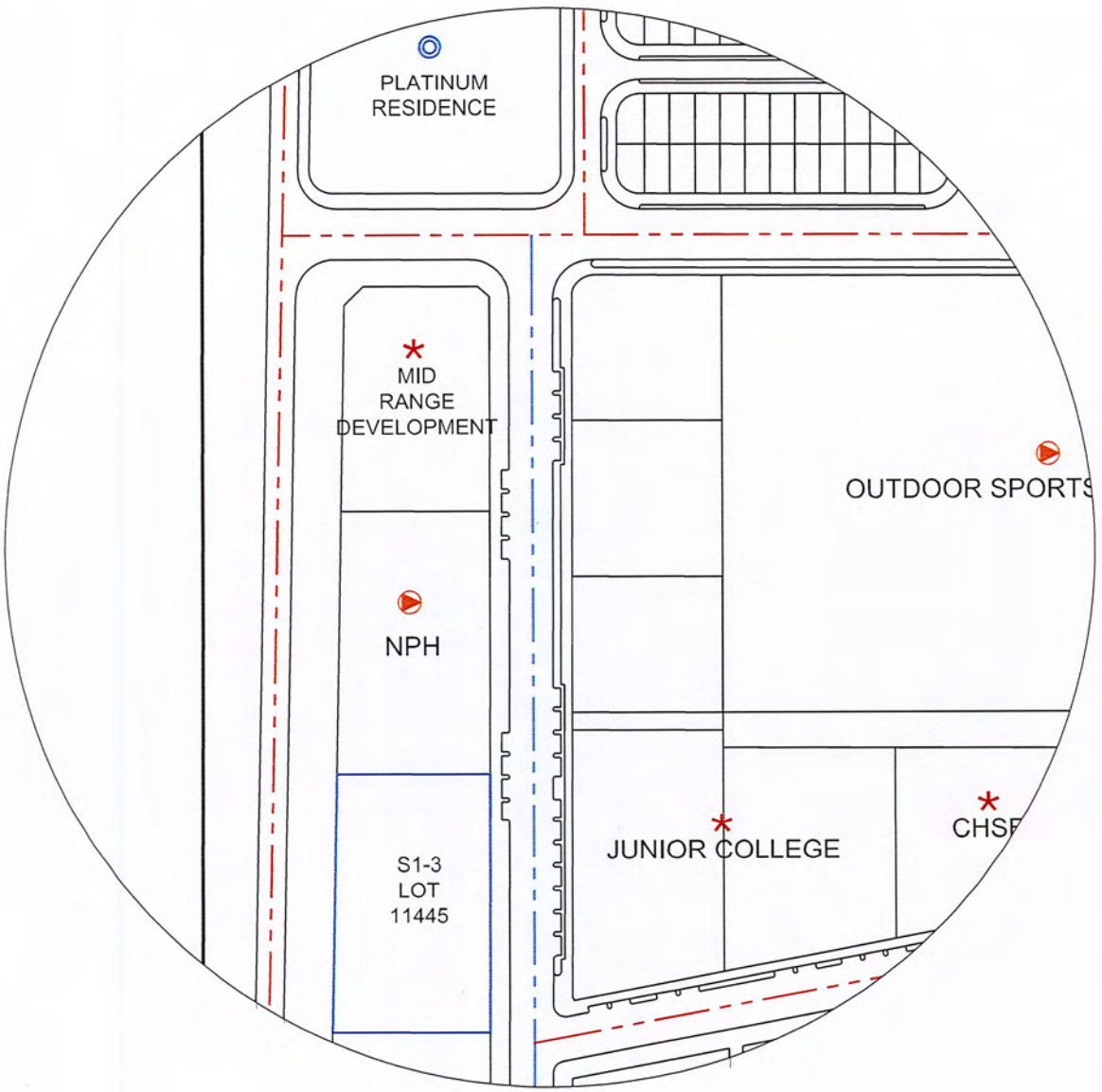

N

LEGEND:

- COMPLETED
- ONGOING
- PLANNED
- ROADS (COMPLETED)
- ROADS (PLANNED)
- GREEN LINK (PLANNED)

PROJECT: Mix-Residential (S1-3)

DRAWING: SITE CONTEXT

Scale: N.T.S | Drawn by: Shahud | Checked by: | Date: 15th July 2020 | Remarks:

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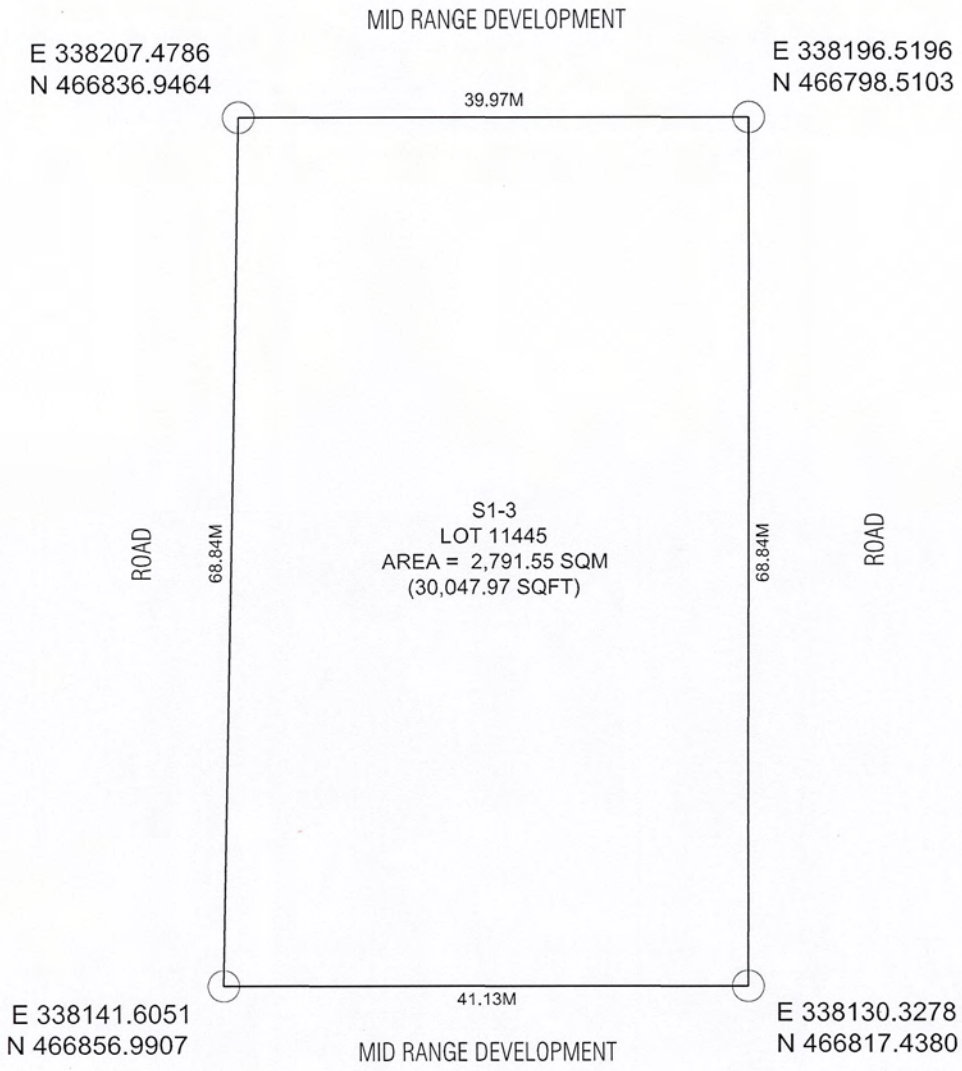

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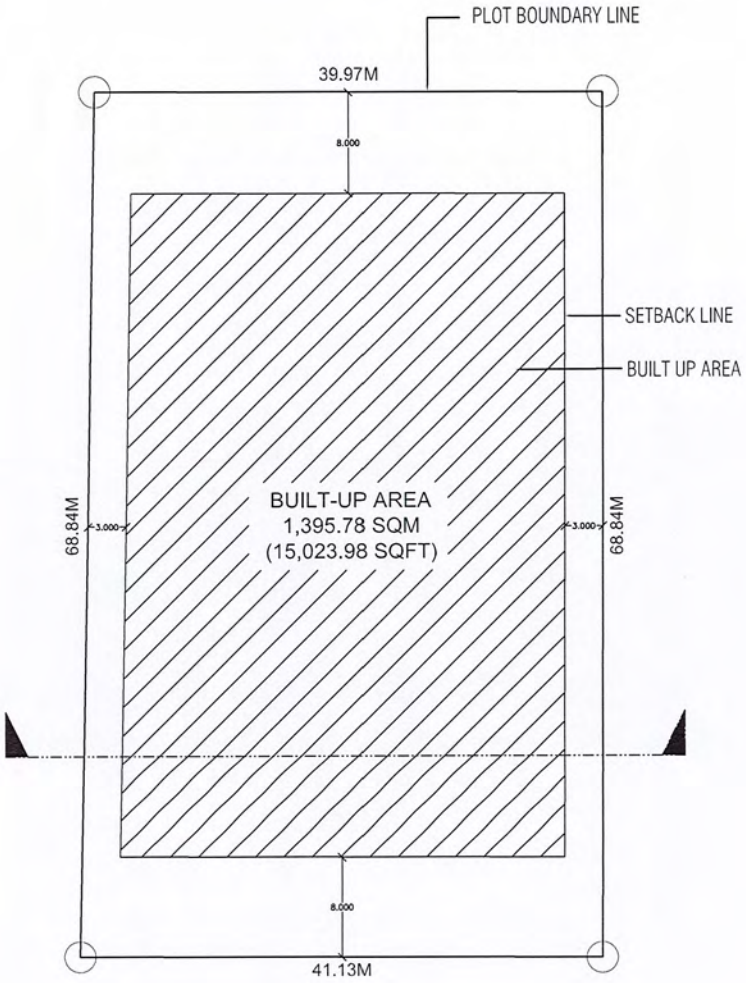
PROJECT: Mix-Residential (S1-3)

DRAWING: PLOT MAP

Scale: N.T.S | Drawn by: Shahud | Checked by: | Date: 15th July 2020 | Remarks:



Lot Number	Parcel Number	Description	Land Use	Plot Area	Foot Print	Gross Floor Area (G.F.A)	Plot Ratio (F.S.I)	Site Coverage	Max Height / Floors	Commercial GFA
11445	S1-3	Residential Development	Mix-Residential	2,791.55 SQM	1,395.78 SQM	16,470.15 SQM	5.90	50%	14 Floors / 47m	1,116.62 SQM
				30,047.97 SQFT	15,023.98 SQFT	177,282.99 SQFT			43m bldg + 4m Lift Machine Room	12,019.23 SQFT

PROJECT: Mix-Residential (S1-3)

DRAWING: SETBACK PLAN

Scale: N.T.S

Drawn by: Shahud

Checked by:

Date: 15th July 2020

Remarks:

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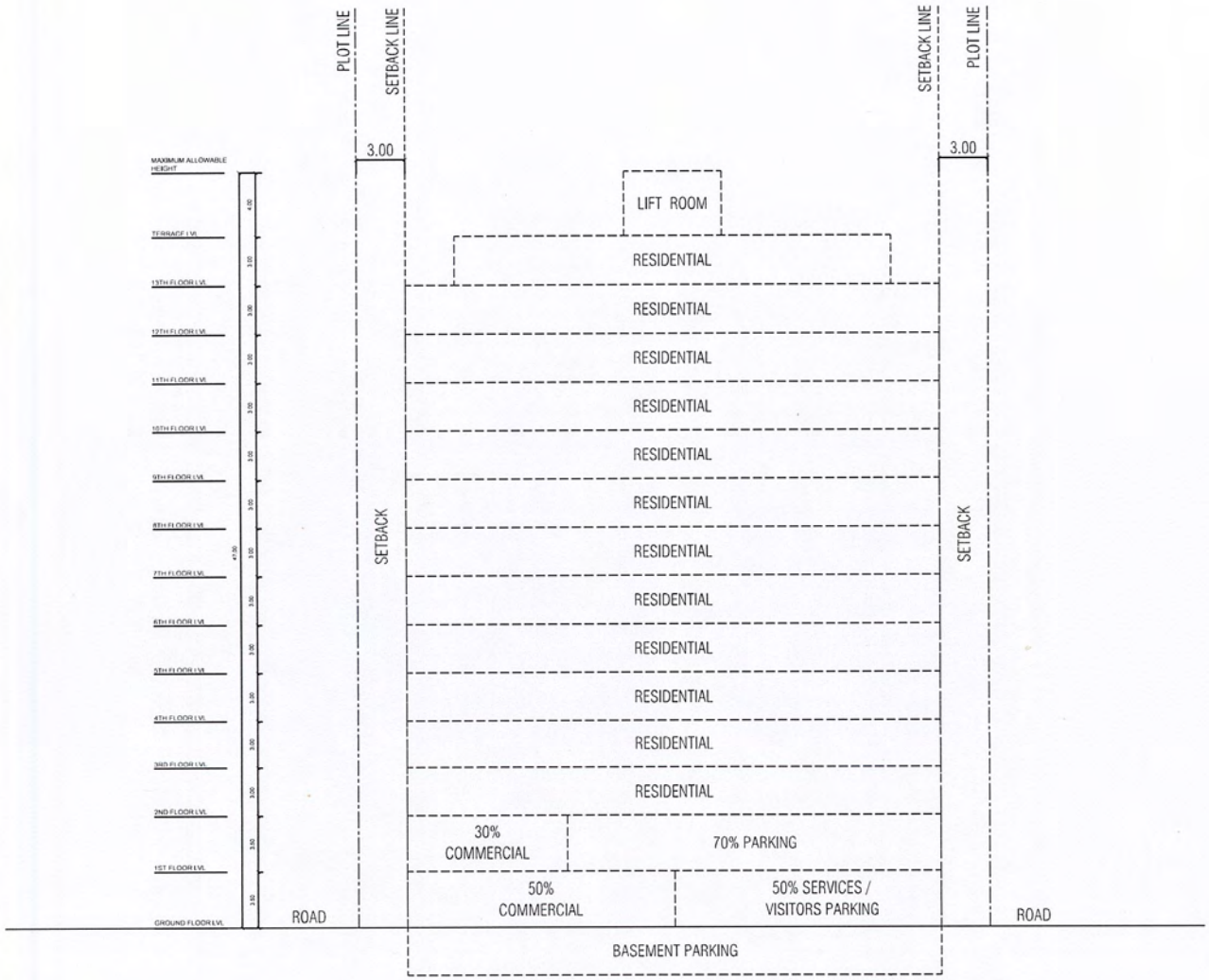

NOTE: The developer may use the 2nd floor and above to achieve the required parking if it is not attained from the allocated parking spaces

PROJECT: Mix-Residential (S1-3)

DRAWING: CONCEPTUAL SECTION

Scale: N.T.S | Drawn by: Shahud | Checked by: | Date: 15th July 2020 | Remarks:

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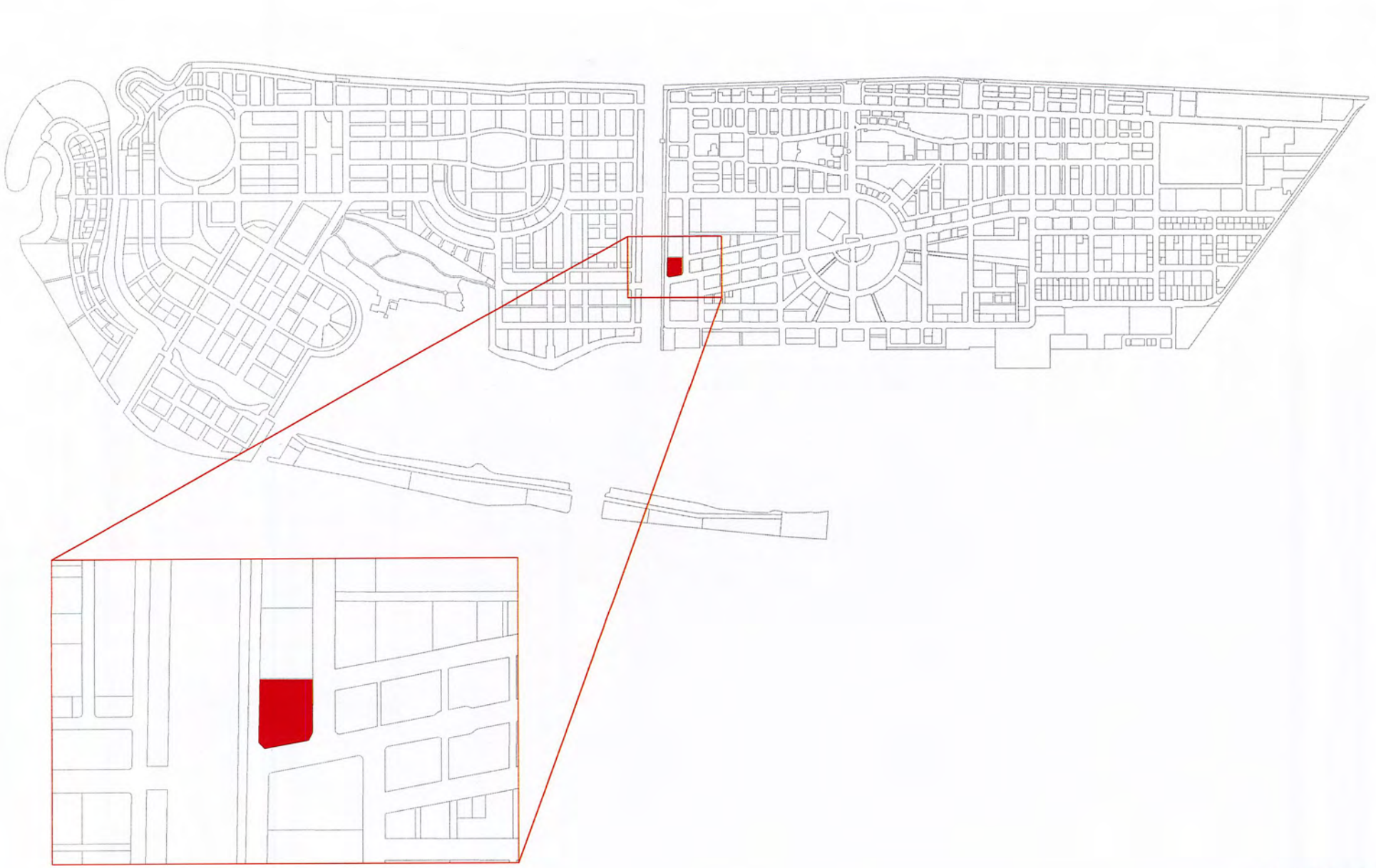

PROJECT: LOT 10958 S1-4

DRAWING: LOCATION MAP

Scale: N.T.S | Drawn by: Naushad | Checked by: | Date: 12th July 2020 | Remarks:

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N

LEGEND:

- COMPLETED
- ONGOING
- PLANNED
- ROADS (COMPLETED)
- GREEN LINK (PLANNED)

PROJECT: LOT 10958 S1-4

DRAWING: SITE CONTEXT

Scale: N.T.S | Drawn by: Naushad | Checked by: | Date: 12th July 2020 | Remarks:

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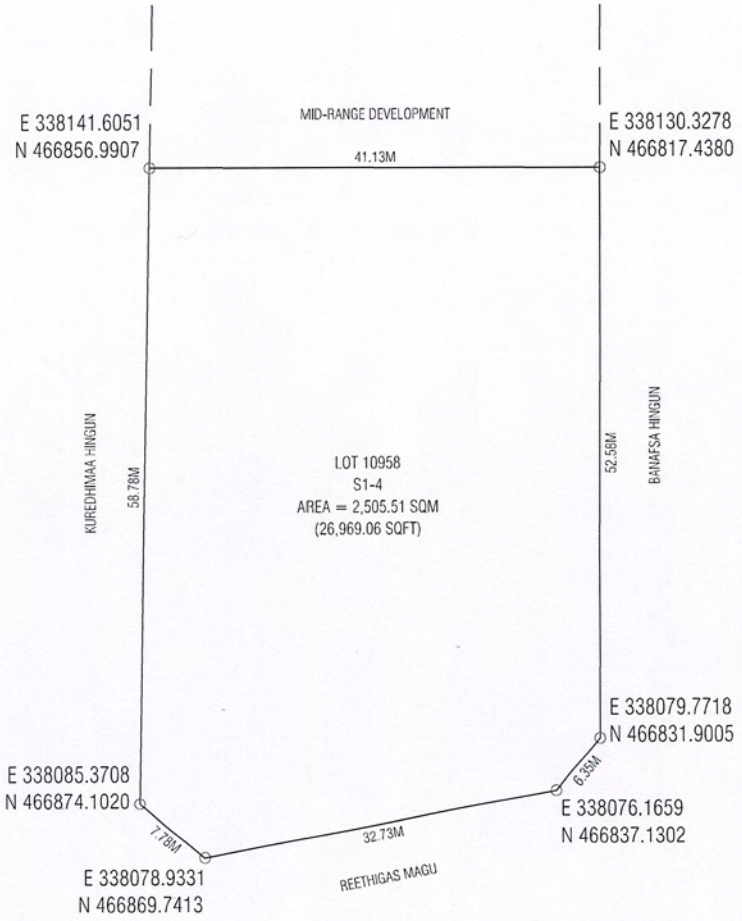

PROJECT: LOT 10958 S1-4

DRAWING: PLOT MAP

Scale: N.T.S | Drawn by: Naushad | Checked by: | Date: 12th July 2020 | Remarks:

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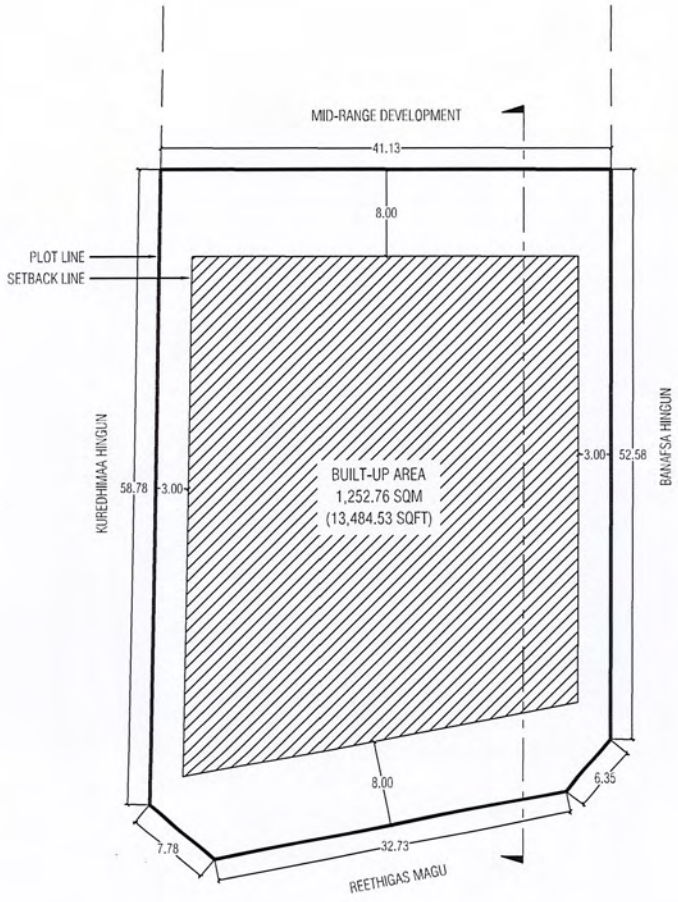

Lot Number	Parcel Number	Description	Land Use	Plot Area	Foot Print	Gross Floor Area (G.F.A)	Plot Ratio (F.S.I)	Site Coverage	Max Height / Floors	Commercial G.F.A
10958	S1-4	Residential Development	Mix-Residential	2,505.51 SQM	1,252.76 SQM	14,782.51 SQM	5.90	50%	14 Floors / 47m	1,002.20 SQM
				26,969.06 SQFT	13,484.53 SQFT	159,117.45 SQFT			43m bldg + 4m Lift Machine Room	10,787.62 SQFT

PROJECT: LOT 10958 S1-4

DRAWING: SETBACK PLAN

Scale: N.T.S Drawn by: Naushad Checked by: Date: 12th July 2020 Remarks:

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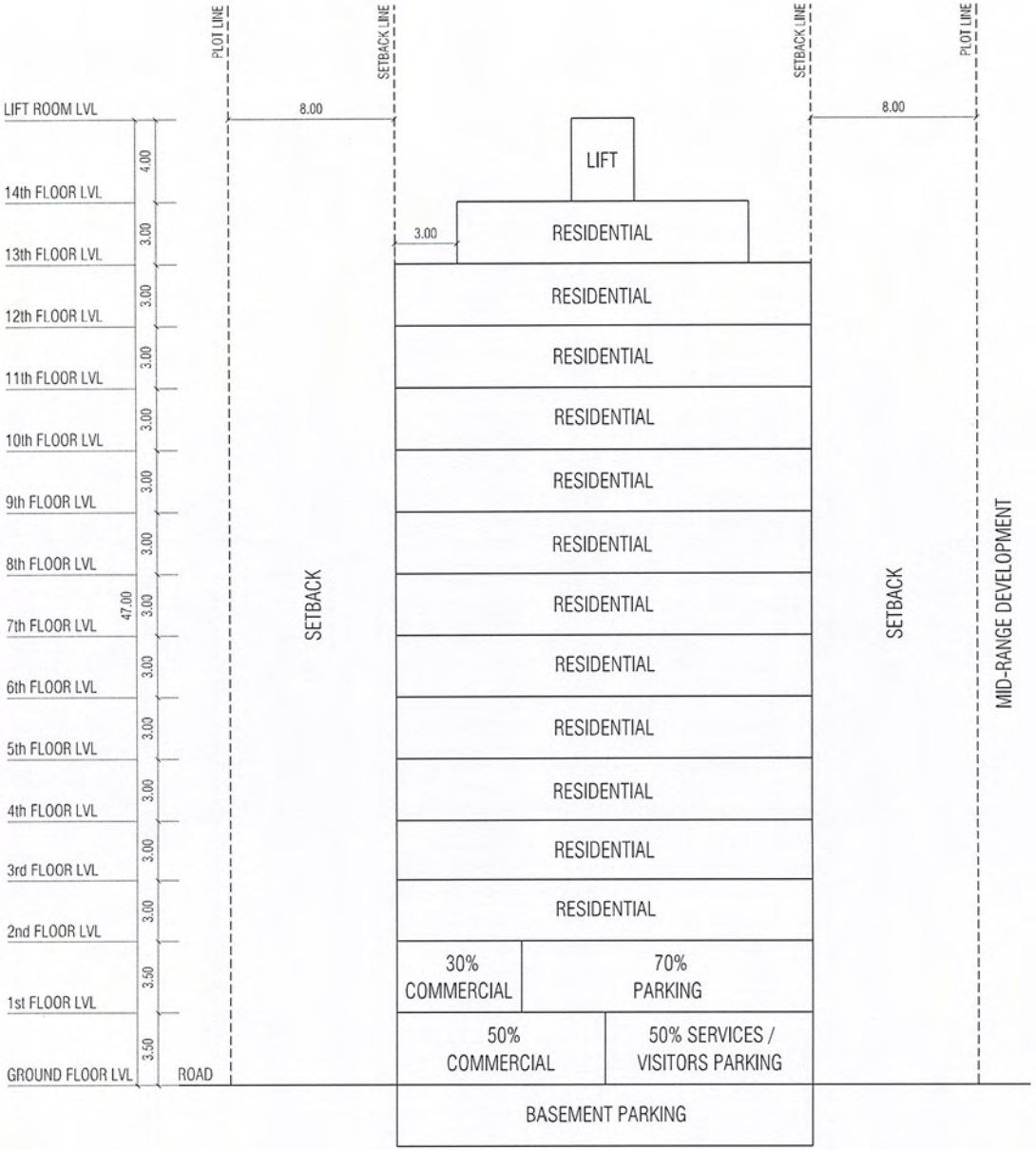

Note: The developer may use the 2nd floor and above to achieve the required parking if it is not attained from the allocated parking spaces.

PROJECT: LOT 10958 S1-4

DRAWING: CONCEPTUAL SECTION

Scale: N.T.S Drawn by: Naushad Checked by: Date: 12th July 2020 Remarks:

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PROJECT: LOT 11645 D10-3B

DRAWING: LOCATION MAP

Scale: N.T.S | Drawn by: Naushad | Checked by: | Date: 7th July 2020 | Remarks:

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EMAIL : planning@hdc.com.mv

LEGEND:

- COMPLETED
- ONGOING
- PLANNED
- ROADS (COMPLETED)
- GREEN LINK (PLANNED)

PROJECT: LOT 11645 D10-3B

DRAWING: SITE CONTEXT

Scale: N.T.S | Drawn by: Naushad | Checked by: | Date: 7th July 2020 | Remarks:

HOUSING DEVELOPMENT CORPORATION
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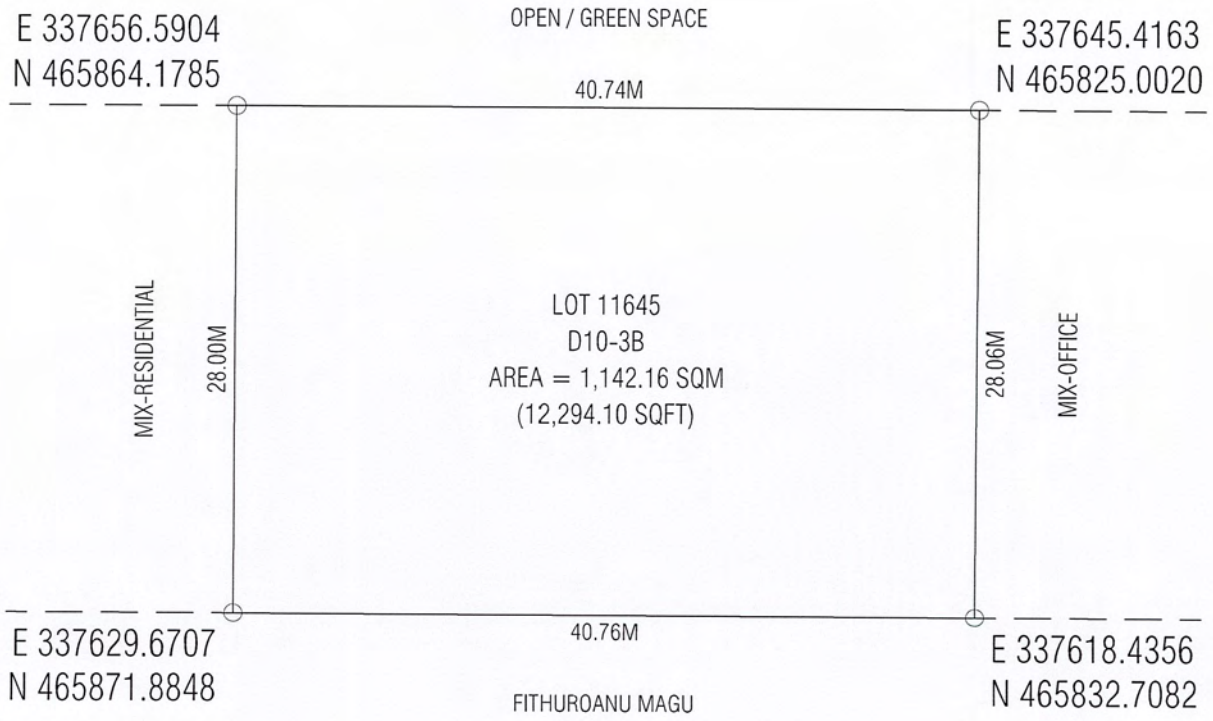

PROJECT: LOT 11645 D10-3B

DRAWING: PLOT MAP

Scale: N.T.S | Drawn by: Naushad | Checked by: | Date: 7th July 2020 | Remarks:

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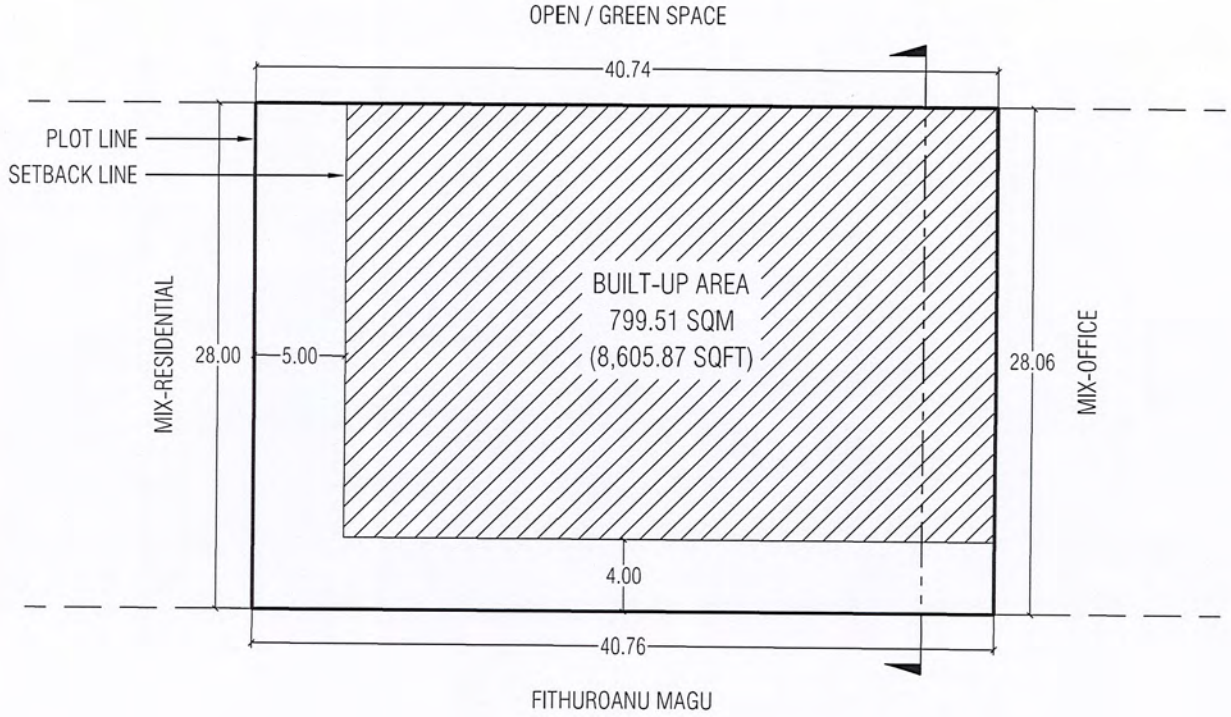

Lot Number	Parcel Number	Description	Land Use	Plot Area	Foot Print	Gross Floor Area (G.F.A)	Plot Ratio (F.S.I)	Site Coverage	Max Height / Floors	Commercial G.F.A
11645	D10-3B	Residential Development	Mix-Residential	1,142.16 SQM	799.51 SQM	7,184.19 SQM	6.29	70%	10 Floors / 35.2m	639.61 SQM
				12,294.10 SQFT	8,605.87 SQFT	77,329.86 SQFT			31.2m bldg + 4m Lift Machine Room	6,884.69 SQFT

PROJECT: LOT 11645 D10-3B

DRAWING: SETBACK PLAN

Scale: N.T.S Drawn by: Naushad Checked by: Date: 7th July 2020 Remarks:

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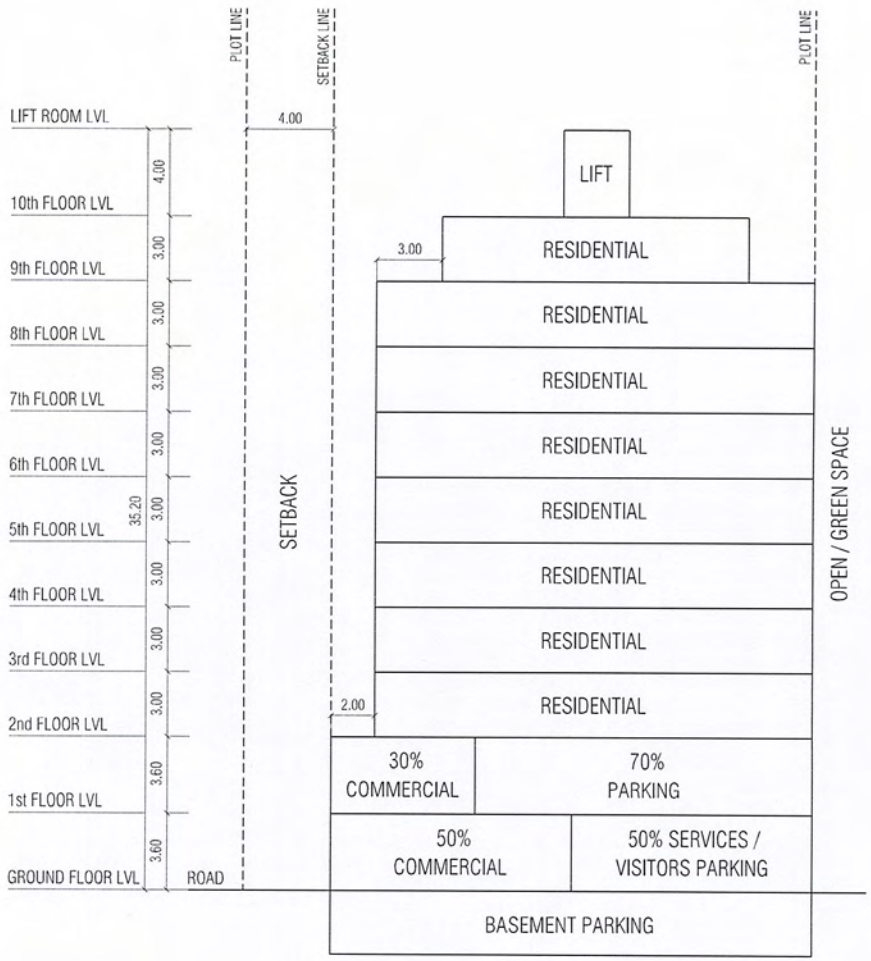

Note: The developer may use the 2nd floor and above to achieve the required parking if it is not attained from the allocated parking spaces.

PROJECT: LOT 11645 D10-3B

DRAWING: CONCEPTUAL SECTION

Scale: N.T.S Drawn by: Naushad Checked by: Date: 7th July 2020 Remarks:

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Annex 02

Planning and Development Guideline,

Design Guidance Document &

In-Building Cabling Standards & Best Practices MDU-MBU-SMB-SFU

HOUSING DEVELOPMENT CORPORATION

PLANNING & DEVELOPMENT DEPARTMENT

MID-RANGE HOUSING DEVELOPMENT GUIDELINES

Planning & Development Department, Housing Development Corporation Ltd, Tel: 3353535, Fax: 3358892, Email:planning@hdc.com.mv

Contents

1. PLANNING GUIDELINES

1.1. INTRODUCTION

1.1.1. This section comprises planning and land use controls defined under these guidelines.

1.1.2. This guideline will be applicable to plots categorized and developed as 'Mix-Residential Housing' in Hulhumalé. Mix-residential housing is defined as housing developments with a mixture of commercial and residential developments.

1.2. LAND USAGE

1.2.1. These allocated land plots are for the construction of Mix-Residential Housing units whereby it is used mainly for pure residential usage.

1.2.2. Commercial spaces should be accommodated as follows

1.2.2.1. 50% of the ground floor level should be allocated as commercial spaces. The rest of the area shall accommodate services, circulation & visitor parking.

1.2.2.2. 30% of first floor level should be accommodated as commercial spaces along the front periphery of the plot.

1.2.2.3. The area allocated for commercial use should not be compromised for any other purposes.

1.2.3. 3% - 5% of residential units should be designed for Persons with Disability (PWD). Please refer to 2.7 PWD accessibility of this document for additional details.

1.2.4. Based on the plot area, location & land use plan, buildings are subjected to additional facilities such as convenience stores, commercial spaces, additional support facilities and restrictions.

1.2.5. The building should accommodate the required vehicular parking given under section 1.6 of this document.

1.2.6. Following are prohibited uses of these dwellings:

1.2.6.1. Any industrial use, any use where flammable materials are used, any use where the public is disturbed from loud noises, smell or dust generating and carrying activities, constructing godowns, etc.

1.3. BUILDING HEIGHT, F.S.I AND SETBACK PLAN

1.3.1. Building setback is provided with the Development guideline drawing along with building F.S.I and is calculated as:

$$\text{Floor Space Index (F.S.I)} = \frac{\text{Total covered area of the building}}{\text{Plot area}}$$

1.3.2. Building Height is subjective to the plot location, area of the plot and land usage.

1.3.3. No part of the building such as roof eaves, gutters and door/window panels, etc. should be projected out into the road beyond the building setback line.

1.3.4. The setback area at ground level can be utilized for circulation or parking but should not be covered above at any level.

1.3.5. The minimum distance between two building blocks/towers in a single plot must be not less than 10m unless stated otherwise.

1.4. DEPTH OF FOUNDATION

1.4.1. The depth of foundation for each building shall be determined by the structural engineer of the development.

1.4.2. The foundation protection method should be submitted with the final detail drawings.

1.4.3. An Environment Impact Assessment Report and Soil Inspection Report needs to be submitted with the detail drawings if:

1.4.3.1. The foundation of the structure is deeper than 1.8m below natural ground level

1.4.3.2. The building height exceeds 31m from the natural ground level

1.5. BOUNDARY WALL

1.5.1. Urban interaction is highly encouraged at street level to provide seamless integration of private and public space without compromising privacy and security.

1.5.2. If required, the developer may choose to have a boundary wall with perforation or demarcate the plot boundary with a natural green verge of maximum 1.2 meters.

1.5.3. A boundary wall of maximum 2 meters is allowed on the rear and sides of the plot. In such a case, the solid portion of the wall is to be 1.2 meters in height with a perforation of up to 2 meters.

1.6. PARKING

1.6.1. The specified amount of parking should be provided within the development site for both residents and visitors.

1.6.2. Parking spaces should be appropriately sized for movement in and around and should cater for disability and wheelchair movement where considered necessary

1.6.3. Basement parking is mandatory in all mix-residential developments.

1.6.4. Minimum clear height for basement should not be less than 2.7m

1.6.5. Car parking shall be provided as per the following ratio:

1.6.5.1. 1 car parking slot for every 3 apartments

1.6.5.2. An additional 10% of the total number of parking must be allocated for visitor parking

1.6.6. Motorbike parking shall be provided as per the following ratio:

1.6.6.1. 1 motorbike for each 1 and 2 bedroom apartment

1.6.6.2. 2 motorbikes for each 3 bedroom apartment and above

1.6.6.3. An additional 10% of the total number of parking must be allocated for visitor parking

1.7. SERVICES

1.7.1. Consultation is to be done at concept level with service providers of electricity, plumbing, sewerage, GPON, as to how these could be economically and sustainably incorporated into the development.

1.7.2. All developments should provide the GPON fiber cabling system for commercial and residential units. Refer to in-building cabling guidelines.

1.7.3. Any space required by the relevant service provider for the installation or provision of a supporting facility (transformer, pump rooms, storage tanks, service stations, etc.) should be provided well within the given area for the development.

1.7.4. Dedicated utility space at either ground or first floor level should be provided for the provision and/or installation of relevant services as required.

1.7.5. The water quality should comply with the standards set forth by the Health Protection Agency (HPA) if proposed to use a private water supply.

1.7.6. In accordance with the EPA guidelines, it is required to have adequate storage of water (if possible with integrated rainwater harvesting systems) within the development for firefighting and any other emergency usage.

1.7.7. An approved firefighting layout for the development should be obtained from Maldives National Defense Force (MNDF) Fire and Rescue Services.

1.7.8. The discharge of foul water should be to a sewer network approved by the relevant service provider.

1.7.9. The layout of each utility network within the development should generally be in accordance with the established practice of the relevant service provider.

1.7.10. The garbage collection area (away from common areas) with easy access should be provided at each floor level and a central collection area at the ground floor with ease of loading/unloading vehicular access.

1.7.11. A waste management plan is to be developed along with the waste management authority to minimize public intrusion and ease of access.

2. DESIGN GUIDELINES

2.1. INTRODUCTION

This section will comprise of design controls and requirements imposed for this development.

2.2. ACCESS & CIRCULATION

2.2.1. A sheltered, safe and convenient vehicular drop-off/pick-up area, with universal access should be provided to all dwellings, facilities & services within the plot.

2.2.2. Frontage of the site and pedestrian & vehicular access ways into the site should be designed & constructed by the developer. This includes but is not limited to the pathways, lighting, softscapes, hardscapes & urban furniture.

2.2.3. All circulation routes and entrances should be well defined and well lit. The entrance should be highlighted as well and should be welcoming for walk-in entrances

2.2.4. An adequate amount of elevators should be provided along with an elevator traffic analysis report justifying the number of elevators.

2.2.5. At least one elevator must be fire rated and must be able to accommodate a stretcher.

2.2.6. An adequate number of staircases should be proposed based on the MNDF fire protection guidelines.

2.2.7. Demarcate and provide appropriate lighting on pedestrian routes.

2.2.8. Disability access should be integrated at all pedestrian and vehicular drop off/ pick up points.

2.2.9. If shared pathways (for vehicles and pedestrians) are to be provided within the development, appropriate markings should be used to indicate pedestrian prominence over vehicles.

2.2.10. Any corridor or walkway with one way and two-way traffic should have a minimum width of 900mm and 1250mm respectively.

2.2.11. Where stepped access is unavoidable especially at ground floor level, the steps should be designed as suitable for physically impaired persons or wheelchair users

2.2.12. Any slope provided at the access ways should be less than 1:50 and with a firm and even surface.

2.2.13. Every storey of a building shall be provided with exit facilities for its occupant load.

2.2.14. There shall be at least two independent exit staircases or other exits from every storey of a building where at least one staircase shall cater for emergency evacuation.

2.2.15. Pedestrian linkages from one building to the other is highly encouraged within the development to promote connectivity and pedestrian interaction

2.2.16. Vehicular pathways within the plot should be designed in a way that is safe, with minimum interruption to both pedestrian pathways and green verges within the plot and during ingress and egress

2.2.17. Use scored, colored, textured and/or similar paving that is distinguishable from the travel lane at the drop off area.

2.2.18. Illuminate all outdoor parking areas with illumination towards the paved areas only and not into any adjacent buildings.

2.2.19. Wherever parking is provided appropriate floor paint marking must be given.

2.2.20. Car parking size: 2.4m x 4.8m (100mm line thickness). Give an additional 300mm for the width of parking at every end.

2.2.21. Motorbike parking size: 2m x 1m (100mm line thickness)

2.3. PUBLIC OPEN SPACES

2.3.1. Public open spaces are defined as common spaces, such as but not limited to courtyards or terraces, within the building.

2.3.2. Access ways and public areas within the development shall be overlooked by dwellings or otherwise open to surveillance by residents

2.3.3. Open space should generally be attractive and usable by different age groups. Undefined areas, badly shaped, fragmented or unusable spaces which are difficult to maintain should be avoided

2.3.4. A children's play area is to be provided within the development.

2.3.5. If landscaping is provided, either soft or hard (or both) at common areas, materials with good resistance to vandalism, non-slip and low maintenance should be chosen

2.3.6. Communal green space is to be provided within the development not less than the ratio at 1:1 of the building footprint

2.4. PRIVATE OPEN SPACES

2.4.1. Private spaces are defined as open spaces such as balconies or terraces only accessible through residential units.

2.4.2. All dwellings should be provided with private open space /balcony, adjacent to the main living area

2.4.3. The private open space/balcony can be used as or together with a drying area which should be screened from public view

2.4.4. Minimum size for private open space/balcony should be as given under section 2.6.15 – 2.6.17 of this guideline

2.5. COMMERCIAL

2.5.1. Each plot should have at least 1 double floor unit where the area is larger than 1,000 sqft

2.5.2. The double floor unit can be either an anchor tenant or a main unit.

2.5.3. A separate shaded drop off/pick up must be provided for commercial zone.

2.5.4. An elevator must be provided solely for the commercial zone for passengers and loading & unloading purposes.

2.5.5. Partition walls of commercial units shall be basic standard blockwork of minimum 100mm thickness and shall be finished as per guidance document.

2.5.6. All commercial unit entrances and access to corridors should accommodate a PWD access.

2.5.7. CCTV systems along with the cables are to be provided at all common areas.

2.5.8. Commercial unit façade walls will not be required.

2.5.9. Drainage must be provided where needed in all corridors and any other open spaces.

2.5.10. Distribution box to be provided in each unit including a separate meter for each unit.

2.5.11. Electrical main panel for commercial units should be provided

2.5.12. The main panel board and transformer should have excess capacity in addition to the required capacity in terms of Amp.

2.5.13. Water connection points and sewerage provisions shall be provided for each commercial unit.

2.5.14. Grease traps must be provided to the development according to MWSC requirement.

2.5.15. Adequate lighting that achieves average lux levels must be provided at all common areas such as corridors, elevator lobby, stairs, etc.

2.5.16. All common areas, such as lift lobby, corridors, walkways & public toilets should be fully finished by the developer.

2.5.17. All balconies, terraces, and where applicable railings should be provided at a minimum height of 1.2m.,

2.5.18. All units should have adequate electricity capacity and provisions.

2.5.19. AC provisions should be given to all commercial units.

2.5.20. A PWD washroom must be provided.

2.5.21. GPON fiber cables should be provided for all units.

2.6. RESIDENTIAL

2.6.1. Consideration must be given to ease of access and circulation within the residential unit for all occupants especially for the physically impaired.

2.6.2. The pedestrian approach towards the entrance of units should be wide enough for two-way traffic and the main entrance of the dwelling at a minimum width of 900mm.

2.6.3. Weather-resistant non-slip material should be provided where necessary

2.6.4. Adequate lighting should be provided to all residential units.

2.6.5. Design and layout should make use of natural daylight as much as possible to encourage minimum use of electrical lighting.

2.6.6. Opening panels of windows, above ground floor level, should be at a minimum height of 1000mm above the internal floor finish level and any opening below 1000mm should be protected with a safety railing.

2.6.7. Glazing used for doors and windows should be safe and with a nominal thickness proportionate to the area of the panel as per British Standard or equivalent.

2.6.8. Wherever a railing is provided, it should be safe for all occupants, especially for children, with a minimum distance of 125mm openings between the railing members where applicable.

2.6.9. Additional safety measures, to minimize the risk of falling over, should be taken if horizontal railings are to be provided.

2.6.10. Floor finishes in wet areas should be provided with slip-resistant surfaces.

2.6.11. Every dwelling should be connected to electricity and GPON networks.

2.6.12. Every dwelling should be provided with an adequate pressure of water for domestic use as per the service providers' requirements.

2.6.13. All units must have dedicated and adequate spaces/ledges for AC outdoor units, which must be properly screened from public view.

2.6.14. All units must have a minimum finishing level as per the Finishing Schedule in Design Guidance Document. This does not include any loose furniture.

2.6.15. 1 BEDROOM APARTMENT

2.6.15.1. Minimum area 400 ft² / 37.16² (carpet area)

2.6.15.2. SPACE ALLOCATION & SPECIFICATIONS

Sitting Room

- The minimum area for Sitting/Living shall be 86 SQFT (7.99 SQM).
- Minimum clear height (Floor to ceiling height) for Sitting/Living area shall be 2.7m.

Dining & Kitchen

- The minimum area shall be 100 SQFT (9.29 SQM)
- Minimum clear height (Floor to ceiling height) for kitchen & dining area shall be minimum 2.7m from slab bottom to floor finish

Laundry

- Laundry/Washing space shall be provided to accommodate 1 washing machine (0.36sqm) & drying area with adequate sunlight.
- The minimum clear height (Floor to ceiling height) shall be 2.7m.

Balcony

- The minimum railing/ parapet wall height shall be 1.2m.
- The minimum width of the balcony shall be 1m (1000mm).

Bedroom

- The minimum size of the Master bedroom shall be 144 SQFT (14.86 SQM).
- Minimum clear height (Floor to ceiling) for all areas (except toilets) shall be 2.7m.

Toilets

- The minimum size of a toilet shall be 32 SQFT (2.97 SQM)
- Minimum clear height (Floor to ceiling height) for toilets shall be 2.4m.

2.6.16. 2 BEDROOM APARTMENT

2.6.16.1. Minimum area 650 ft² / 69.68m² (carpet area)

2.6.16.2. SPACE ALLOCATION & SPECIFICATIONS

Sitting Room

- The minimum area for Sitting/Living shall be 130 SQFT (12.08SQM).
- Minimum clear height (Floor to ceiling height) for Sitting/Living area shall be 2.7m.

Dining & Kitchen

- The minimum area shall be 140 ft² (13.01 m²)
- Minimum clear height (Floor to ceiling height) for kitchen & dining area shall be minimum 2.7m from slab bottom to floor finish

Laundry

- Laundry/Washing space shall be provided to accommodate 1 washing machine (0.36sqm) & drying area with adequate sunlight.
- The minimum clear height (Floor to ceiling height) shall be 2.7m.

Balcony

- The minimum railing/ parapet wall height shall be 1.2m.
- The minimum width of the balcony shall be 1m (1000mm).

Bedroom

- The minimum size of the Master bedroom shall be 144 SQFT (14.86 SQM).
- The minimum size of the other bedroom shall be 120 SQFT (12.08 SQM).
- Minimum clear height (Floor to ceiling) for all areas (except toilets) shall be 2.7m.

Toilets

- The minimum size of the master bedroom toilet shall be 32 SQFT (2.97 SQM)
- The minimum size of other bedroom toilets shall be 28 SQF (2.60 SQM)
- Minimum clear height (Floor to ceiling height) for toilets shall be 2.4m

2.6.17. 3 BEDROOM APARTMENT

2.6.17.1. Minimum area 900 ft² / 83.61m² (carpet area)

2.6.17.2. SPACE ALLOCATION & SPECIFICATIONS

Sitting Room

- The minimum area for Sitting/Living shall be 160 SQFT (14.86 SQM).
- Minimum clear height (Floor to ceiling height) for Sitting/Living area shall be 2.7m.

Dining & Kitchen

- The minimum area shall be 170 ft² (15.79 m²)
- Minimum clear height (Floor to ceiling height) for kitchen & dining area shall be minimum 2.7m from slab bottom to floor finish

Laundry

- Laundry/Washing space shall be provided to accommodate 1 washing machine (0.36sqm) & drying area with adequate sunlight.
- The minimum clear height (Floor to ceiling height) shall be 2.7m.

Balcony

- The minimum railing/ parapet wall height shall be 1.2m.
- The minimum width of the balcony shall be 1m (1000mm).

Bedroom

- The minimum size of the Master bedroom shall be 144 SQFT (14.86 SQM).
- The minimum size of the other bedroom shall be 120 SQFT (12.08 SQM).
- Minimum clear height (Floor to ceiling) for all areas (except toilets)

shall be 2.7m.

Toilets

- The minimum size of the master bedroom toilet shall be 32 SQFT (2.97 SQM)
- The minimum size of other bedroom toilets shall be 28 SQF (2.60 SQM)
- Minimum clear height (Floor to ceiling height) for toilets shall be 2.4m.

2.6.18. Maid rooms

2.6.18.1. This is not a mandatory aspect of residential units. However, if a maid room is to be included in the design the developer should follow the minimum areas given in this document.

2.6.18.2. Minimum room area 56 SQFT / 5.20 SQM

2.6.18.3. Minimum toilet area 24 SQFT / 2.23 SQM

2.7. PWD ACCESSIBILITY

2.7.1. Entrances

2.7.1.1. Easy accessibility between internal and external spaces, and between internal spaces, provides a safe transit point for people with limited mobility and people who use a wheelchair.

2.7.1.2. Guidelines to consider:

a) Make wide enough for wheelchair access
b) Provide adequate maneuvering space
c) Provide even, non-slip surfaces
d) Provide ramped access for ease of dealing with more than one level and for easy entry from external to internal spaces
e) Provide lighting for safety and security
f) Install sounding devices, such as a doorbell, to identify visitors

2.7.2. Indoor circulation

2.7.2.1. Circulation through different spaces must be well planned for easy maneuverability, especially for people with limited mobility and people who use a wheelchair.

2.7.2.2. Incorporate spaces wide enough for wheelchair access

2.7.2.3. Ensure door handles are lever handles to make

2.7.3. Bathrooms and toilets

2.7.3.1. At least 1 en suite should be designed and furnished for maximum comfort and ease of use.

2.7.3.2. The following aspects should be included in at least 1 bathroom of allocated PWD units.

a) Minimum 850 mm width door, preferably opening out or sliding.
b) Sufficient space for people using wheelchairs or other assistive devices.
c) Adequate handrails and grab bars to assist people to get to and from a wheelchair and to assist people with reduced strength.
d) Security and privacy feature so users can easily close and lock the bathroom or toilet door.
e) Toilets with a minimum dimension of 1.6 m x 2.4 m, or 2.0 m x 2.7 m if a shower is included and with an in-swinging door.
f) Toilets located against the wall diagonal from the entry door.

g) Firmly fixed-grip rail next to the WC, 800 mm high.
h) Accessories, such as mirrors and towel rails, 900 mm to 1.1 m high.
i) Firmly fixed washbasin to the wall at a height of between 800 mm to 850 mm.
j) Single-lever taps.
k) Drop-down or removable shower seat in the shower.

2.7.4. Kitchens

2.7.4.1. Provide work surfaces at a comfortable height for people using wheelchairs

2.7.4.2. Provide ease of access to the opening and closing of windows and doors.

2.7.5. Bedroom & living room

2.7.5.1. At least one bedroom should be designed and furnished for maximum comfort.

2.7.5.2. Provide spaces large enough to allow for easy maneuverability

2.7.5.3. Make entrance wide enough for wheelchair access

2.7.5.4. Provide lighting for safety and security

2.7.6. Ensure that all aspect of the building complies with the Maldives Disability Act.

2.8. STRUCTURAL & CIVIL WORKS

2.8.1. The designed lifespan of the main structure should be a minimum of 50 years.

2.8.2. The structural design must be done in accordance with British standards or any superseded European standard (Eurocode). The developer must include a local registered engineer during the design process and should get the drawings stamped by an accredited structural checker.

2.8.3. Necessary standards for construction to ensure the quality of workmanship and site safety during construction should be followed

2.8.4. At the concept stage as a deliverable, the developer should propose a structural system/material as well as the proposed methodology brief with the above mentioned standards.

HOUSING
DEVELOPMENT
CORPORATION

PLANNING & DEVELOPMENT DEPARTMENT

MID-RANGE HOUSING
DESIGN GUIDANCE DOCUMENT

Contents

Planning & Development Department, Housing Development Corporation Ltd. Tel: 3353535, Fax: 3358892, Email:planning@hdc.com.mv

1. INTRODUCTION

The intent of this document is to guide the developer to design this development to local and international standards, guidelines accepted by this corporation.

This document has been established as a guide to functionality, materials, products, workmanship & services. Developers are encouraged to go beyond these standards and recommendations to foster innovative, healthy, efficient, and sustainable housing developments.

2. DESIGN CONSIDERATIONS

2.1 SITE DEVELOPMENT

The most impactful design decisions are often made during the site planning phase, laying The groundwork for a project that positively contributes to the lives of its residents and to Its neighborhood, and creating the framework for the rest of the design development.

- Design the development to take into consideration the potential negative impacts of adjacent properties, including but not limited to, overshadowing, overlooking & wind tunnel effect.
- Consider prominent view corridors and physical intersections.
- Design and orient the building to take into consideration climatic factors where there are maximum benefits to be derived from natural lighting, energy efficiency (e.g. Solar heat gain), and protection from weather elements. The installation of a future solar thermal system or solar photovoltaic system must be considered.
- Design the ground floor of the building to express the individuality of the residential and commercial units, if applicable, through architectural expression and the inclusion of entrance doors, canopies, and windows addressing the street. Ensure appropriate sidewalk width is provided to accommodate the anticipated pedestrian traffic flow.
- Utilize the existing site's features in creating compatible and well-defined amenity areas for adults and/or child-oriented activities. Minimize the overshadowing of amenity spaces by neighboring buildings. Create shading through natural means (e.g. Deciduous tree planting).
- Consider vehicular, bike, and pedestrian circulation through and around the site.
- Create well-defined public places (street, garden, park, walkway, mews, square, etc.) Through the massing of built-form. Avoid creating residual, unusable spaces.
- Establish play area within walking distance from residential units (dwellings, windows) and/or communal spaces.
- At corner developments, consider concentrating any commercial activities along the main thoroughfares and allow for residential and more passive uses alongside streets.
- At midblock or infill sites, consider small-scale strategies, such as orientation and screening, to mitigate sub-optimal conditions, such as noise, traffic, and unpleasant views.

2.2 BUILT FORM

The mass of a building—its form and size—accommodates interior program while also providing a sense of identity and presence on the street. Massing articulations, such as varied building heights and setbacks, can visually connect a building to adjacent structures and respond to a neighborhood's character and scale.

Thoughtful and well-designed massing can help to make even a large residential building sensitive to the pedestrian scale and feel like home. Working within zoning constraints, the mass of a building should be designed to take advantage of a site's best features, including views and connections to neighboring buildings while also mitigating any challenging conditions.

- Design the development to take into consideration the potential negative impacts of adjacent properties, including but not limited to, overshadowing, overlooking & wind tunnel effect.
- Consider breaking up the scale of overall massing to relate to lower or adjacent building heights.
- Consider using setbacks to optimize views and public outdoor spaces, such as yards and terraces

- At corner developments, consider concentrating bulk adjacent to existing buildings with height, and integrating lower heights adjacent to open spaces and pedestrian thoroughfares.
- At midblock or infill sites, consider concentrating bulk at the center of the building, and stepping down toward adjacent lower buildings and the street.

2.3 FACADE

Façades are building's "faces" to the neighborhood, bringing together massing and material decisions to create presence and character. While a street-facing façade can help to create a welcoming identity for the building and its residents, buildings often have visible rear and side façades, giving additional design opportunities.

The façades of a building should be designed with colors, materials, and articulations that form a coherent image. Different faces should be designed in response to interior programs and site conditions. It may be appropriate, for instance, to have distinct and complementary façade designs for street- and rear-facing sides of a building. A beautiful façade can help give residents and neighbors a sense of dignity and feeling of home.

The following points must be taken into consideration when designing the façade of the establishment.

- Consider how façade design can help enhance the building's character and identity both in the existing community and for its residents.
- Consider how each façade uniquely responds to adjacent programs and conditions.
- Consider avoiding co-planer material connections to further break down the overall massing.
- Consider using functional components, such as sunshades or window frames, to provide depth and shadow lines.
- Consider adding green walls or ornamental plants to the façade.
- Building services should be screened with proper access for maintenance, within the façade.

2.4 PEDESTRIAN & VEHICULAR CIRCULATION

- Sidewalks shall be provided along the full length of the building along any facade bordering streets and parking areas, where workable.
- Locate additional site access points for loading and unloading and back of house services as far as possible from street intersections to minimize conflicts.
- Pedestrian walkways shall be differentiated from driving surfaces through the use of durable landscape treatments and/or surface materials.
- All pedestrian ways shall be scaled to the use and expectations of pedestrian volumes in any given location with the minimum width of the sidewalk, no less than 1.5m.
- Sidewalks shall connect main areas of pedestrian activity such as transit stops, street crossings, building and store entrances, bike racks, and feature adjoining landscaped areas that include trees, shrubs, lighting, signage, benches, flowerbeds, groundcovers or other similar amenities.
- Ensure that the internal road networks and flow of traffic within the boundary shall be designed to complement the development.
- Design the layout of walkways to follow natural pedestrian traffic patterns with a hard surface such as concrete, unit pavers, natural stone pavers, or other suitable material, to discourage routing across lawns and play areas.
- Consider the design of garbage and move-in/out areas to ensure the ability of large trucks to maneuver.

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2.5 VEHICULAR PARKING

- All parking must be accommodated within the plot area. & according to parking requirements.
- Controlled/structured parking and surface can be located at the perimeter of the lot adjacent to the access roads.
- Controlled/structured parking, mechanical parking, and or surface parking can be proposed by the developer.
- Provide separate vehicular and pedestrian circulation systems with a strong emphasis on pedestrian linkages between uses. Make provisions for pedestrian routes through the parking area(s) with sightlines at intersections of walkways and vehicular traffic.
- Separate parking aisles from primary vehicle circulation routes and entry drives whenever possible.
- Use design elements that are visually interesting and consistent with other streetscape materials used in the overall development.
- Utilize Universal Design techniques where feasible to provide a separation between driveway curb-cuts and drop-off areas to minimize turning conflicts; provide a clear separation of vehicular traffic between drop-off zones and access to either a parking lot or parking structure; and design drop-off lanes so as not to obstruct traffic flow when motorists are stopped to discharge passengers.

2.6 FORM, MATERIALS & AESTHETICS

Both aesthetic and functional, building materials can enhance a development's massing and Façade strategy, while also contributing to overall building identity. Materials also contribute To a development's environmental impact, constructability, and durability. By selecting Sustainable materials as part of a high-performance building envelope, designers can reduce Environmental impact and energy costs.

Materials should be selected with local construction expertise in mind, noting that a well-designed building requires quality construction. Durable, easily-maintained materials can contribute to the longevity of a building; up-front investment in materials and construction details often results in cost savings over time by reducing the need for renovations.

2.6.1 GENERAL MATERIAL REQUIREMENT

- Establish consistent levels of material quality and detail.
- To encourage materials that are complimentary to the large-scale open landscape and natural surroundings.
- All primary building facades shall incorporate materials that are durable, economically maintainable, and of a quality that will retain their appearance and finish over time & withstand climatic conditions.

2.6.2 SIGNAGES

- Provide a comprehensive signage system that considers the orientation, location, direction, and distance of signage based on the physical layout of the project.
- Ensure that all exterior signage is durable, low maintenance, and vandal resistant.
- Provide project identification sign(s) at the main entrance that includes the development name and address.
- Provide internal way-finding signage in all driveways, parking areas, lobby areas, and at each elevator location.
- Provide metal/cast aluminum door numbers and plates. Door numbers are to be centered within the door width at a height of 1,800 mm (70 in.) From the ground to the top of the plate using tamperproof membrane screws.
- Provide text and identification plates for all multi-purpose and utility rooms.
- Provide traffic signs & floor marking wherever needed.

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2.7 LANDSCAPING DESIGN

Outdoor open spaces are critical amenities for residents, and can also provide benefits to the general public. Extending from interior common spaces, front and rear yards, as well as other kinds of open space, such as terraces, are vital design components that can help connect a new building with adjacent development and existing urban fabric.

Front boulevards often provide a semi-public threshold between private development and the street, while courtyards, terraces, and rooftops are typically favorite places for residents to gather. Open spaces should be designed and landscaped to accommodate residents' and neighbors' desired uses and to contribute to sustainability and resiliency goals.

- Design landscaping to compliment the development and amenity spaces, enhance the image of the neighborhood and address practical considerations, such as wind protection, buffering, and shade.
- Use landscaping for practical benefits and solutions, such as:
  - A colonnade of trees for protection from sun, rain, and wind.
  - A grid of trees that will produce a "roof canopy" of foliage to create a secluded sitting area for passive recreation.
  - A berm adjacent to an open sodded area, which will act as a separation between outdoor spaces and can also, be used for an informal sitting area.
- Consider planting hardy, water saving, indigenous species, especially in passive areas, to reduce the demand for irrigation and maintenance.
- Plantings along streets, at monument signs, and other key locations shall be designed using a plant palette and design approach as defined in these guidelines.
- The development of building sites shall be consistent in landscape design to provide overall continuity to the project. Landscape treatments of the building site, parking lots, and streetscape are critical elements of the site development.
- Incorporate landscaping elements to provide maximum shade for hard surface areas.
- Design site-landscaping layout to accommodate and support all desired and required outdoor activities, such as garden plots and or outdoor exercise areas.
- Ensure outdoor furniture design on the site is durable and unified in style (e.g. Garbage receptacles, benches, etc.).
- Ensure that all aspects of outdoor landscaping are PWD friendly.

2.8 PWD ACCESSIBILITY

The following points are to be considered when designing to ensure that the development is universally accessible.

GENERAL SPACES

2.8.1 SIGNAGE

- Sign surface should prevent Glare & be of a durable weatherproof material
- Colors should contrast with the surrounding surface to avoid confusing people with low vision & blindness
- Color combinations should be red & green or yellow & blue to avoid confusing people with low vision & blindness
- Letters should be sized in proportion to the reading distance
- The international symbol of access should be used where appropriate

2.8.2 PATHWAYS

Pathways include paved and unpaved footpaths. They must be safe for all users, particularly people with low vision and blindness or mobility disability.

- Clear of all obstructions

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- Seal or upgrade unpaved footpath surfaces, where possible, since these often become hazardous in adverse weather conditions
- Construct slopes that do not exceed a gradient of 1:12
- For slopes that exceed 1:12, install ramps and allow for landings with a minimum dimension of 1 m x 1 m every 9 m, to enable rest opportunities
- Use smooth, continuous, non-slip and even surfaces for all pathways
- Install a guide strip comprising a tactile line in a color that contrasts with the pavement for people with low vision and blindness
- Install tactile tiling on pedestrian routes of travel, with a minimum 30% luminance contrast to adjacent surfaces
- Place tactile tiling at pedestrian crossings and around obstructions that are difficult for people with low vision and blindness to detect
- Avoid stepped curbs or, if required, ensure they are between 70 mm and 150 mm high
- Place drains, grating and manholes outside pedestrian pathways to avoid potential changes in pathway texture and height
- Cover all drains, gratings, and manholes for safety, ensuring covers are level with the path surface and have narrow grid patterns

2.8.3 PARKING

Parking spaces

- Locate disability-reserved parking spaces no more than 50 m from a main building entrance
- Design car parking spaces for people with disability that are a minimum width of 3.4m x 4.8m with an adjacent minimum 2.4 m wide shared space for wheelchair transfers
- Design motorbike parking spaces for people with disability that are a minimum width of 1.5m x 2m
- Provide same-level access from disability-reserved parking spaces to kerb
- Ramps and pedestrian pathways where possible.

Drop-off zones

- Design at a minimum 3.2 m wide for ease of mobility and safety
- Make parking spaces for people with disability wide enough to accommodate two cars
- Position within 30 m of accessible building entrances to reduce the need to travel long distances
- Provide curb ramps to negotiate changes in level from parks to footpaths
- Provide clear signage to reduce potential for confusion
- Provide tactile guide strips for improved security and safety
- Consider installing bollards to define zones.

2.8.4 DOORS

- Install each door with a door handle, extra pull handle, glazing, kick plate and sign
- Select doors with a minimum of 2 m clear height to avoid head contact with the top of the door frame
- Install single doors at the recommended minimum clear opening of 850 mm
- Install door hardware, such as latches, locks, handles and pulls, that can be easily grasped with one hand
- Provide lever-type handles, not knobs, for ease of use
- Incorporate recesses at doors in corridors to avoid obstructing main traffic
- Paint door and/or door frames in a color of a minimum 30% contrast with the adjoining wall to help people with low vision and blindness identify them
- Install automatic sliding doors, where possible, where circulation space is restricted

MDU- MBU - SMB - SFU INSTALLATION/CONSTRUCTION STANDARDS & BEST PRACTICES

MDU- MBU - SMB - SFU INSTALLATION/CONSTRUCTION STANDARDS & BEST PRACTICES

TABLE OF CONTENTS

Acronyms used:

- MULTI DWELLING UNIT (MDU)
- MULTI BUSINESS UNIT (MBU)
- SMALL BUSINESS (SMB)
- SINGLE FAMILY UNIT (SFU)
- FIBER DISTRIBUTION BOX (FDB)
- FIBER ENTRANCE JUNCTION BOX (FEJB)
- JUNCTION BOX (JB)
- INDIVIDUAL UNIT TERMIATION BOX (IUTB)
- HIGH CAPACITY MICRO DUCT (HCMD)
- SINGLE MICRO DUCT (SMD)
- OPEN ACCESS NETWORK (OAN)
- END OF LINE HANDHOLE (ELHH)

1. OVERVIEW OF WORK REQUIRED

1.1. SINGLE OR FIRST MDU/MBU BUILDING

1.1.1. A 50mm HDPE duct will be buried underground from the interior area in the 1st building, designated as the area for the installation of the new Fiber Distribution Box (FDB) to the Open Access Networks (OAN) End of Line Handhole (ELHH). The duct will be left sticking out of the ground, 1 m, next to the ELHH so that it can be terminated by others into the ELHH. See exhibit 11.2 (pg28)

1.1.2. The 50 mm duct will be stubbed up to the bottom of the newly installed telecom board in the 1st building.

1.1.3. Others will run a D series loose tube Dielectric outdoor fiber cable from the ELHH through the newly buried 50mm HDPE duct to the FDB space. 3.5 m of slack fiber will be left at the FDB

1.1.4. If this is a building with multiple floors, a Junction Box (JB), per 24 or less duct, will be installed on each floor near and with access to the riser. See Exhibit 11.1 (pg27)

1.1.5. High Capacity MicroDuct (HCMD) packages will be used exclusively between the FDB and each floors JB.

1.1.6. HCMD will run from the Top of the FDB Board and will enter and terminate in the designated floors JB

1.1.7. Single MicroDuct (SMD) will be terminated in the designated floors JB and then be run from the JB to each individual unit and will terminate at a newly installed Individual Units Termination Box (IUTB).

1.1.8. Once this is completed a 2 Count fiber cable will be run from the FDB through the high capacity microduct to the designated floor and JB. A one wrap service loop will be left in the JB and the 2-count fiber cable will continue through the designated SMD, to the individual unit and to the IUTB.

1.1.9. A minimum of 3.5 meters of slack fiber will be left at the FDB end and the IUTB. The ONT will be installed in the future at the IUTB by others.

1.2. MULTIPLE BUILDINGS ON SAME PLOT

1.2.1 If there is more than 1 building on the plot, each subsequent building will have a designated telecom space with a Telcom board and Fiber Entrance Junction Box (FEJB) installed on the wall. See exhibit 11.4 (pg30)

1.2.2 Multiple 152.4 mm schedule 40 PVC pipes will be run from the bottom of the newly installed telecom board for the FDB in building 1, underground, to the newly installed telecom board and terminated into the newly installed Fiber Entrance Junction Box (FEJB) in building 2, 3 and so on.

1.2.3 Theses PVC pipes will be stubbed up to the bottom of the 1st buildings telecom board and terminated in the bottom of each subsequent buildings Fiber Entrance Junction Box (FEJB) mounted to the Buildings telecom board.

1.2.4 The number of subsequent 152.4 mm PVC needed will be determined by the subsequent building sizes and number of units to be serviced. Each 152.4 mm PVC will carry multiple Single MicroDuct (SMD) between buildings.

1.2.5 If this subsequent building is a building with multiple floors, a Junction Box (JB) will be installed on each floor near and with access to the riser.

1.2.6 HCMD packages will be used exclusively between the FEJB and each floors JB.

1.2.7 The HCMD will terminated into the top of the FEJB and run from the Top of the FEJB and to the designated floors JB and terminate into the designated JB

1.2.8 SMD will be terminated in the designated floors JB and then be run from the JB to each individual unit and will terminate at a newly installed Individual Units Termination Box (IUTB).

1.2.9 Once this is completed a 2 Count fiber cable will be run continuously from the FDB in the 1st building through the SMD's in the 150 mm PVC Pipe to the designated subsequent buildings FELB a one wrap service loop will be left in the FEJB and the 2-count fiber will continue through the installed HCMD to the designated floors JB. A one wrap service loop will be left in the JB and the 2-count fiber cable will then continue through the designated single microduct, to the individual unit and to the IUTB.

1.2.10 A minimum of 3.5 meters of slack fiber will also be left at the FDB end and the IUTB

1.3. SMB'S AND SFU'S

1.3.1. The requirement for these buildings will be to bury a 50 mm HDPE duct from the designated location where the IUTB will be installed in the SMB or SFU, and the ELHH.

1.3.2. The duct will be left sticking out of the ground, 1 m, next to the ELHH so that it can be terminated by others into the ELHH. See exhibit 11.2 (pg20)

1.3.3. Once installed, a D-series outdoor dielectric fiber cable will be pulled in by others and 3.5 m of slack will be left at the IUTB for future installation of the ONT by others

2. COMPONENTS FOR MDU'S, SMB'S, AND SFU'S

2.1. COMPONENTS OF A MDU DISTRIBUTUION SYSTEM

2.1.1. Distributing a Fiber Optic Network throughout an MDU property requires several stages of equipment and materials between the Open Access Network facilities and each type and size of building and individual unit.

- 50 mm HDPE duct
- 48 count D series outdoor dielectric cable
- Telecom board (1st building and subsequent buildings)
- Fiber Distribution Box (FDB) (1st building)
- Fiber Entrance Junction Box (FEJB) (subsequent buildings)
- Multiple 150.4 mm schedule 40 PVC Pipe (1st building to subsequent buildings)
- 8.5/6 mm High capacity Microduct packages (HCMDP) (24, 19,12,7, way etc.) (1st building and subsequent buildings)
- Junction Boxes (JB) (1st building and subsequent buildings)
- 10/6 mm Single MicroDuct (SMD) (1st building and subsequent buildings)
- 2 count indoor Fiber (1st building and subsequent buildings)
- Individual Unit Termination Box (IUTB) (1st building and subsequent buildings, SMB's and SFU's)

3. FIBER ENTRANCE

3.1. GENERAL (NON-SMB/SFU)

3.1.1. All MDU Buildings on the plot will need a Telecom space that is on the floor that is at actual ground level and meets the following criteria.

3.2. GENERALSPACE REQUIRMENTS FOR FDB & FEJB (NON-SMB/SFU)

3.2.1. Fiber Entrance requires spaces suitable for the installation and maintenance of the Fiber Optic Network Equipment. It must be at ground level, safe, secure and easily accessible for the installation of connection equipment, connection of the building to the network and connection of multiple buildings to the FDB Building.

3.2.2. The following points are required for selection and placement of the fiber entrances in all buildings of the MDU Plots:

- Ground level
- Easy access
- Securable entry
- Secure from damage or tampering
- Has adequate lighting
- Dry and free of moisture damage
- Clean and free of dust of vaporous chemicals
- Will not cause an obstruction hazard
- Wall space to accommodate a 121.92 cm X 243.84 cm X 19.05 mm (4' X 8" x ¾") plywood board secured to the wall
- Must have at least 1 meter of clearance in front of the Telcom board and equipment.

3.2.3. This area does not require electrical power.

3.3. BUILD & ACCESS REQUIREMENTS FOR FDB & FEJB (NON-SMB/SFU)

3.3.1. The FDB and FEJB area will require unobstructed wall space as follows

3.3.2. For the FDB, a space on the wall in this area is needed to accommodate a 121.92 cm X 243.84 cm X 19.05 mm (4' X 8" x ¾") plywood board attached to the wall and made ready for the future installation of FDB by others and used to dress the fiber cables.

3.3.3. For the FEJB, a space on the wall in this area is needed to accommodate a 121.92 cm X 243.84 cm X 19.05 mm (4' X 8" x ¾") plywood board secured to the wall. You will then install a 121.92 cm X 121.92 cm by minimum depth of 304.8 mm, Electrical style Junction Box with cover, centered on the plywood and attached to the wall.

3.3.4. The 1st building to be built on the plot will house a future Box (FDB) on the ground level floor.

3.3.5. The FDB and FEJB should be located in the Mechanical / Telecom designated area or other room that can accommodate, that will be securable and on the ground level.

3.3.6. When the property has multiple buildings on (1) plot, only (1) Fiber Distribution Box (FDB) will be installed and it will be installed in the 1st building built.

3.3.7. FDB's and FEJB's are important pieces of equipment that service multiple customers and therefore they need to be secure and easily accessible, at all times, for installation and repair purposes.

3.3.8. The Telecom space chosen must also have available and easy access with the straightest paths possible to the buildings riser area.

3.3.9. The space should also be as close as possible to the Open Access Networks (OAN) End of Line Handhole (ELHH) for access to the network.

4. CONNECTION OF OPEN ACCESS NETWORK (OAN), FIBER DISTRIBUTION BOX (FDB), FIBER ENTRANCE JUNCTION BOX (FEJB) & JUNCTION BOXES (JB)

4.1. FDB CONNECTION TO THE OAN

4.1.1. A 50mm HDPE Duct is to be installed underground from the FDB location in the Building 1, to the Open access network, End of Line Handhole (ELHH).

4.1.2. The 50 mm HDPE duct will be terminated and stubbed up at the bottom of the Telcom board.

4.1.3. The 50 mm HDPE duct should be stubbed up from the floor in the FDB space at least 304.8 mm and not more than 457.2 mm.

4.1.4. The other end of the 50 mm HDPE duct should be buried and run to either side of the ELHH, leaving 1 m of duct above ground next to the ELHH.

4.1.5. The duct will be terminated by others.

4.1.6. D series fiber outdoor cable will be run into the building by others.

4.1.7. The 50 mm duct is to be sealed water tight at both ends.

4.2. FDB CONNECTION TO THE FEJB

4.2.1. You must calculate the number of units to be served in each subsequent building.

4.2.2. Using that data, you must determine how many 10/6 mm SMD's will be necessary to carry each unit's individual 2 count fiber from the FDB in the 1st buildings to each subsequent buildings FEJB.

4.2.3. Once that is determined, by using the OD's of the 10/6 mm SMD needed, and the ID of the 150.4 schedule 40 PVC pipe, determine how many 150.4 schedule 40 PVC pipe will need to be installed between the buildings to accommodate the amount of fiber to be carried continuously from the FDB in Building 1 through the FEJB in subsequent buildings.

4.2.4. The 150.4 schedule 40 PVC pipe, is not to be filled with 10/6 mm SMD, equal to more than 80% of the available area.

4.2.5. These PVC pipes will be terminated in the FDB building by stubbing them up from the floor in the FDB space at least 304.8 mm and not more than 457.2 mm.

4.2.6. These same PVC pipes will then be terminated into the bottom of the newly installed FEJB.

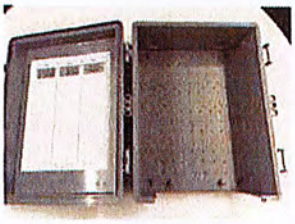
4.2.7. The 10/6 SMD will then be run from the FDB through the PVC pipe into the FEJB.

4.2.8. Each SMD must be labeled.

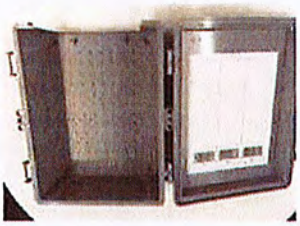
4.3. JUNCTION BOX (JB)

4.3.1. Junction Boxes (JB) are used to connect and transition the individual 2 count fiber from HCMD to SMD and to hold a service loop.

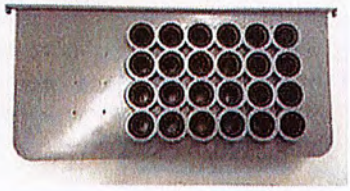
4.3.2. These Junction Boxes should be a minimum of (H) 397.764 mm x (W) 304.8 mm x (D) 136.652 mm. You will install 1 JB per 24-way HCMD package. The JB's called out for use are reversible and the door is changeable. The HCMD will enter from the top and the SMD will leave from the top through the plate shown below.



Junction Box



Installed in reverse



Drill hole for 8/6 mm
24-way HCMD

Flex Port fittings
10/6 mm SMD

4.3.3. If the floor has 24 or less units to serve, 1 JB is all that is needed for that floor. If there are 25 units to be served on that floor, then you would install 2 JB and so on. One JB is required for each 24 or less units served.

4.3.4. The JB's are to be located as close to and with access to the risers on each floor.

4.3.5. The space chosen must have the following:

- Ease of access
- Securable
- Secure from damage and tampering
- Adequate light
- Dry and free from moisture
- Clean and free of dust or vaporish chemicals
- Will not cause obstruction hazard
- Must have at least a clearance of 1 meter in front of the JB

4.3.6. A rubber gasket or similar item will be used to seal around the HCMD's termination into the JB.

4.3.7. Each HCMD package and individual Microduct must be labeled.

4.4. FDB/FEJB CONNECTION TO JB

4.4.1. There is to be (1) JB per floor of multi-floor buildings for every 24 units served on that floor.

4.4.2. 24-way 8.5/6 mm HCMD will run directly and continuously between the FDB or FEJB (depending on building) and 1 designated floor JB.

4.4.3. By determining the number of individual units to be served on each floor, you will determine the number of 24-way 8.5/6 mm HCMD packages you will need to run to a designated floor and in turn, how many JB's are needed on that floor.

4.4.4. No SMD will be used between FDB or FEJB's and any floors JB.

5. DUCT CONNECTIONS

5.1. FEJB TO JB

5.1.1. The 24-way 8.5/6 mm HCMD will terminate and leave the FEJB for the JB's from the top of the FEJB.

5.1.2. A rubber gasket or similar item will be used to the HCMD into the FEJB. The seal is to provide a Secure termination to the FEJB and to also maintain the FEJB's seal.

5.1.3. A rubber gasket or similar item will be used to seal the HCMD into the JB. The seal is to provide a Secure termination to the JB and to also maintain the JB's seal.

5.1.4. Each 8.5/6 mm SMD inside the HCMD package must be labeled at both ends.

5.1.5. The HCMD package itself must also be labeled on both ends.

5.2. FDB TO JB

5.2.1. The 24-way 8.5/6 mm HCMD will be strapped to the top of the FDB's Telecom Board and run to the designated JB.

5.2.2. A rubber gasket or similar item will be used to terminate the HCMD into the JB. The seal is to provide a Secure termination to the JB and to also maintain the JB's seal.

5.2.3. Each 8.5/6 mm SMD inside the HCMD package must be labeled at both ends.

5.2.4. The HCMD package itself must also be labeled on both ends.

5.3. JB TO INDIVIDUAL UNIT TERMINATION BOX (IUTB)

5.3.1. 10/6 mm Single Microduct (SMD) will be run from the JB on the designated floor to the individual units IUTB.

5.3.2. 10/6 mm SMD will be terminated into the JB through the 10/6 Flex Port Fittings in the JB in the entrance exit plate of the JB

5.3.3. The opposite end of the 10/6 mm SMD will terminate through the ITUB's 10/6 mm entrance plate.

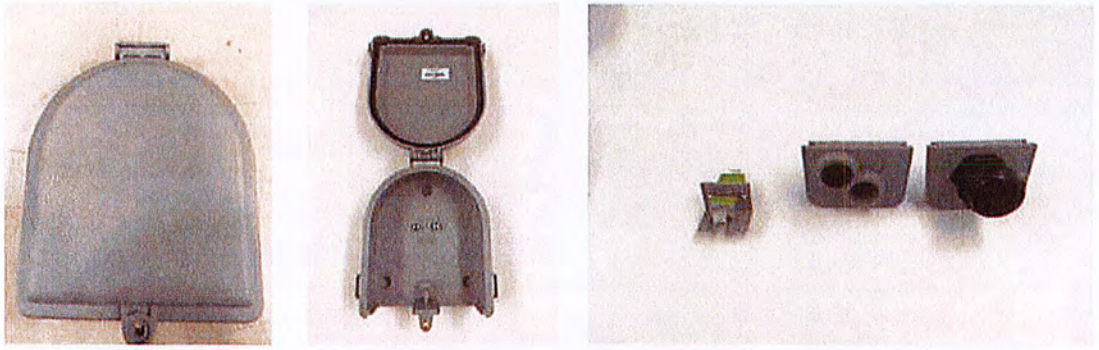
5.3.4. Each SMD must be labeled on both ends.

6. ITEMS & MATERIALS

6.1. IUTB

6.1.1. The IUTB is simply a box to allow termination of the entry fiber and the connection of the ONT. ONT to be installed by others.

6.1.2. Acceptable IUTB.



Individual Unit Termination Box (Single Unit Box)

SC/APC adapter plate

10/6 entrance plate

Strain relief exit plate & adapter

6.1.3. This is the unit to be installed on the wall in each individual unit.

6.1.4. The 10/6 mm SMD will be terminated to this IUTB through the Entrance plate.

6.1.5. Each IUTB Box (Single Unit Box) you install will require all (4) items shown:

1. Single Unit Box
2. SC/APC adapter plate
3. 10/6 mm Entrance plate
4. Exit plate with strain relief adapter

6.1.6. The IUTB should be installed in a designated room that will be most convenient and used for tv viewing, internet usage etc. There must be access to power (230V / 60HZ).

6.2. 8.5/6 MM 24-WAY HCMD &10/6 MM SMD

6.2.1.1. The purpose of this section is to provide simple instructions that can be used to design or construct any premise and ensure it is fiber ready. This applies to new buildings.

6.2.1.2. Prerequisite

6.2.1.3. Personnel must have suitable industry training and / or qualification before undertaking this work.

6.2.2.1. 10/6 mm SMD riser rated plenum LSZH

- FieldShield FS-DCR-NT-610-PS-2000F

1.	OD	10.01 mm
2.	ID	6.25 mm
3.	Wall thickness:	1.88 mm
4.	Slip layer minimum:	0.102 mm
5.	Minimum bend radius:	132.08 mm
6.	Material:	thermoplastic
7.	Rating:	Plenum
8.	Markings:	Part number, Date Code, Footage marks every 609.6 mm

6.2.2.2. Each duct must have a pull string

- 24-way HCMD Riser Rated Plenum LSZH

1.	Outside Dimensions	H X W 38.6 mm x 52.7 mm
2.	Outside Diameter	52.7 mm
3.	Weight per 30.488 cm	0.3234 kilos
4.	Safe working Pull Strength	1,411.12 kilos
5.	Over sheath thickness	0.762 mm
6.	Bend radius – supported	406.4 mm
7.	Bend Radius Unsupported	812.8 mm
8.	Shipping length	304.8 m
9.	Markings:	Part number, Date Code, Footage marks every 609.6 mm

6.2.2.3. HCMD Internal SMD

- OD 8.5 mm
- ID 6.7 mm
- Wall thickness Minimum 0.76 mm
- Wall Thickness Maximum 0.86 mm

6.2.2.4. Each duct must have a pull string

6.3. DUCT ATTACHING, SECURING & DUCT PATHWAYS

6.3.1. Defects

6.3.1.1. Any defects caused must be rectified prior to closing up any walls, ceilings etc., otherwise it could result in the fiber path being unusable and surface mounted conduit being used.

6.3.2. Deviations

6.3.2.1. Any need to deviate from this standard must be discussed with, and approved by, an appropriate HDC Engineer representative before continuing.

6.3.2.2. Once the paths are determined between the Fiber entrance and the JB's HCMD will be installed.

6.3.2.3. The product for both 8/6 HCMD and 10/6 SMD is Low Smoke Zero Halogen (**LSZH**) plenum, riser rated microduct that can be easily run through internal cavities.

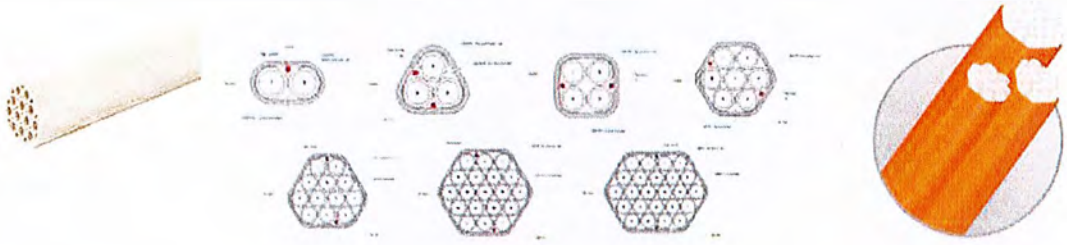
6.3.2.4. The microduct has a thin wall which can kink very easily, therefore it must be handled accordingly, with the number of bends kept as low as possible. You must also adhere to the minimum bend radius.

6.3.2.5. If the product is incorrectly installed it may adversely affect the delivery of the fiber, rendering the installation unusable.

6.3.2.6. Attaching LSZH Single Microduct and High Capacity Micro duct.

6.3.3.1. LSZH microduct is easily crushed. For this reason, extreme care must be taken when using cable ties to hold or attach it. If cable ties were applied too tightly, the microduct could be crushed, which would damage any fiber inside, or make it impossible to pull or blow a fiber cable through it.

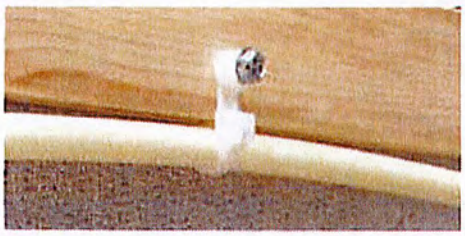
10/6 Single Micro Duct

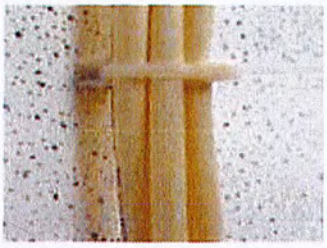


8.5/6 mm 24-way HCMD

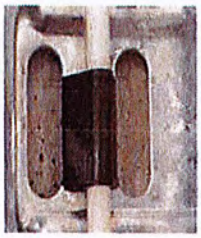
6.3.4. Internal Surface Mounting

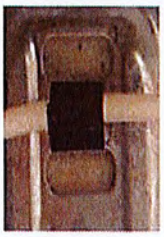
6.3.4.1. A variety of a fixing products can be used. Below are 2 examples.

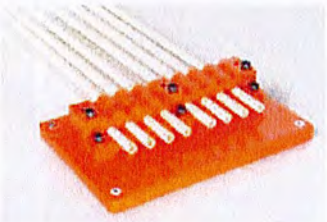




6.3.4.2. Other methods for holding or attaching LSZH microduct both vertically and horizontally, are Velcro (19 mm or similar) or using insulation tape wrapped two or three times around. The microduct can even be attached to an existing cable.



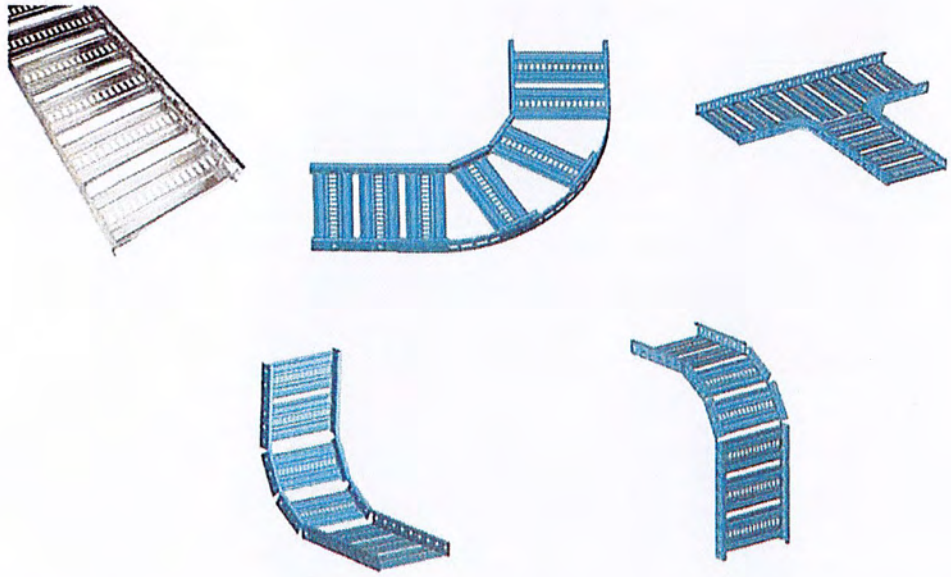




6.3.4.3. All LSZH, individual Micro Duct or High Capacity Micro Duct, should be supported every 300mm to prevent the tube to lose shape or kink over time.

6.3.5. Riser and Multi Duct Home Runs

6.3.5.1. When running the product vertically, such as in a riser, or when running large numbers of SMD and especially HCMD, extra care must be taken when managing bends at each floor as this is a prime area for kinks or crushing.



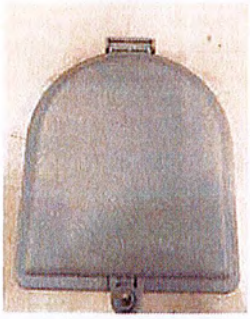
6.3.5.2. Unitray / Unistrut should be installed to create the main runs from the FDB / FEJB to the riser and up the riser.

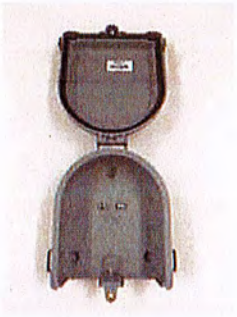
6.3.5.3. Unitray is also a recommended alternative for each floor's duct runs from the JB's to the individual units.

6.3.6. Drilling

6.3.6.1. The drilling angle allows the pre-fibred microduct pass through without compromising the minimum bend radius.

6.3.7. Premise





6.3.7.1. At the final position within the premise, a IUTB (Single Unit Box) will be used to house the Fiber microduct. The microduct terminated at the box and the Fiber is left with a 3.5 m slack hanging.

7. DUCT INSTALL

7.1. DUCT

7.1.1. Pathway

7.1.1.1. Pathway is critical. The following chart lists the recommended bend radius and installation tensile of the SMD and HCMD Microduct.

7.1.1.2. When you exceed these recommendations, you put stress on the sidewalls of the MD, causing friction when pushing/pulling fibers. The chances of damage (i.e. kinking, stretching, or ovaling of the MD) increase dramatically.

	Riser 10/6 mm and 8.5/6 mm
Installation Tensile	10/6: 154.22 kilos per 30.48 cm 8.5/6: 154.22 kilos per 30.48 cm
Bend Radius	10/6: 132.08 mm 8.5/6: 152.4 mm

7.1.1.3. Microduct (MD) is manufactured with a smooth core slip lining that allows the fibers to be pushed and/or pulled through the MD with a very low coefficient of drag when MD is installed properly.

7.1.1.4. All installations should be smooth, plumb and free of kinks.

7.1.2. Duct

7.1.2.1. HCMD: 24-way Enterprise Plenum LSZH FuturePath 8.5mm / 6mm Duct Package

7.1.2.2. SMD: FieldShield Plenum, Riser Rated LSZH 10/6mm Single Microduct

7.1.2.3. 10/6 mm SMD to be used FS-DCR-NT-610-PS-2000F. The red indicates the length of that microduct. You can purchase it with less or more footage.

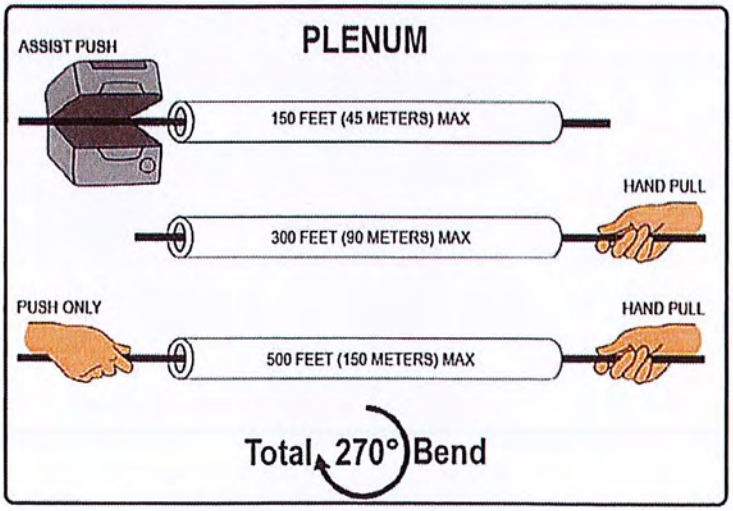
7.1.2.4. 8.5/6 mm HCMD 24-way part #10004859 to be used.

7.1.2.5. See spec sheet attached

7.2. PULL POINTS

- There is no maximum distance when using the pull point installation process. Pull point maximum distances include one 270° (ISP) bend per pull point. This gives you the ability to maneuver around objects at no more than a 90° bend. As an example, three 90°s, or six 45°s, are allowed in the 270° rule.

7.2.1. The following charts are recommendations for a successful installation of the required push pull fiber to be used (between pull points).



Push Pull Plenum Riser LSZH

7.3. PULL STRING

7.3.1. Pulling Tensile

- Use Microduct that shipped with a pre-installed pull string with a 50lb pulling tensile. This allows for enough strength to pull the fiber cables when the MD is installed correctly. When the MD is installed correctly, it should never feel difficult to pull. If it is difficult to pull this is an indication that the MD has exceeded the bend radius and the 360°/270° rule per pull point.
- Exceeding the pulling tension will cause the string to cut into the duct.
- When tying off Microduct to pull fibers, tie MD at an angle so that the pull string will not cut into the duct when tension is applied. Pull string cuts into the duct when the bend radius has been exceeded.
- If max pulling tension is exceeded while installing, the pre-connectorized fiber end (SC, LC or MPO) may break.

7.3.2. Secure Pull String

- If not utilizing the pull string immediately, expose enough pull string to catch in the end cap, or tape off at both ends.

7.3.3. Tape

- The use of tape inside the Microduct (taping pull string) is not recommended. The slip lining on both the MD and the fiber jackets will cause the tape to release. Tape can come off inside the MD and cause a blockage.

7.3.4. Pull Lube

- The use of a "pulling lube" is not required in Clearfield MD. It can become sticky/gummy when left to dry. This will cause issues if you ever need to replace the fiber. If using a water base, it can freeze in the MD and cause issues later down the road as well.

7.4. PLANNING THE ROUTE

7.4.1. Keep the Route as Straight as Possible

- Place the runs to minimize the amount of duct required. Choosing the route with the least amount of bends is key.

7.4.2. Pull Point

- Plan for pull points at intervals recommended for the products being used.

7.4.3. Long and Sweeping Bends 90° Bend

- The use of 45° sweeping bends is highly recommended as they are easier to pull through than 90° bends and should be used whenever possible.
- Be sure to maintain bend radius.

7.5. INSTALLING MICRODUCT

7.5.1. Leave 10ft of Slack Per Side

- If leaving MD for another team, leave 10 feet of slack at each end. This will allow the technician to find the pull string when tension has been applied and cut at installation. The pull string can and will relax back into the duct approximately 6-8 feet. Use of a rotary MD cutter is suggested to trim the MD to length while not cutting the pull string.

7.5.2. Pay from the Top

- When installing MD from a reel, pay the MD off over the top of the reel. Coming from underneath puts too much tension (ovaling/stretching the duct) when installing. If this occurs, you must remove the damaged MD before fiber can be placed.

7.5.3. Remove Twists

- Be sure to remove any twists before installing. This reduces the chance of kinking or unnecessary bends (undulations) especially during OSP installations (i.e. trenching). Excessive undulations reduce max installation distances.

7.5.4. Repair or Remove Damage

- Exceeding installation tensions (see Figure 1) of the MD will cause the MD to stretch. This can also happen when pulling around sharp edges.
- When kinked, stretched, or ovaled, you must pull enough MD to remove the damage area from an end point (terminal or pull point), or remove the section and repair with a coupler.

7.5.5. De-Burring and Coupling

- De-burr between coupled joints and use appropriate coupler for MD size.
- When coupling two MD's be sure to de-burr the MD ends before coupling. This will allow for a smooth transition for the fiber. Failure to do so can cause the fiber to break at the connector crimp tube.

7.5.6. Label Ducts

- Permanently label each end of the Microduct for easy identification later.

7.5.7. Cap the Duct Ends

- It is IMPERATIVE that the ends of the duct are capped/sealed. This will keep contaminates out of the duct (mud, sand, water, drywall dust, etc.). When end caps are not available, folding the end over and taping, or wrapping electrical tape to seal off the end is acceptable.

7.6. MICRODUCT MDU/MBU IMPLENTATION GUIDELINES

7.6.1. There are two types of MD specifically for indoor applications: plenum (white) and riser (cream).

- Utilize BICSI and NEC codes for pull points.
- Follow all local codes and practices as well as fire stopping procedures.

7.6.2. Supporting Duct

- When installing ISP, vertical or horizontal straight runs should be supported every 16-24 inches. Use of plastic cable strap clamps is recommended. When using multiple ducts; double up (2-hole) cable strap. Do NOT over tighten or crush MD.
- Use of MD organizing brackets are suggested.
- Sweeping 45° bends are recommended. Do not exceed 90° turns.

7.6.3. Installation

- Do not interfere with drywall installation.
- Drill your "right of ways" in a manner that will not interfere with the bend radius or add additional bends.

7.6.4. Hidden Slack Loops

- DO NOT leave "slack loops" hidden. These extra bends are not desired when pulling fiber.

8. FIBER

8.1. Push Pull Fiber Required

- A (2) count, Oval, Push/Pull fiber with a 3mm OD, Plenum, Riser-Rated and LSZH.

8.1.1. Recommended Push Pull fiber.

- Fiber cable to be used is FA-CA1-002-8ZD-B-03000F. The red is the length in one piece. You can purchase it with less or more footage.

8.1.2. See spec sheet attached

8.2. PUSH PULL FIBER INSTALL

8.2.1. Keep Fiber Clean

- Do not allow fiber to lie in dirt or water. If there is any type of foreign contamination on the fiber jacket it will end up in the MD and create a blockage inside the duct as there is a tight tolerance between cable O.D. and duct I.D.

8.2.2. Distances

- The images (Figures 2) show the recommended maximum distances for pulling fibers. Following these best practices have allowed longer pull distances.

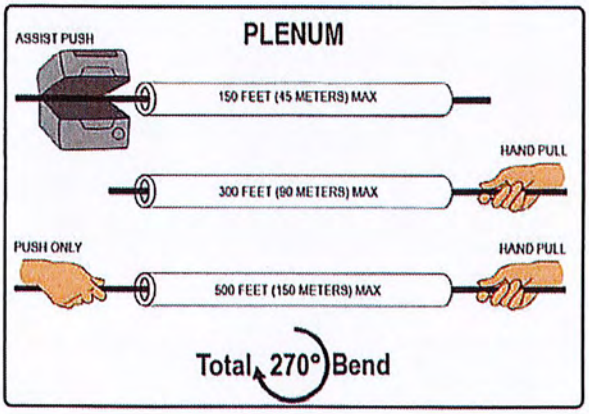


Figure 2

8.2.3. Pull Sock/Loop

- If Fiber Cable is to be pulled, you must use a pulling sock.
- The required fiber is also designed to be pushed.

8.2.4. Spool Deployment Method

- When installing a drop on a spool, the spool has a large hole where you can use a variety of items to pay off the fiber from the spool. We suggest utilizing a turn table ("Lazy Susan") and cardboard dispensing box made for the drop wheel (see "tools and accessories" for these options available from Clearfield). Using an a-frame, a broomstick or even a long screwdriver placed through the hole and inserted into the ground (or held) is also acceptable.

8.2.5. Relieve Tension

- When installing fiber, it is helpful to take up the tension off the reel when paying out the fiber. Keep a small amount of slack on the fiber as you guide it into the duct in a push-pull technique. This small amount of tension from the reel can greatly affect the force

needed to pull the fiber into the duct. On longer runs this will especially important. This is the case even with the 900um deploy reels. Gently spin the deploy reel while pulling on the far end.

8.2.6. Half Hitch

- When installing Strong Fiber, be sure to follow the instructions to tie off (half-hitch) the pulling eye string to the metal crimp tube before pulling the fiber.

9. LABELING

9.1. You must label the following:

- FDB Telecom Board
- FEJB
- JB
- IUTB
- HCMD
  - Each end of the outer jacket of the 24-way.
  - Each end of the stripped out 8.5/6 mm SMD inside the HCMD 24-way
- SMD 10/6 mm duct, each end

HCMD 24-way

9.1.1. The HCMD must be labeled on both ends of each individual HCMD package.

- Example: You will place the labeled on the outer sheath just prior to:

  1. The end of the sheath as it is secured to the FDB Telecom Board
  2. Just prior to entering the FEDB
  3. Just prior to entering each JB

9.1.1.1. Labeling example:

- FDB Telecom Board Building, B001 – Floor, F001 – Room, R001 etc.
- FEJB Building, B001 – Floor, F001 – Room, R001 etc.
- JB Building, B001 – Floor, F001 – Room, R001– JB, JB001, etc.
- IUTB Building, B001 – Floor, F001– Unit, U001, etc.
- HCMD

1. Each end of the outer jacket of the 24-way.

    a. Building, B001 – Floor, F001 – Room, R001 Duct Package, DP001 etc.
    b. Add JB when terminated at the JB

2. Each end of the stripped out 8.5/6 mm SMD inside the HCMD 24-way

    a. Building, B001 – Floor, F001 – Room, R001 - Duct Package, DP001 – Duct, D001 etc.
    b. Add JB when terminated at the JB

- SMD 10/6 mm duct, each end

    a. Building, B001 – Floor, F001 – Room, R001 - Duct Package, DP001 – Duct, D001 etc.
    b. Add JB when terminated at the JB

10. MATERIALS

10.1. FIBER

- Required to install a 2 count, Single mode, Oval, 3mm OD, Push/Pull, LSZH, Plenum, Riser.

10.1.1. Recommended Fiber cable is: Clearfield, FieldShield Pushable Optical Fiber cable

- Part number: FS-CA1-002-8ZD-B 03000F

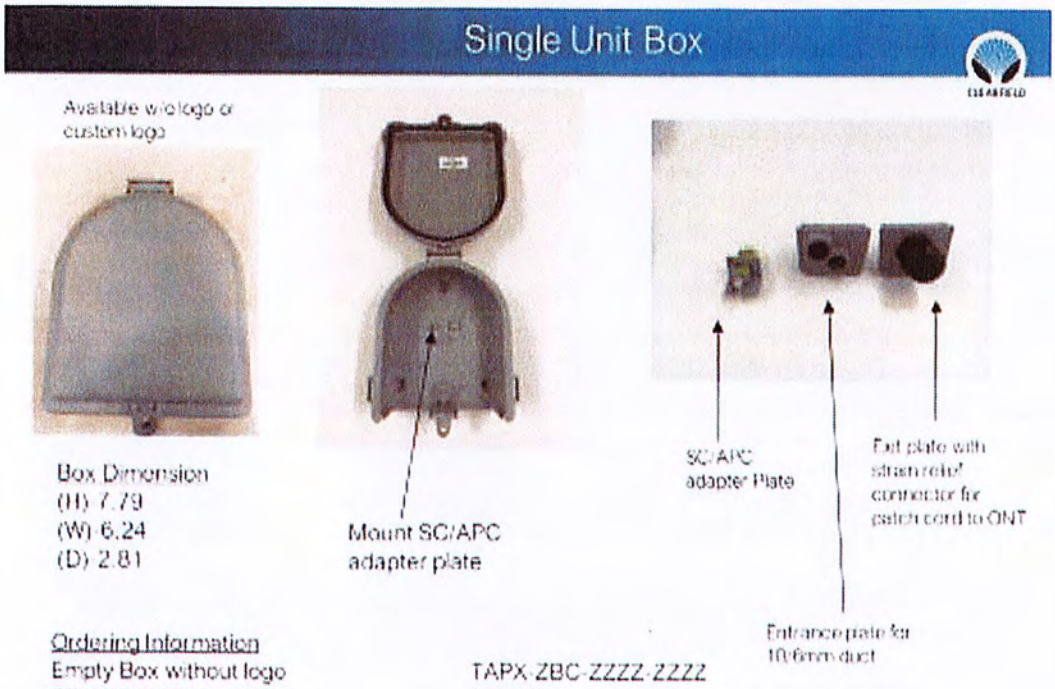
10.1.2. See Information sheet

10.2. INDIVIDUAL UNIT TERMINATION BOX (IUTB)

10.2.1. Required to install a Termination Box in the individual units that will terminate the 10/6 mm SMD and allow the connection of the ONT by others. This box must have a tension relief for the ONT fiber.

10.2.2. Recommended IUTB is: A Clearfield YOURx-Tap single unit box, with the following add on.

1. Part Numbers
2. Empty Single Unit Box TAPX-ZBC-ZZZZ-ZZZZ
3. SC/APC Adapter Plate 018458
4. Entrance Plate 018852
5. Exit Plate with Connector 019849



10.2.3. See Information sheet

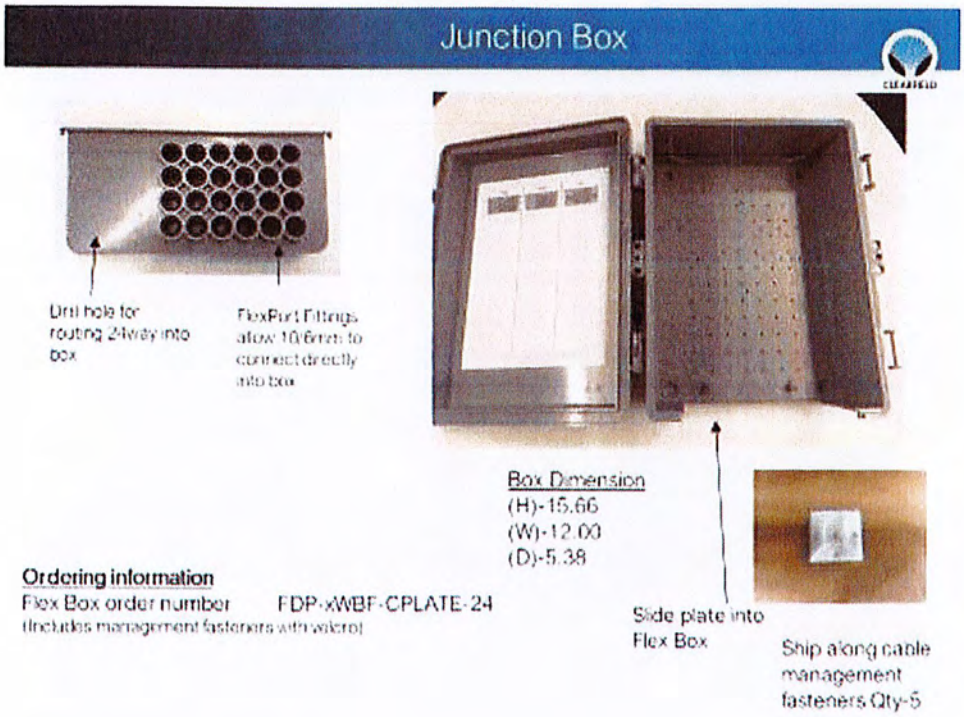
10.3. JUNCTION BOX (JB)

10.3.1. Required to install JB's that will fit an 8.5/6 24-way HCMD in and up to 24 10/6 SMD out.

10.3.2. Recommended JB: A Clearfield YOURx-Flex Box with the following add-ons:

10.3.3. Junction Box / Flex Box with Flex Port Entrance exit plate accommodating 24 10/6 exit fittings.

- Part Number
- FDP-Xwbf-cplate-24



10.3.4. See Information sheet

10.4. SINGLE MICRO DUCT (SMD)

10.4.1. Requirement is: A Riser Rated 10/6 mm Micro Duct

10.4.2. Recommended item is Clearfield FieldShield Riser Rated 10/6 mm Microduct

- Part Number:
- FS-DCR-NT-610-PS-2000F
- FieldShield, 10 MM, RISER, NON-TONABLE-WHITE, 2,000 FOOT (609.60 M) SPOOL

10.4.3. See Information sheet

10.5. HIGH CAPACITY MICRO DUCT 24-WAY (HCMD)

10.5.1. Requirement is: A Riser Rated 8.5 mm/6 mm 24-way Micro Duct package.

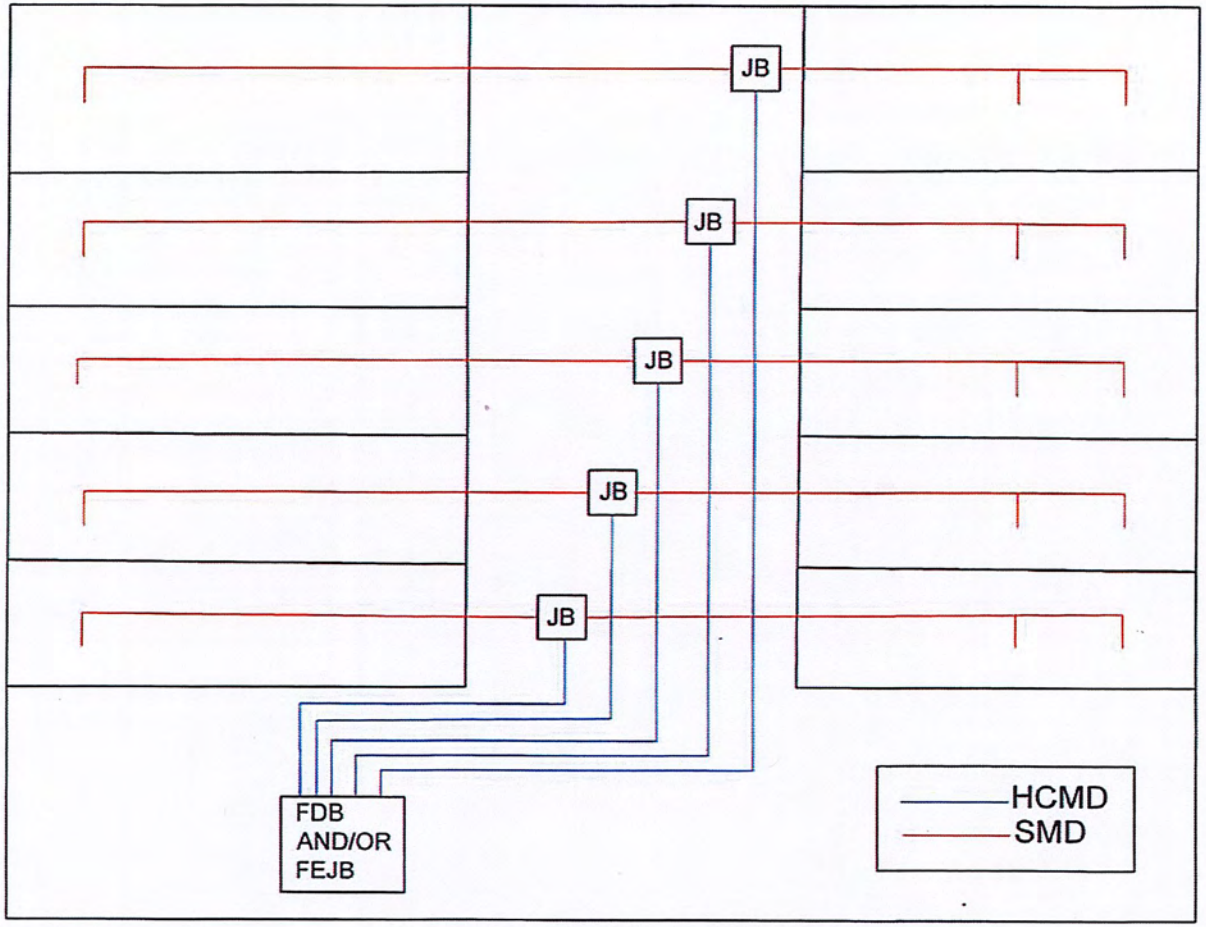
10.5.2. Recommended item is, Dura-line Enterprise FuturePath Microduct system - 8.5 mm/6 mm 24 way.

- Description: 8.5 mm X 6 mm 24-way Riser
- Part Number 1000ft (304.8 m) #10004601
- Part Number 2500ft (762 m) #10008984
- Part Number 6000ft (1828.8 m) #10008985

10.5.3. See Information sheet

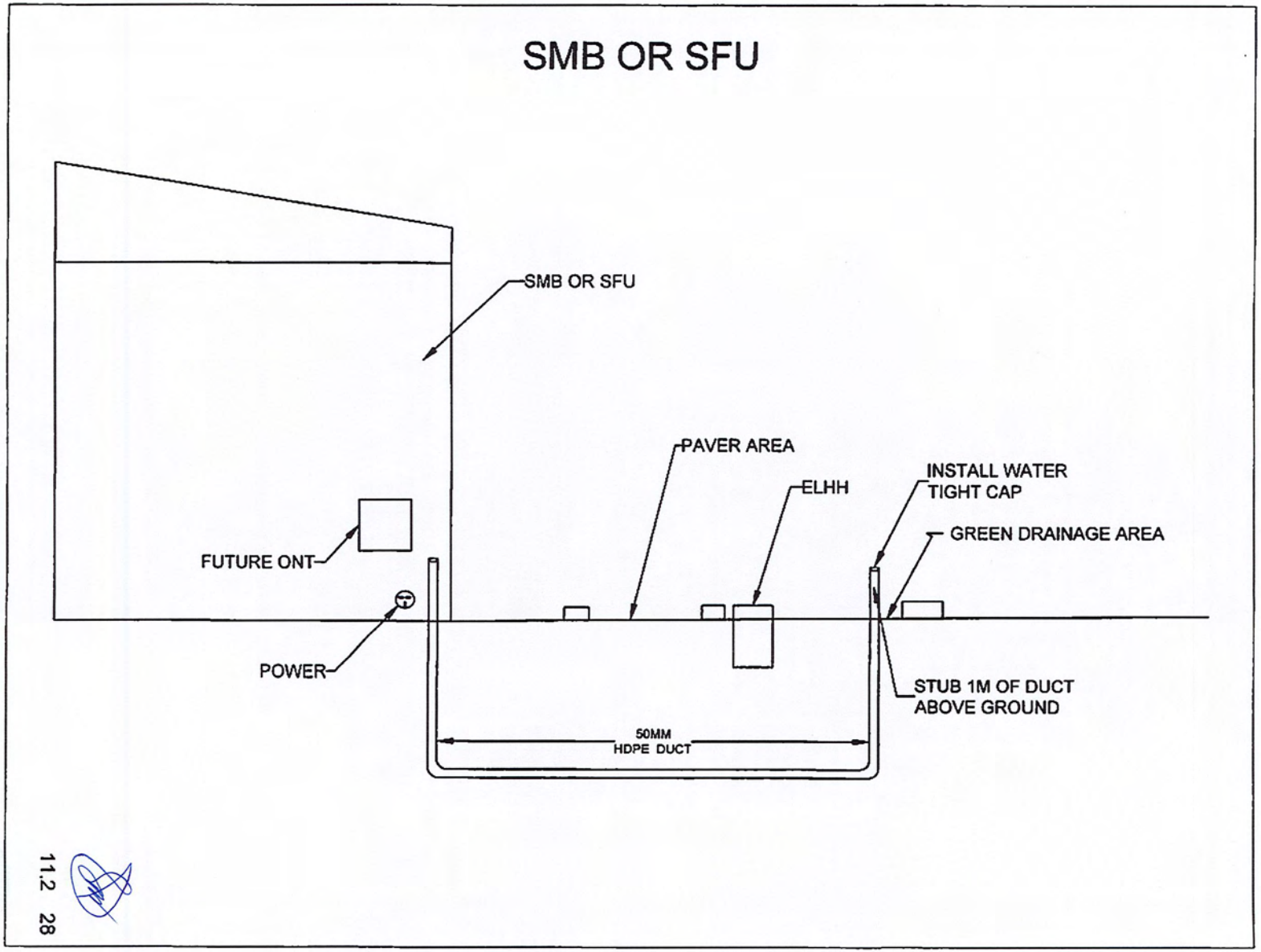
11. TYPICALS DRAWINGS, MATERIAL SHEETS & INFORMATIONAL SHEETS

See next page



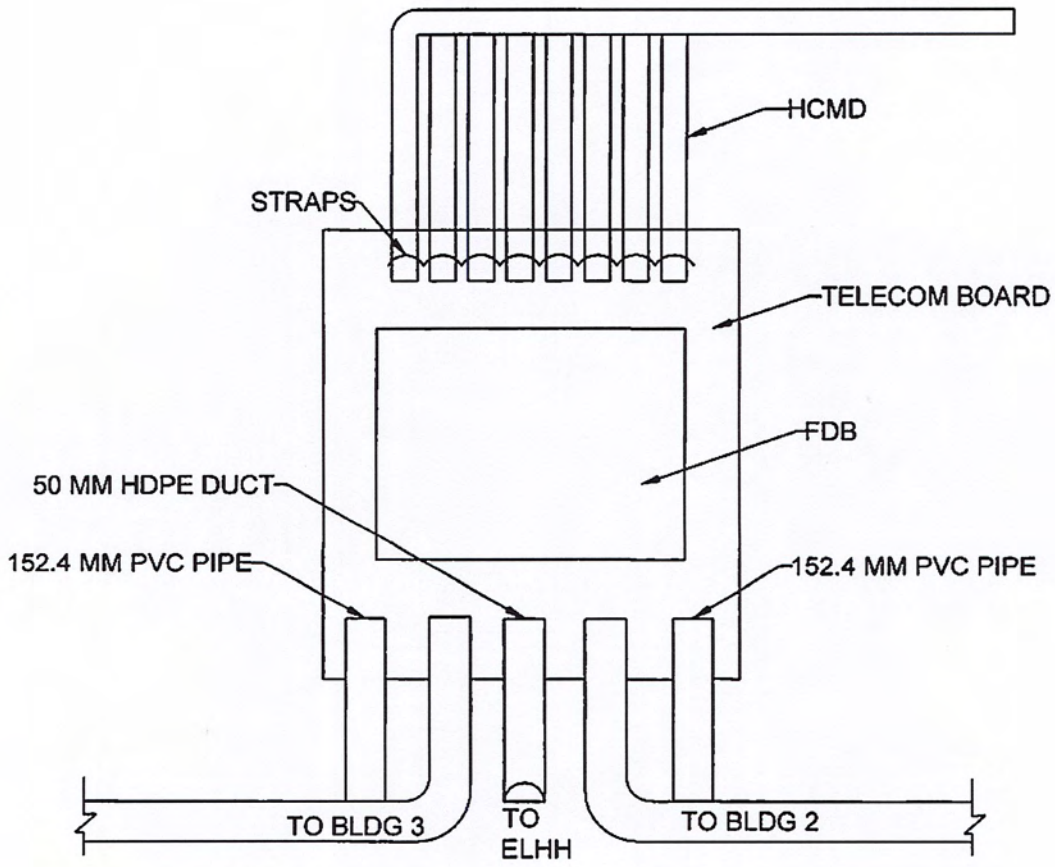
MICRO DUCT SCHEMATIC

SMB OR SFU



11.2 28

FIBER DISTRIBUTION BOX



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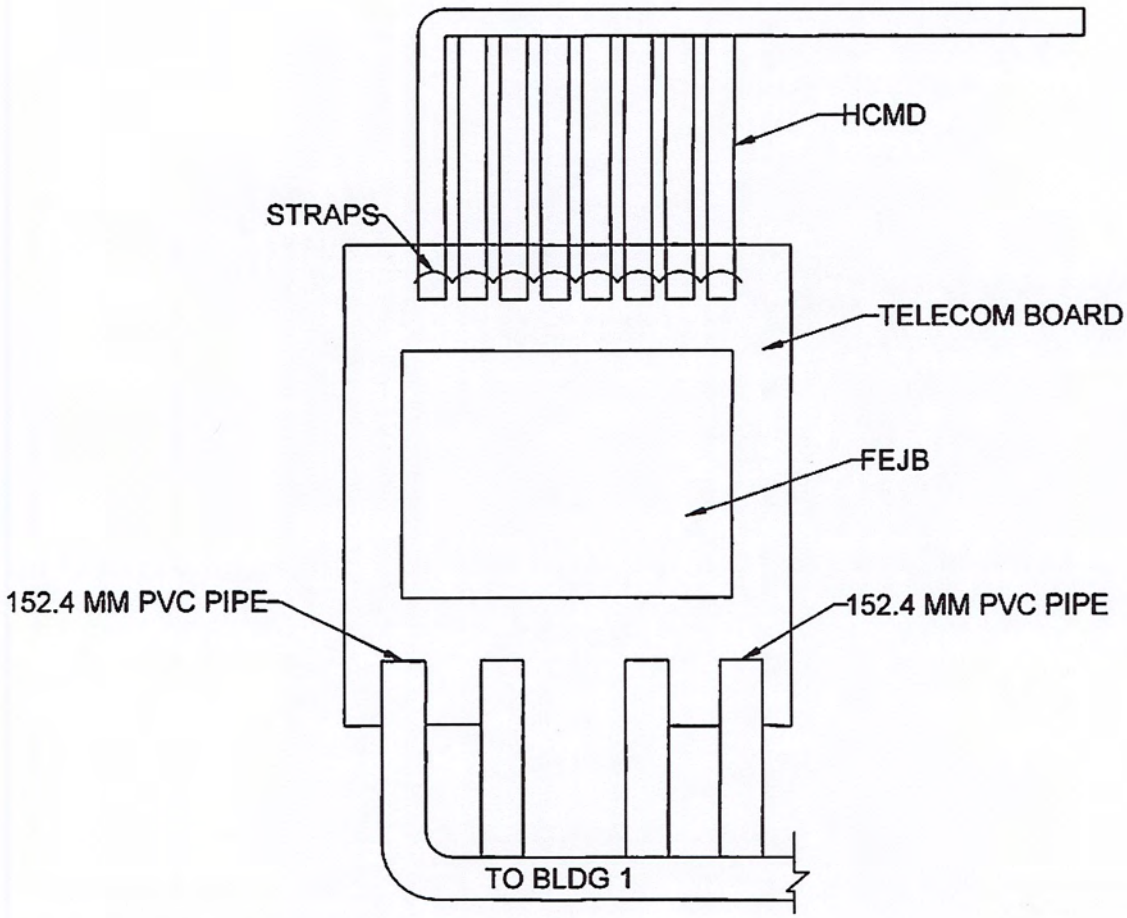
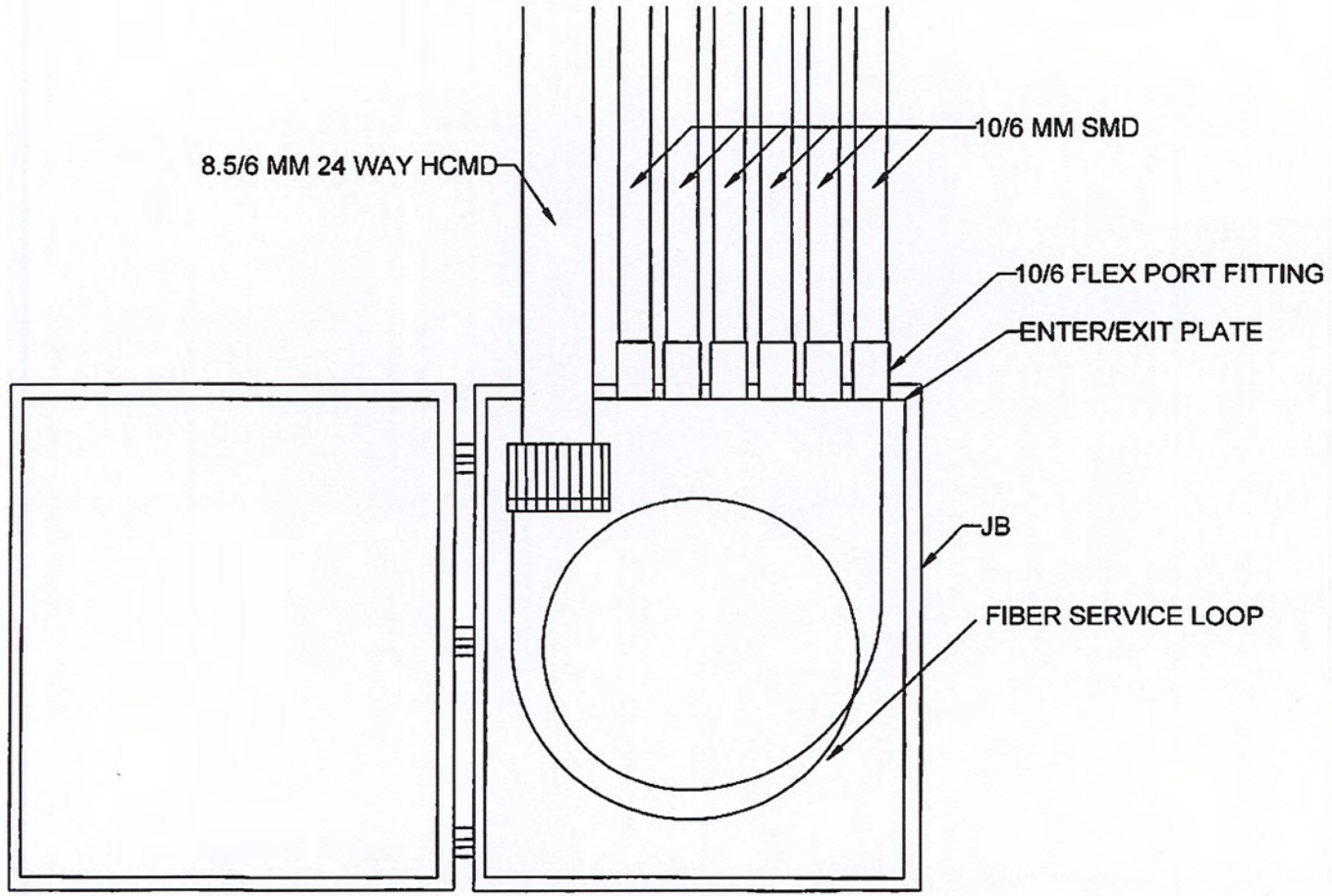
FIBER ENTRANCE JUNCTION BOX



JUNCTION BOX/JB



11.5 31

FieldShield®
Pushable Optical Fiber

CLEARFIELD

Application

Designed to simplify the placement of fiber, FieldShield Pushable Optical Fiber reduces the cost of any fiber deployment, while providing industry leading protection when mated with FieldShield Microducts. Pushable Optical Fiber is either pulled or pushed through microduct at turn-up, maximizing installation efficiency. In the event of a later fiber cut, the fiber can be easily pulled from the microduct. The duct is then repaired and a new FieldShield Pushable Assembly is pushed or pulled through the microduct for a fast and cost-effective restoration.

Available in 1, 2, 6, 12, 24 and 48 fiber counts

Description

FieldShield Pushable Optical Fiber is a durable and crush resistant product that is suitable for most indoor or outdoor environments. Manufactured using PBT jacketing, pushable optical fiber offers flexibility as well as resistance to chemicals. FieldShield Pushable Optical Fiber is typically recommended to be used in conjunction with FieldShield Microduct.

Features and Benefits

Integrity

- Available in singlemode
- Supports all industry standard connectors

Protection

- Bend-insensitive (G.657.A2) fiber protects optical signal with minimal to zero attenuation down to a 10 mm radius
- Tough PBT jacketing provides high column strength and low coefficient of friction to maximize push and pull distances
- Lightweight and high crush resistance
- One and two fiber drops protected by water blocking Kevlar strength member
- 6 to 48-fiber utilize water blocking gel

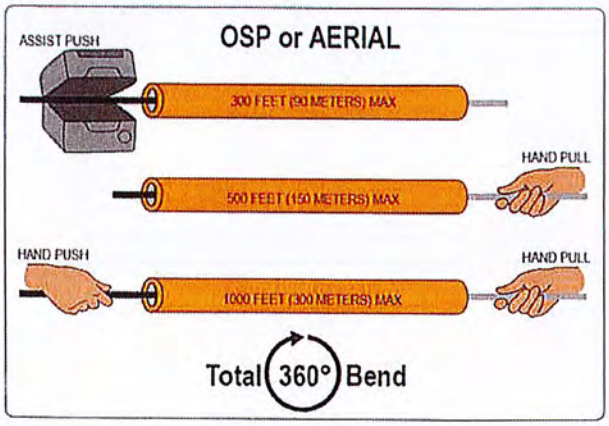
Access

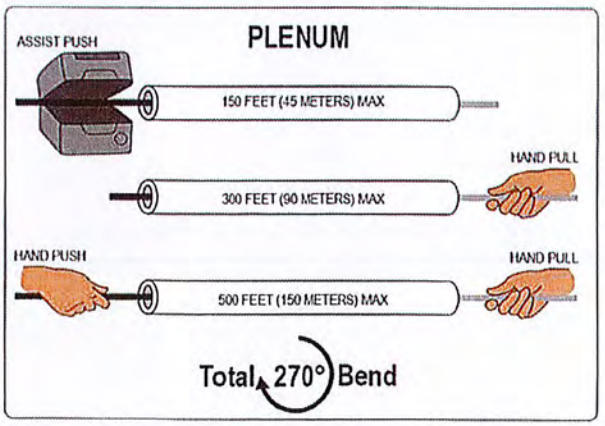
- Standard color is black
- Tech-friendly 250 µm fiber inside the outer jacket reduces splicing steps and installation costs
- Suitable for all types of indoor and outdoor implementations within a microduct

Investment

- Pushes directly into a Clearview® Cassette, FieldShield is optimized for placement alongside Clearfield® FieldSmart® fiber management platforms
- Quick and easy deployment allows capital investment to be aligned to customer take rates
- Available in multiple fiber counts up to 48 fibers

Recommended Push/Pull





11.6

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FieldShield®
Pushable Optical Fiber

CLEARFIELD

Technical Specifications

FieldShield Pushable Optical Fiber	
Fiber	Corning ClearCurve Optical Fiber or equivalent
Water Peak	ZWP (Zero Water Peak)
Bend-Insensitive	Bend-Insensitive Fiber G.657.A2
Color Code	TIA/EIA 598 (US Standard)
Fiber Count	Any fiber count up to 48 fibers
Pushable Connectors	FieldShield SC/UPC, SC/APC, Simplex and Duplex LC/UPC, Simplex and Duplex LC/APC, MPO
Standard Connectors	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, HFOC SC/APC, MPO
Internal Fiber Size	250 µm
Outside Diameter	1 to 12-fiber : 0.118" (3.0 mm); 24-fiber: 0.156" (3.96 mm); 48-fiber :0.217" (5.51 mm)
Color	Black
Material	PBT
Bend-Radius	10 mm minimum
High Temperature Aging	(-40°C + 85°C) ≤ 0.05 dB/km
Temperature & Humidity Cycling	≤ 0.05 dB/km *(at -10°C to 85°C and 95% RH)*
Water Immersion (23 ± 2°C)	≤ 0.05 dB/km
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Installation Temperature	-14°F to 158°F (-26°C to 70°C)
Installation Tension	20 lbf for 3 mm; 20 lbf for 4 mm
Markings	Part number, lot number and footage markers every two feet (609.60 mm)

Pre-Configured Part Numbers

Part Number	Description
FS-CA1-001-8ZD-B 01000F	FieldShield boxed Pushable Optical Fiber, 1-fiber (250 µm), singlemode, 3 mm jacket, 1000 feet (305 m)
FS-CA1-001-8ZD-B 02000F	FieldShield boxed Pushable Optical Fiber, 1-fiber (250 µm), singlemode, 3 mm jacket, 2000 feet (610 m)
FS-CA1-001-8ZD-B 03000F	FieldShield boxed Pushable Optical Fiber, 1-fiber (250 µm), singlemode, 3 mm jacket, 3000 feet (914 m)
FS-CA1-001-8ZD-B 05000F	FieldShield boxed Pushable Optical Fiber, 1-fiber (250 µm), singlemode, 3 mm jacket, 5000 feet (1,524 m)
FS-CA1-002-8ZD-B 01000F	FieldShield boxed Pushable Optical Fiber, 2-fiber (250 µm), singlemode, 3 mm jacket, 1000 feet (305 m)
FS-CA1-002-8ZD-B 02000F	FieldShield boxed Pushable Optical Fiber, 2-fiber (250 µm), singlemode, 3 mm jacket, 2000 feet (610 m)
FS-CA1-002-8ZD-B 03000F	FieldShield boxed Pushable Optical Fiber, 2-fiber (250 µm), singlemode, 3 mm jacket, 3000 feet (914 m)
FS-CA1-006-8ZD-B 01000F	FieldShield boxed Pushable Optical Fiber, 6-fiber (250 µm), singlemode, 3 mm jacket, 1000 feet (305 m)
FS-CA1-006-8ZD-B 03000F	FieldShield boxed Pushable Optical Fiber, 6-fiber (250 µm), singlemode, 3 mm jacket, 3000 feet (914 m)
FS-CA1-012-8ZD-B 01000F	FieldShield boxed Pushable Optical Fiber, 12-fiber (250 µm), singlemode, 3 mm jacket, 1000 feet (305 m)
FS-CA1-012-8ZD-B 03000F	FieldShield boxed Pushable Optical Fiber, 12-fiber (250 µm), singlemode, 3 mm jacket, 3000 feet (914 m)
FS-CA1-024-8ZE-B 01000F	FieldShield boxed Pushable Optical Fiber, 24-fiber (250 µm), singlemode, 4 mm jacket, 1000 feet (305 m)
FS-CA1-024-8ZE-B 02000F	FieldShield boxed Pushable Optical Fiber, 24-fiber (250 µm), singlemode, 4 mm jacket, 2000 feet (610 m)
FS-CA1-024-8ZE-B 05000F	FieldShield boxed Pushable Optical Fiber, 24-fiber (250 µm), singlemode, 4 mm jacket, 5000 feet (1,524 m)
FS-CA1-048-8ZF-B 01500F	FieldShield boxed Pushable Optical Fiber, 48-fiber (250 µm), singlemode, 5.5 mm jacket, 1500 feet (457 m)
FS-CA1-048-8ZF-B 02500F	FieldShield boxed Pushable Optical Fiber, 48-fiber (250 µm), singlemode, 5.5 mm jacket, 2500 feet (762 m)

YOURx™
YOURx-TAP

CLEARFIELD

Application

The YOURx-TAP provides a secure demarcation point between the service provider network and multiple customer environments – SFU, MDU or business. YOURx-TAP gives the network service provider both the ability to store slack fiber as well as provide a test access point (TAP) for ease of deployment and network maintenance without needing to have access to the interior of the customer premise. With the ability to accept a variety of drop cables, YOURx-TAP can be wall or pole mounted, and can be integrated into any network architecture and deployment.

Description

Slack storage of excess fiber has always been an issue within network design and deployment. The YOURx-TAP, with the smallest demarcation footprint in the industry, provides the ability to store up to 600 feet (182.88 m) of slack fiber storage (300 feet - 91.44 m per reel) using the FieldShield® Deploy Reel with 900 µm FieldShield StrongFiber®. This eliminates the need for having a large, bulky and unsightly box on the side of an SFU, MDU or business location, to store excess or unused fiber.

With its hinged removable cover design, YOURx-TAP is easily accessible for craft personnel to access the box during both initial service installation and ongoing maintenance. FieldShield Deploy Reels are easily installed into YOURx-TAP by simply snapping them onto the post bracket that is mounted inside the box. Each post bracket has a built-in feature that locks the deploy reel in place once the fiber has been pulled to the specified location.

Once mounted inside the box, the StrongFiber Deploy Reels are deployed by using a pull string to pull fiber from the bottom reel back through the 10 mm FieldShield Duct and connect it to the distribution/access point. Bringing fiber to the inside of the customer location is accomplished by using the top reel and pulling it to the desired location. Either 900 µm StrongFiber (with a ducted pathway) or 3 mm FLEXdrop™ fiber can be used for this internal application.

Drop Cable Options

Clearfield® recognizes the fact that flat drop connectivity in the last mile is a widely-used product and is a good solution for both direct buried and aerial drop applications. Listening to our customers' requests, **FieldShield FLATdrop** was developed and designed to fit into YOURx-TAP. FieldShield FLATdrop cable assemblies come pre-terminated from the factory and are available in multiple lengths. Cable assemblies are placed and brought to YOURx-TAP, where the connector is snapped into place on the bottom of the box, providing an air/water tight connection.

FieldShield D-ROP is the cable-in-conduit solution and the name stands for "restorable one pass" drop. It is a fiber pre-placed in a 7 mm O.D. microduct that reduces the traditional FieldShield solution from a two-step process to a one-step process. Rather than establish the route path of the duct and then push the FieldShield pre-terminated drop to the customer as a second step, D-ROP combines these two functions into one. Distance limitations are no concern when using D-ROP as the pre-terminated fiber is already installed.

FieldShield FLEXdrop provides all the same characteristics as current 3 mm pushable/pullable FieldShield Fiber, with increased flexibility and reduced jacket memory, providing better slack storage and routing while decreasing the risk of kinking. UL listed cable can be routed, without protection of duct, into the inside premise through walls, stapled and/or applied using local contractor accepted practices. FLEXdrop can be used with YOURx-TAP and deploy reels for connectivity to the terminal as well as for final connectivity inside the premise at the ONT or fiber jack/demarcation.

FieldShield StrongFiber is a durable high tensile strength fiber when compared to other fibers of its size. It is suitable for both indoor and outdoor environments. Manufactured with premium bend-insensitive fiber, FieldShield StrongFiber offers high tensile strength to resist damage to the fiber during installation in the FieldShield Microducts. When terminated with a FieldShield Pullable Connector, the FieldShield StrongFiber can be quickly deployed, and in turn, reduces installation time drastically.

FieldShield Pushable Optical Cable is a durable and crush-resistant product that is suitable for most indoor or outdoor environments. Manufactured using PBT jacketing, FieldShield offers maximum push/pull distance as well as resistance to chemicals.

Clearfield highly recommends a ducted solution when deploying FieldShield FLEXdrop, StrongFiber and FieldShield Pushable Fiber.

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YOURx™
YOURx-TAP

CLEARFIELD

YOURx-TAP has been designed with maximum customer flexibility in mind. YOURx-TAP is available:

- Empty (for future fiber deployment)
- With L-Bracket that holds single fiber adapter
- With one or two FieldShield® Deploy Reels – each holding up to 300 feet (91.44 m) of 900 µm StrongFiber
- With Multiple Drop Options
  - FieldShield StrongFiber
  - FieldShield FLATdrop
  - FieldShield FLEXdrop™
  - FieldShield Pushable/Pullable Fiber
- Two insertable/interchangeable cable entrance plates are incorporated into the bottom of the box
  - Plate with couplers for bringing in one or two 10 mm FieldShield Microduct or FieldShield FLATdrop assemblies
  - Blank plate - providing multiple cable, duct and connector feed options into the YOURx-TAP
- Access port on rear of box, allows for direct fiber deployment into the customer location
- Available with optional private labeling on the front cover to easily identify service provider's identification

Designed for all environments, the YOURx-TAP has a gasketed cover, watertight duct fittings and is made from impact and UV resistant PBT and PC material. Clearfield® optical fiber terminations have been tested compliant to GR-326 requirements with certification currently pending through Telcordia.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Supports singlemode SC connectors
- 100% performance tested for insertion loss, return loss and final mechanical inspections
- Small footprint

Protection

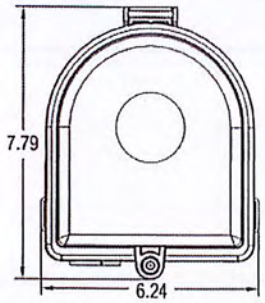
- Designed to meet NEMA 4 criteria
- Gasketed cover for protection from elements
- Watertight connectors for sealing of duct
- Pin in hex screw for reduced tampering
- Enclosure made of high-impact UV resistant thermal plastic material - to resist and withstand corrosive environments

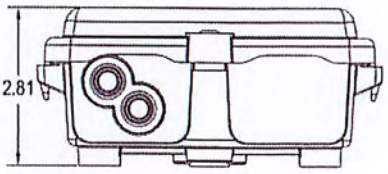
Access

- Accepts multiple drop options for maximum flexibility
- Removable hinged cover allows for easy access to closure
- Available with up to two deploy reels
- Lockable Pins hold deploy reels in place once fiber is deployed
- Available in SC/APC, SC/UPC
- Wall and pole mount applications available

Investment

- Available with pre-terminated deploy reels, which minimizes splicing and connectorization field costs
- Can add reels after box has been installed
- Available all hours of the day, without customer needing to be there to identify potential problems





YOURx™
YOURx-TAP

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Technical Specifications

YOURx-TAP	
Dimensions	7.8" H x 6.25" W x 2.81" D (198.12 mm x 158.75 mm x 71.37 mm)
Box Options/Connector Availability/Capacity	Empty, no deploy reels With L-Bracket that holds single fiber adapter One or two StrongFiber Deploy Reels: SC/APC or SC/UPC with up to 300 feet (91.44 m) of 900 µm StrongFiber Empty Reel available for slack storage of FLATdrop or FLEXdrop™
Drop Options/Connector Types	StrongFiber Deploy Reels: SC/APC or SC/UPC FieldShield® FLATdrop: with hardened connector FieldShield D-ROP: Cable-in-conduit FieldShield FLEXdrop FieldShield Pushable Fiber
Cable Entrance/Exit	One or two 10 mm YOURx FlexPort Empty plate, allows for other industry connectors to be installed
Private Labeling	Standard: comes with Clearfield® logo No logo Private labeling available (500 piece minimum). Contact Clearfield sales representative for details.
Mounting Options	Wall or pole mount

Configured Part Numbers

TAPX - [1][2][3] - [4][5][6][7] - [8][9][10][11]

Bottom Reel (Typically Feeder) — Top Reel (Typically Distribution)

1 Select Box Type
- A = 1 StrongFiber Deploy Reel
- B = 2 StrongFiber Deploy Reels
- C = 2 reels (1 StrongFiber Deploy and 1 TAP Slack Storage Reel)
- D = 2 reels (1 SRD Reel with adapter; 1 StrongFiber Deploy)
- E = 2 reels (1 SRD Reel with adapter; 1 TAP Slack Storage Reel)
- M = Box with L Bracket and SCA Adapter (No Reels)
- Z = Empty

2 Select Logo Type
- A = CLFD logo
- B = No logo
- C = Private label - Custom logo (500 piece min.)

3 Select Cable Entrance Plates
- A = Default – includes 1 blank and 1 dual entrance plate
- B = Includes 2 dual entrance plates
- C = Includes 2 blank plates

4 Select Connector 1 (inside plugged into adapter)
- A = SC/UPC - Standard
- C = SC/APC - Standard
- Z = No connector – empty reel. Choose this when FLATdrop or D-ROP is used for feeder.

5 Select Connector 2 (take off end)
- B = SC/UPC – Pullable
- D = SC/APC – Pullable
- Z = No connector

6 Select Fiber Type
- S = StrongFiber
- Z = No fiber

7 Select Reel 1 Length - Feet
- 2 = 50 (15.24 m)
- 3 = 75 (22.86 m)
- 4 = 100 (30.48 m)
- 5 = 125 (38.10 m)
- 6 = 150 (45.72 m)
- 7 = 175 (53.34 m)
- 8 = 200 (60.96 m)
- 9 = 225 (68.58 m)
- A = 250 (76.20 m)
- B = 275 (83.82 m)
- C = 300 (91.44 m)
- Z = No Fiber

8 Select Connector 1 (inside plugged into adapter)
- A = SC/UPC – Standard
- C = SC/APC – Standard
- Z = No connector – empty reel

9 Select Connector 2 (take off end)
- B = SC/UPC - Pullable
- D = SC/APC - Pullable
- Z = No Connector

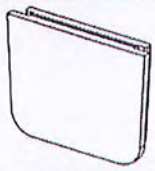
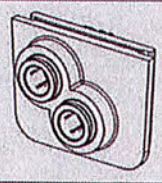
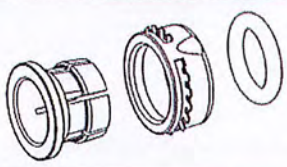
10 Select Fiber Type
- S = StrongFiber
- Z = No Fiber

11 Select Reel 1 Length - Feet
- 2 = 50 (15.24 m)
- 3 = 75 (22.86 m)
- 4 = 100 (30.48 m)
- 5 = 125 (38.10 m)
- 6 = 150 (45.72 m)
- 7 = 175 (53.34 m)
- 8 = 200 (60.96 m)
- 9 = 225 (68.58 m)
- A = 250 (76.20 m)
- B = 275 (83.82 m)
- C = 300 (91.44 m)
- Z = No Fiber

NOTE: Pin-in-hex screw bit (015075) is not included and needs to be ordered seperately as a special item

CLEARFIELD

Pre-Configured Part Numbers

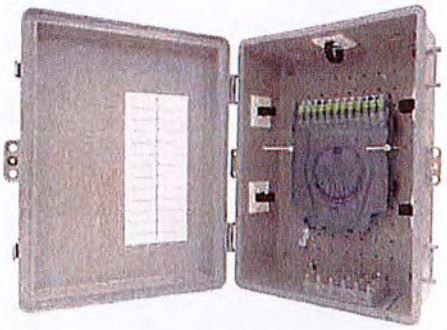
Part Number	Description	Image
018458	Kit - L Bracket and SC/APC Adapter	
SRD-CZZZ-ZZZ	Empty StrongFiber Deploy Reel with SC/APC Adapter	
SRD-AZZZ-ZZZ	Empty StrongFiber Deploy Reel with SC/UPC Adapter	
TAP-REEL-EMPTY	Empty slack storage reel for YOURx-TAP, includes mounting pin, holds up to 50 feet (15.24 m) of FLEXdrop™	
018041	Blank plate	
018250	Plate with two 10 mm YOURx FlexPorts	
016280	10 mm YOURx FlexPort	
015075	Single hex bit insert for securing the pin-in-hex screw on YOURx-TAP	

YOURx™
Flex Box

CLEARFIELD

Application

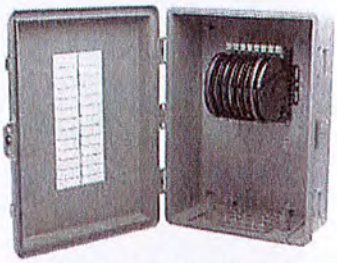
Carriers are faced with many challenges when cabling MDUs in both existing (brownfield) and new construction (greenfield). One such challenge is how to manage incoming duct, while supporting varying number of subscribers in different configurations with slack management while also reducing installation time. Clearfield's patent-pending YOURx Flex Box addresses these challenges with a flexible and scalable solution all within a single wall box.



Flex Box with Clearview Blue

Description

The YOURx Flex Box is a secure, modular wall box with slide-in aggregator plate that supports multiple cable entries like, individual fiber cables, conduit and microduct in an organized manner. Installers simply push the microduct into the aggregator plate and they are ready to pull fiber. Slack storage is provided for both incoming and outgoing fiber in separate areas to reduce service interruptions when turning up additional subscribers. The drop wheel feature accommodates up to 16 individual drop wheel assemblies with each drop wheel supporting up to a 200' (60.96 m) of FieldShield® StrongFiber storage. The SmartRoute Plate can also be mounted in the Flex Box, providing spool technology and MPO connectorization. Using the Clearview® Cassette, Drop Wheel assembly or SmartRoute Plate allows for a plug-and-play concept which reduces installation time.



Flex Box with Drop Wheel

Features and Benefits

Integrity

- Utilizes the Clearview Blue Cassette, Clearview xPAK and FieldShield Drop Wheel
- 1" inside mounting hole pattern for multiple applications
- Dual snap ensures lid secures to box

Protection

- Security screw with ability to secure with padlock
- Gasket seal
- Grounding lug included

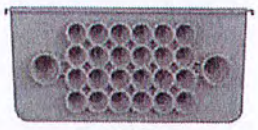
Access

- Internal mounting holes for easy installation
- Top and bottom entry/exit points
- Reversible door allows for dual direction mounting

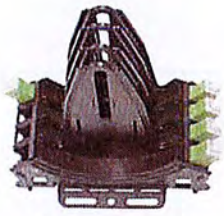
Investment

- Scalable
- Slide-in aggregator plates eliminate the need for additional duct organizer
- Clearview Cassette, Clearview xPAK, Drop Wheel or SmartRoute Plate

Combo Plate Includes 3/4" (19.05 mm) Connector



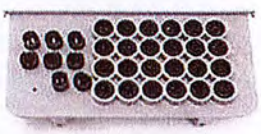
Duct Plate



Cradle Assembly

Individual Drop Wheel

Cradle Assembly with Drop Wheels Installed



PON Plate Includes 1/2" (12.70 mm) Connector

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YOURx™
Flex Box

CLEARFIELD

Technical Specifications

YOURx Flex Box	
Dimensions	15.66" H x 12.00" W x 5.38" D (397.76 mm x 304.80 mm x 136.65 mm)
Material	UV rated, flame retardant, V0 rated
Port Density	Two cassettes (24 ports), up to 16 in drop wheel, SmartRoute Plate 24 port
Connectivity Types	Clearview® Blue, Clearview xPAK, Drop Wheel, SmartRoute Plate
Aggregator Plate	Duct Plate supports (24) 10/6 mm and (2) 14/10 mm Microduct Combo Plate supports (24) 10/6 mm Microduct
Drop Wheel	Fiber type - FieldShield® StrongFiber
Drop Wheel Connector	Pullable SC/APC and SC/UPC to standard SC/APC and SC/UPC
Drop Wheel Cable Length	200 feet (60.96 m) FieldShield StrongFiber
Drop Wheel Material	Black Thermoplastic

Configured Part Numbers

W S ___ - ___ ___ ___ - ___ ___ ___ - ___ Z Z ___ ___ ___ ___

[1] [2] [3] [4] [5] [6] [7]

[1] Select Module Type

B = Cassette
N = Cassette with Male MPO
M = Drop Wheel with Male MPO (Includes Drop Wheel)
S = Drop Wheel with Splitter (Includes Drop Wheel)
C = Cradle Assembly with MPO (Male) (No Drop Wheels)
E = Cradle Assembly with Splitter (No Drop Wheels)

[2] Select Port Count

If Cassette:
012 = 12 ports
024 = 24 ports
If Drop Wheel:
004 = 4 ports
008 = 8 ports
012 = 12 ports
016 = 16 ports

[3] Select Connector Type

If Cassette:
A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC
If Drop Wheel:
A = SC/UPC
C = SC/APC

[4] Select Mode and Type (Inside Cassette or Drop Wheel)

0 = Cradle Assembly (No Drop Wheels)
1 = Singlemode Non-ribbon (For Drop Wheel, Cassette or MPO)
2 = Singlemode Ribbon (Patch and Splice Only)

[5] Select Jacket Construction (Inside Cassette or Drop Wheel)

F = Loose Tube Patch and Splice (For Cassette Only)
S = StrongFiber (For Drop Wheel Only)
Z = None (Ribbon Patch and Splice) (For Cassette Only)

[6] Select Aggregator Plate Type

C = Combo Plate *Includes 10/6 mm FlexPort fitting and One Sealcon Connector
D = Duct Plate *Includes 10/6 mm and (1) 14/10 mm FlexPort fitting

** 10/6 mm FlexPorts will match the port count selected in #2.*

[7] Select Length of Fiber

If Cassette or Drop Wheel Cradle = Leave Blank
200F = Drop Wheel Assembly

Pre-Configured Part Numbers

Flex Box Loaded With FlexPort Fittings

Part Number	Description
FDP-xWBF-CPLATE-24	Flex Box loaded with (24) 10/6 mm FlexPort fittings in combo plate with cable management
FDP-xWBF-DPLATE-24	Flex Box loaded with (24) 10/6 mm FlexPort fittings in duct plate and (1) 14/10 mm shipped along with cable managemen
FDP-xWBF-PPLATE-32	Flex Box loaded with (32) 10/6 mm FlexPort fittings in PON plate and (1) sealcon connector

Flex Box Empty Without FlexPort Fittings

Part Number	Description
FDP-xWBF-CPLATE	Empty Flex Box with combo plate and cable management. No FlexPort fittings
FDP-xWBF-DPLATE	Empty Flex Box with duct plate and cable management. No FlexPort fittings

YOURx™
Flex Box

CLEARFIELD

Pre-Configured Part Numbers

Individual Drop Wheel

Part Number	Description
DW-001-SCU-SCU 200F	Drop wheel, loaded with loaded with 200 feet (60.96 m) FieldShield StrongFiber, terminated with pullable SC/UPC to SC/UPC connectors
DW-001-SCA-SCA 200F	Drop wheel, loaded with loaded with 200 feet (60.96 m) FieldShield StrongFiber, terminated with pullable SC/APC to SC/APC connectors

Accessories

Part Number	Description
016280-06	FlexPort Fitting, 10 mm, Quantity - 6
016280-12	FlexPort Fitting, 10 mm, Quantity - 12
018107	FlexPort Fitting, 14 mm, Quantity - 1
018664	Plug, FlexPort, 10 mm
018665	Plug, FlexPort, 14 mm

Configured Part Numbers - SmartRoute Plate

(Order Empty Flex Box and FlexPort Fittings)

S R P - ___ ___ ___ ___ - ___ ___ ___ ___

1 2 3 4 5 6 7 8

1 Select Front Connector Type
A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC

2 Select Cable Type
1 = SM stranded non-ribbon, plenum rated
3 = MM stranded non-ribbon, plenum rated

3 Select Cable Construction
Y = IFC Plenum
W = FieldShield

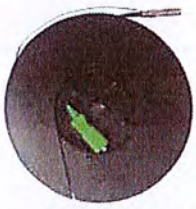
4 Select Number of Fibers
1 = 12 Fibers
3 = 6 Fibers

5 Select Rear Connector Type
A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC
N = MPO Male Pushable
P = MPO Female Pushable
Z = None

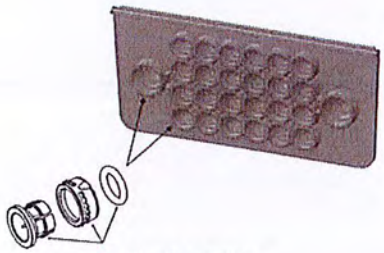
6 Select Rear Breakout
B = 1 meter
C = ½ meter
Z = None

7 Select Rear Upjacketing
A = 900 µm
B = 2mm
Z = None

8 Select Length
1 = 25 feet (7.62 mm)
2 = 50 feet (15.24 mm)
3 = 75 feet (22.86 mm)
4 = 100 feet (30.48 mm)
5 = 125 feet (38.10 mm)
6 = 150 feet (45.72 mm)
7 = 175 feet (53.34 mm)
8 = 200 feet (60.94 mm)



Individual Drop Wheel



FlexPort Fitting

SmartRoute Plate

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FieldShield®

Riser Rated 10/6 mm Microduct

CLEARFIELD

Application

Simplifying the placement of fiber, while providing protection for all indoor elements, FieldShield Riser Rated 10/6 mm Microduct is specifically designed for applications requiring small pathways in confined spaces. Rugged crush resistance protects FieldShield Riser Rated 10/6 mm Microduct from the rigors of all industry standard deployment methods, while the rigid column strength allows microducts to be deployed through occupied duct previously thought to be exhausted. Riser Rated 10/6 mm Microduct has an outer diameter of 10 mm and an inner diameter of 6 mm.

Description

FieldShield Riser Rated 10/6 mm Microduct is a durable, crush resistant micro-conduit designed to increase the protection of fiber while decreasing installation and maintenance expenses. Manufactured using high density thermoplastic, FieldShield Riser Rated Microduct offers superior durability and protection.

Features and Benefits

Integrity

- Compliant to Telcordia GR-3155
- UL-2024 listed

Protection

- Quick and easy to install
- Riser Rated 10/6 mm Microduct has high tensile strength and crush resistance
- Designed for applications designated as riser air space

Access

- Industry standard beige provides high visibility for indoor installation applications in existing conduit and by itself
- Standard nylon pull string simplifies deployment of fiber
- Smooth core slip lining reduces drag co-efficient enabling fiber to be pushed or pulled with minimal resistance

Investment

- Maximizes capacity of existing conduit previously considered exhausted
- Provides industry leading protection for any indoor riser rated application

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FieldShield®

Riser Rated 10/6 mm Microduct

CLEARFIELD

Technical Specifications

FieldShield Riser Rated 10/6 mm Microducts	
Length	2,000 feet (609.60 m) per spool (-0 / +5%)
Outside Diameter	0.394" (10.01 mm)
Inside Diameter	0.246" (6.25 mm)
Wall Thickness	0.074" (1.88 mm)
Slip Layer	Minimum 0.004" (0.102 mm)
Ovality	≤ 5%
Installation Tension	340 lbf
Minimum Bend-Radius	132.08 mm/5.2" radius
Material	Thermoplastic
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Installation Temperature	-14°F to 158°F (-26°C to 70°C)
Color	White
Markings	Part number, lot number, footage markers every two feet (609.60 mm)
Spool Size	12" ID x 24" OD x 14" W (304.80 mm x 609.60 mm x 355.60 mm)
Weight	84 lbs

Pre-Configured Part Numbers

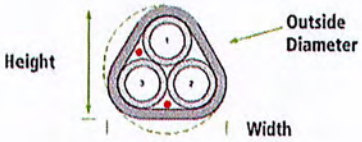
Part Number	Description
FS-DCR-NT-610-PS-2000F	FieldShield Microduct, 10 mm, riser, non-toneable, white, 2,000 foot (609.60 m) spool

Enterprise FuturePath MicroDuct System—8.5 mm/6 mm

FuturePath 24-Way Configuration

MicroDuct Specifications

PARAMETER	VALUE
OD	8.5 mm ± 0.10 (0.335" ± 0.004")
Wall Min.	1.14mm (0.045")
Wall Max.	1.24mm (0.049")
ID Min.	5.92mm (0.233")
Materials	HDPE, Riser, Plenum, LSHF, Armored
Fiber Count	6, 12, 24, 48, 72, 96 strand MicroCable SM, MM
Shipping Length (in feet per reel)	1,000 2,500 4,000 5,000 6,000 Custom lengths available



Outside Dimensions: Height x Width

Outside Diameter: Used to Calculate Fill Ratios

FuturePath Mechanical Specifications

	CONFIGURATION						
PARAMETER	2-WAY	3-WAY	4-WAY	7-WAY	12-WAY	19-WAY	24-WAY
Outside Dimensions HxW (inches)	0.44/0.77	0.75/0.79	0.79/0.93	1.04/1.13	1.33/1.46	1.62/1.80	1.62/2.13
Outside Dimensions HxW (mm)	11.2/19.7	19.0/20.2	20.2/23.7	26.4/28.7	33.8/37.2	41.1/45.7	41.1/54.2
Outside Diameter (inches)	0.77	0.85	0.93	1.13	1.48	1.80	2.13
Outside Diameter (mm)	19.7	21.5	23.7	28.7	37.7	45.7	54.2
Over-Sheath Thickness	0.050"	0.060"	0.060"	0.060"	0.060"	0.060"	0.060"
HDPE Over-Sheath Color	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Rated Over-Sheath Color	Natural	Natural	Natural	Natural	Natural	Natural	Natural
MicroDuct	Natural	Natural	Natural	Natural	Natural	Natural	Natural
HDPE Locate Wire (optional)	20 ga.	20 ga.	20 ga.	20 ga.	20 ga.	20 ga.	20 ga.
Rated Locate Wire	No	No	No	No	No	No	No
Ripcords	2	2	2	2	2	2	2
Bend Radius Supported	5"	8"	8"	11"	14"	16"	16"
Bend Radius Un-Supported	10"	16"	16"	22"	28"	32"	32"

DURA-LINE MICRODUCTS

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Enterprise FuturePath MicroDuct System—8.5 mm/6 mm (cont.)

Ordering Information

DESCRIPTION	DURA-LINE NO.				
	1000 FT	2500 FT	4000 FT	5000 FT	6000 FT
8.5 mm x 6 mm 1-way HDPE	10005861	—	—	—	—
8.5 mm x 6 mm 2-way HDPE	10004625	10008884	—	10004624	—
8.5 mm x 6 mm 3-way HDPE	10004654	10008885	—	10008886	—
8.5 mm x 6 mm 4-way HDPE	10004655	10004656	—	10008887	—
8.5 mm x 6 mm 7-way HDPE	10004659	10004874	—	—	10008888
8.5 mm x 6 mm 12-way HDPE	10004662	10004663	—	—	10004664
8.5 mm x 6 mm 19-way HDPE	10004665	10008882	—	—	10006770
8.5 mm x 6 mm 24-way HDPE	10004668	10008883	—	—	10004669
8.5 mm x 6 mm 1-way Riser	10008758	—	—	—	—
8.5 mm x 6 mm 2-way Riser	10004866	10004586	—	10008986	—
8.5 mm x 6 mm 3-way Riser	10008987	10008988	—	10008989	—
8.5 mm x 6 mm 4-way Riser	10004591	10004867	—	10008990	—
8.5 mm x 6 mm 7-way Riser	10004592	10008992	—	—	10004594
8.5 mm x 6 mm 12-way Riser	10004596	10008979	—	—	10008980
8.5 mm x 6 mm 19-way Riser	10004599	10008981	—	—	10008982
8.5 mm x 6 mm 24-way Riser	10004601	10008984	—	—	10008985
8.5 mm x 6 mm 1-way LSHF					
8.5 mm x 6 mm 2-way LSHF	10008934	10008935	—	10008936	—
8.5 mm x 6 mm 3-way LSHF	10008937	10008938	—	10008939	—
8.5 mm x 6 mm 4-way LSHF	10008940	10008941	—	10008942	—
8.5 mm x 6 mm 7-way LSHF	10008943	10008944	—	—	10008945
8.5 mm x 6 mm 12-way LSHF	10008925	10008926	—	—	10008927
8.5 mm x 6 mm 19-way LSHF	10008928	10008929	—	—	10008930
8.5 mm x 6 mm 24-way LSHF	10008931	10008932	—	—	10008933
8.5 mm x 6.7 mm 1-way Plenum	10008755	—	—	10008755	—
8.5 mm x 6.7 mm 2-way Plenum	10004851	10010091	—	10010093	—
8.5 mm x 6.7 mm 3-way Plenum	10008950	10010095	—	10010096	—
8.5 mm x 6.7 mm 4-way Plenum	10004853	10010092	—	10010094	—
8.5 mm x 6.7 mm 7-way Plenum	10004856	10010097	—	10010098	—
8.5 mm x 6.7 mm 12-way Plenum	10004857	10010099	—	10010100	—
8.5 mm x 6.7 mm 19-way Plenum	10004858	10010101	—	10010102	—
8.5 mm x 6.7 mm 24-way Plenum	10004859	10010103	—	10010104	—
8.5 mm x 6 mm 4-way Armored	—	—	10004888	—	—
8.5 mm x 6 mm 7-way Armored	—	—	10004889	—	—
8.5 mm x 6 mm 19-way Armored	—	—	10004890	—	—

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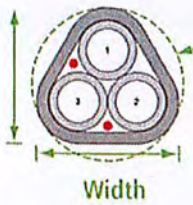
Specification Notes:



SWPS (Safe Working Pull Strength)*:
Calculated at 80% of maximum tensile strength.

Outside Dimensions: Height x Width

Outside Diameter: Used to Calculate Fill Ratios When Placing Into Larger Conduit

Bend Radius Definitions:
During installation, use the Unsupported Bend Radius guidelines (20 times the bend radius). After installation, use the Supported Bend Radius guidelines (10 times the bend radius). Large, sweeping bends increase fiber installation performance.

FUTUREPATH – 8.5mm/6mm

HDPE MICRODUCT SPECS:	
OD	8.5mm (0.33")
ID Min.	5.9mm (0.23")
Weight (#/ft)	0.018
Min. Bend Radius Sup	3"
Min. Bend Radius Unsup	6"
SWPS*	96 lbs

RISER MICRODUCT SPECS:	
OD	8.5mm (0.33")
ID Min.	5.9mm (0.23")
Weight (#/ft)	0.022
Min. Bend Radius Sup	3"
Min. Bend Radius Unsup	6"
SWPS*	89 lbs

PLENUM MICRODUCT SPECS:	
OD	8.5mm (0.33")
ID Min.	6.7mm (0.26")
Weight (#/ft)	0.024
Min. Bend Radius Sup	3"
Min. Bend Radius Unsup	6"
SWPS*	89 lbs

LSHF MICRODUCT SPECS:	
OD	8.5mm (0.33")
ID Min.	5.9mm (0.38")
Weight (#/ft)	0.021
Min. Bend Radius Sup	3"
Min. Bend Radius Unsup	6"
SWPS*	77 lbs

MATERIALS:

- ☑ HDPE
- ☑ RISER
- ☑ PLENUM
- ☑ LSHF
- ☑ ARMORED

MICRODUCT/FUTUREPATH PACKAGING:

- Up to 6,000' per reel
  Custom lengths available
- MicroDucts consecutively numbered and printed every 2 inches

FIBER:

Fiber Count: 6, 12, 24, 36, 48, 72 & 96 (SM) strand MicroCable
SM, MM
Fibers up to 4.5mm OD

Specifications 8.5/6mm	2-Way	3-Way	4-Way	7-Way	12-Way	19-Way	24-Way
Outside Dimensions HxW (inches)	0.44/0.77	0.75/0.79	0.79/0.93	1.04/1.13	1.33/1.46	1.62/1.80	1.62/2.13
Outside Diameter (inches)	0.77	0.85	0.93	1.13	1.48	1.80	2.13
OSP Locate Wire	20 ga.	20 ga.	20 ga.	20 ga.	20 ga.	20 ga.	20 ga.
Ripcords	2	2	2	2	2	2	2
MicroDuct Color	Natural	Natural	Natural	Natural	Natural	Natural	Natural
Standard Colors (Custom Available):							
OSP Over-Sheath Color	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Rated Over-Sheath Color	Natural	Natural	Natural	Natural	Natural	Natural	Natural
Min. Bend Radius Sup (inches)	5	8	8	11	14	16	16
Min. Bend Radius Unsup (inches)	10	16	16	22	28	32	32
Safe Working Pull Strength (SWPS)*							
HDPE (lbs)	404	593	733	1,112	1,727	2,528	3,099
Riser (lbs)	419	615	749	1,119	1,724	2,502	3,050
Plenum (lbs)	377	508	626	1,057	1,644	2,552	3,111
LSHF (lbs)	354	518	634	951	1,461	2,127	2,593

ENTERPRISE PLENUM FUTUREPATH – 8.5mm/6mm (6.7mm)

MICRODUCT SPECIFICATIONS:	
OD	8.5mm ± 0.10 (0.335" ± 0.004")
Wall Min.	0.76mm (0.03")
Wall Max.	0.86mm (0.03")
ID Min.	6.7mm (0.26")

FIBER:

Fiber Count: 2, 6, 12, 24, 48 , 72 strand eABF MicroCable
SM, MM – OM-1, OM-2, OM-3, OM-4

SHIPPING LENGTH – FEET PER REEL:

1,000'
Custom Lengths Available

HDPE INSTALLATION TEMPERATURE SPECS:

MINIMUM TEMPERATURE: -30°F (-34°C)
MAXIMUM TEMPERATURE: +165°F (+74°C)

SPECIFICATIONS:

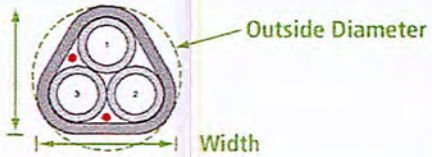
All Conduits produced to: GR-3155-CORE
All Fiber Optic Cable produced to: GR-409-CORE
ETL Listed to UL 2024 & CSA C22.2 No.262-04

STANDARD FEATURES:

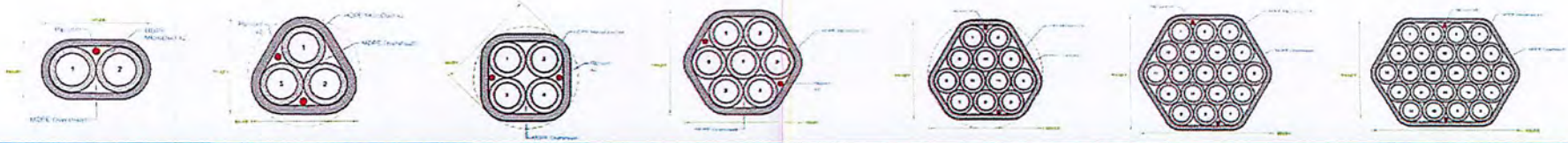
Over-Sheath/MicroDuct Color: Opaque White
Ripcords: 1 per 2-way; 2 all others

Outside Dimensions: Height x Width

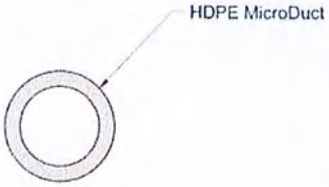
Outside Diameter: Used to Calculate Fill Ratios



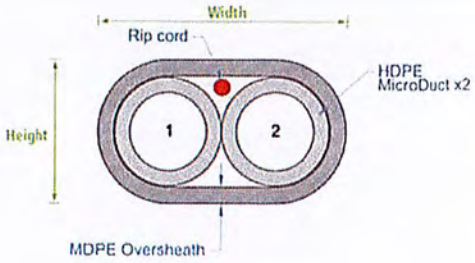
	2-Way	3-Way	4-Way	7-Way	12-Way	19-Way	24-Way
Outside Dimensions HxW (inches) Outside Dimensions HxW (mm)	0.38/0.71 9.5/18.0	0.67/0.71 17.0/18.1	0.71/0.85 18.1/18.1	0.97/1.06 24.5/26.8	1.26/1.39 32.0/35.4	1.56/1.74 39.6/44.2	1.52/2.07 38.6/52.7
Outside Diameter (inches/mm)	0.71/18.0	0.77/19.5	0.85/21.7	1.06/26.8	1.41/35.7	1.74/44.2	2.07/52.7
Weight/Foot (lbs)	0.076	0.106	0.134	0.229	0.369	0.577	0.713
Safe Working Pull Strength (lbs)	377	508	626	1,057	1,644	2,552	3,111
Over-Sheath Thickness	0.020"	0.020"	0.020"	0.025"	0.025"	0.030"	0.030"
Bend Radius – Supported (inches)	7	7	8	10	14	16	16
Bend Radius – Unsupported (inches)	14	14	16	20	28	32	32
Length:	PART #	PART #	PART #	PART #	PART #	PART #	PART #
1,000 ft	10004851	10008950	10004853	10004856	10004857	10004858	10004859



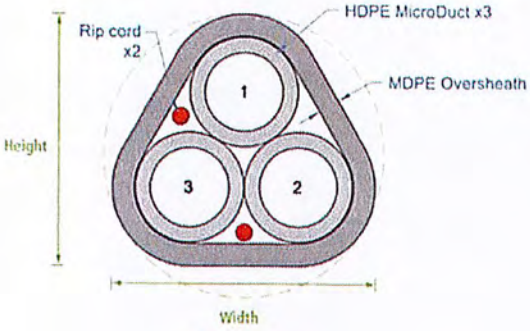
FUTUREPATH Configurations



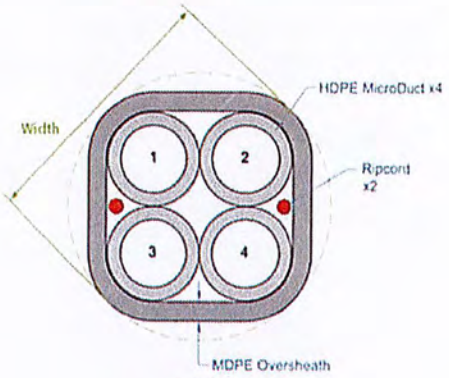
Individual



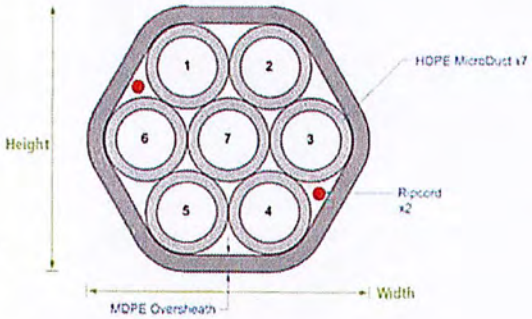
2-Way



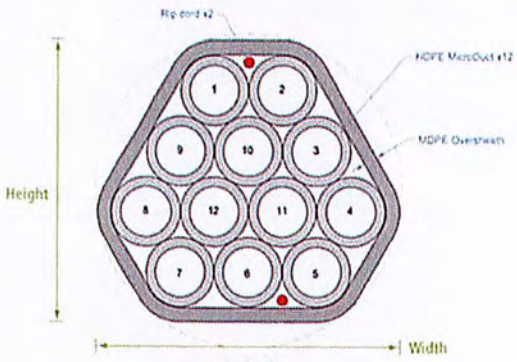
3-Way



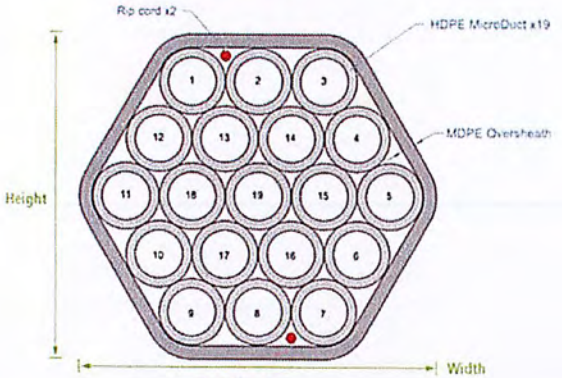
4-Way



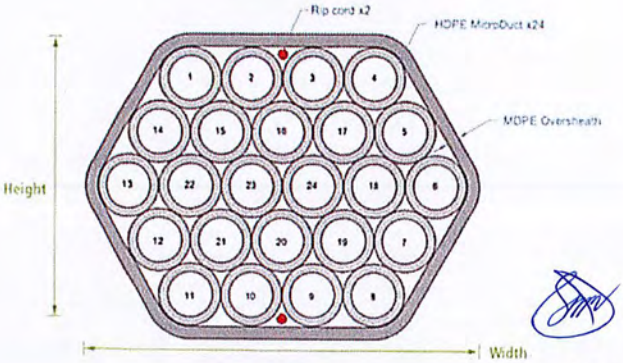
7-Way



12-Way



19-Way



24-Way

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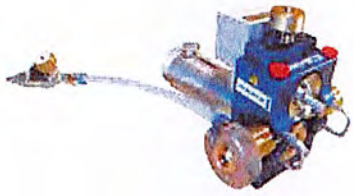
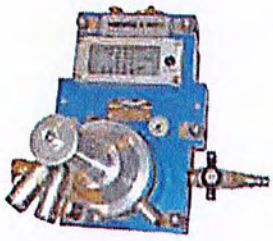


Plumett UltimaZ P2P-V20 Model



MicroJet PR-196 Model

MiniJet Pneumatic-Drive Model

Cable Jetting Equipment

Plumett UltimaZ P2P-V20

The UltimaZ® P2P-V20 is ideal for pushing and jetting Enterprise MicroCables and ABF cables into standard or riser-rated single, or bundled FuturePath MicroDuct products. It is powered by common electric corded and cordless drills. The UltimaZ can be outfitted with inserts to accept Enterprise MicroDucts (5 mm, 7 mm, 8 mm, 8.5 mm, 12 mm, 12.7 mm OD) and cables ranging from 1 - 4.5 mm OD.

Plumett MicroJet

The MicroJet® PR-196 is ideal for pushing and jetting Enterprise MicroCables and ABF cables into standard or riser-rated single, or bundled FuturePath MicroDuct products. The MicroJet can be outfitted with inserts to accept typical Enterprise MicroDucts (5 mm, 7 mm, 8 mm, 8.5 mm, 12 mm, 12.7 mm OD) and cables ranging from 1 - 8.5 mm OD. Other MicroJet models and inserts available.

Plumett MiniJet

The MiniJet® is ideal for Enterprise applications where larger micro or conventional optical fiber cables are being placed in ducts up to 1.66" (42 mm) OD, or FuturePath and single MicroDuct sections, such as feeder routes between structures in a campus or MDU environment. The MiniJet is a highly versatile jetting machine that is available with a pneumatic drive system.

Specifications

PARAMETER	VALUE		
	PLUMETT ULTIMAZ P2P-V20	PLUMETT MICROJET PR-196	PLUMETT MINIJET
Cable OD	1 mm - 4.5 mm (0.04" - 0.33")	1 mm - 8.5 mm (0.04" - 0.33")	4.0 mm - 16. 0 mm (0.16" - 0.63")
Duct OD	5 mm - 12.7 mm (0.20" - 0.50")	5 mm - 16.0 mm (0.20" - 0.63")	7.0 mm - 42.0 mm (0.28" - 1.65")
Operation	12V – 18V 3/8" cordless drill or standard 3/8" drill	Pneumatic	Pneumatic

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Cable Jetting Equipment

Ordering Information

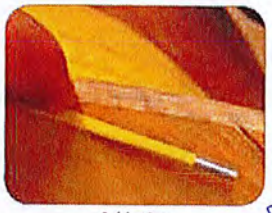
DESCRIPTION	DURA-LINE NO.
ULTIMAZ P2P-V20—Kit includes: P2P Housing, Variable Drive, Counter, Air Connector (G1/8"), Carrying Case, Tools and Spares	20003753
ORDER SEPARATELY	
Drive Wheel—Fits Cable 3.1 to 3.5 mm (order 2 each)	20001576
Drive Wheel Cable—Fits 3.6 to 4.0 mm (order 2 each)	20001573
Duct Insert P2P 8.5 mm	20003754
Cable Guides P2P 5 mm	20003755
O-Rings—Set of 6 Duct OD 8 mm	20001684
Lip Seal Set Cable—2.4 to 3.3 mm x 7 mm OD	20001647
Lip Seal Set Cable—3.4 to 4.3 mm x 7 mm OD	20003790
OPTIONAL COMPONENTS	
Duct Insert P2P 8.0 mm	20003758
Pressure Wheel—Rubber	20003759
Pressure Wheel—Aluminum	20001690
OPTIONAL 12.7 MM COMPONENTS (All items below needed for 12.7 mm Kit)	
Duct Insert P2P 12.7 mm to 5 mm OD Cable	20003757
O-Rings— Set of 6 12.7 mm P2P	20003756
Lip Seal Set Cable 3.4 to 4.3 mm x 12 mm OD	20001888
Lip Seal Set of 6 Cable 4.4 to 5.3 mm x 12 mm OD	20001642
Air Connection G1/4"	20003791
Nut Collar P2P Large	20003792
MICROJET PR-196 System—Kit includes: PR-196 Unit, Counter, Air Connector, Air Controls, Carrying Case, Tools and Spares	20001659
ORDER SEPARATELY	
Duct Insert Set OD 8.5 mm (3.1-5.6 mm Cable)	20001599
Duct Insert Set OD 12.7 mm (3.0-8.0mm Cable)	20001587
Cable Insert Set Dia. 4-8 mm	20001565
Duct O-Ring for 8 mm	20001668
Duct O-Ring for 12 mm	20001665
Lip Seal Set 3.4-4.3 mm	20001888
Steel Tire with U-Groove 3.1-3.5 mm Cable	20001878
Steel Tire with U-Groove 3.6-4.0 mm Cable	20001890
Duct Clamp Accessory—External	20001582
MINIJET P-01 System—Kit includes: Pneumatic-powered Tractor Drive, Counter, Air Controls, Accessory Case, Storage Box, Tools and Spares	20001661
ORDER SEPARATELY	
Duct Insert Set OD 12.7 mm	20001586
Cable Insert Set Dia. 6-8 mm	20001566
Lip Seal Set for Cable Dia. 7.0-7.5 mm	20001640
Lip Seal Set for Cable Dia. 7.5-8.0 mm	20001641

Additional Jetting Accessories

PRODUCT TYPE	DESCRIPTION	DURA-LINE NO.
Lube Sponge	Spreaders 7 mm for 6 mm ID, 20/PK	20001938
Lube Sponge	Spreaders 12 mm for 10mm ID, 20/PK	20001697
Lubricant	MicroJet Lube, 8 oz. Bottle	20001927
Cable Caps/Tips	Cable Caps 3.5 mm, 10/PK	20001549
Cable Caps/Tips	Cable Caps 4.0 mm, 10/PK	20001554

Spreaders

MicroJet Lube

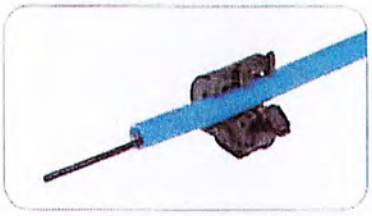


Cable Cap

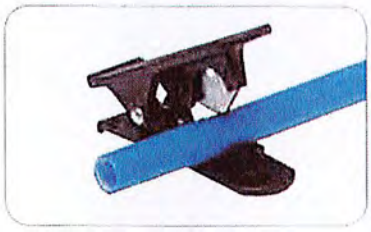
Couplers, End Caps and Plugs

Bulkhead Fitting

Gas Block Connector



MicroDuct Round Cutter



MicroDuct Straight Cutter

Accessories

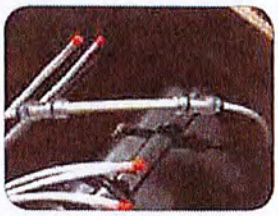
A comprehensive line of Micro Accessories are available to complete your network. With our Enterprise End-to-End Solutions, we offer Micro Couplers, Cross-Connect Cabinets, Splice Closures, Optical Termination Hardware and Tools.

Ordering Information—Accessories

PRODUCT TYPE	DESCRIPTION	DURA-LINE NO.
COUPLERS		
12.7 mm x 12.7 mm	Straight Coupler	20001832
8.5 mm x 8.5 mm	Straight Coupler	20001834
TRANSITIONS		
8.5 mm x 8 mm	Reducer Coupler	20001884
8.5 mm x 5 mm	Reducer Coupler	20001883
8 mm x 5 mm	Reducer Coupler	20003016
10 mm x 8.5 mm	Reducer Coupler	20001881
END CAPS		
12.7 mm	End Cap	20001482
8.5 mm	End Cap	20001819
PLUGS		
12.7 mm	End Plug	20002828
8.5 mm	End Plug (for HDPE and Riser Only)	20001523
BULKHEAD FITTINGS		
12.7 mm	12.7 mm Bulkhead Connector with Lock Ring	20003017
8.5 mm	8.5 mm Bulkhead Connector with Lock Ring	20001712
GAS BLOCK CONNECTORS		
8.5 mm	8.5/6 mm Gas Block Connector for cable 3.3-4.0 mm	20002104
12.7 mm	12.7/10 mmm Gas Block Connector for cable 5 mm - 8 mm	20003363
TOOLS		
Cutter 8-19 mm	MicroDuct Straight Cutter 8-19 mm OD	20001856
Cutter Round	Round MicroDuct Cutter	20001745
Cutter Ratchet	2 in. Ratchet Cutter	20001803
Cutter Ratchet 1-1/2"	1-1/2" Ratchet Cutter	20001923
Slitter	Slitter Longitudinal	20001937
Slitter	Longitudinal Sheath Slitter	20003768
Unlocking Tool	Tool MicroDuct Coupler Collet Unlocking Tool	20001866
CLOSE-DOWN ASSEMBLY		
8.5 mm	CO Close-Down Assembly, 8.5 mm	20003018

Ratchet Cutter

Longitudinal Sheath Slitter



Close-Down Assembly

Accessories (cont.)

Ordering Information—Connectors

PRODUCT TYPE	DESCRIPTION	DURA-LINE NO.
FUTUREPATH ENCLOSURE CONNECTORS		
8.5/6 X 1	Enterprise - FuturePath Enclosure Connector D 8. 5 mm x 1	20003048
8.5/6 X 2	Enterprise - FuturePath Enclosure Connector D 8. 5 mm x 2	20001915
8.5/6 X 3	Enterprise - FuturePath Enclosure Connector D 8.5 mm x 3	20003049
8.5/6 X 4	Enterprise - FuturePath Enclosure Connector D 8.5 mm x 4	20001916
8.5/6 X 7	Enterprise - FuturePath Enclosure Connector D 8.5 mm x 7	20001917
8.5/6 X 12	Enterprise - FuturePath Enclosure Connector D 8.5 mm x 12	20001918
8.5/6 X 19	Enterprise - FuturePath Enclosure Connector D 8.5 mm x 19	20001919
8.5/6 X 24	Enterprise - FuturePath Enclosure Connector D 8.5 mm x 24	20001920
12.7/10 X 1	Enterprise - FuturePath Enclosure Connector D 12.7 mm x 1	20003050
12.7/10 X 2	Enterprise - FuturePath Enclosure Connector D 12.7 mm x 2	20003051
12.7/10 X 3	Enterprise - FuturePath Enclosure Connector D 12.7 mm x 3	20003052
12.7/10 X 4	Enterprise - FuturePath Enclosure Connector D 12.7 mm x 4	20003053
12.7/10 X 7	Enterprise - FuturePath Enclosure Connector D 12.7 mm x 7	20003054

FuturePath Enclosure Connector

FieldShield®
Duct Accessories

CLEARFIELD

Airtight Coupler

Description

Airtight Couplers are designed to provide simple, 2-click plug-and-play joining of microducts, enabling longer runs and safe pushing and pulling performance.

Pre-Configured Part Numbers

Part Number	Description
FS-CPLR-7MM-7MM-10	FieldShield Microduct Airtight Coupler, 7 mm to 7 mm, 10 pack
FS-CPLR-8MM-8MM-10	FieldShield Microduct Airtight Coupler, 8 mm to 8 mm, 10 pack
FS-CPLR-10MM-10MM-10	FieldShield Microduct Airtight Coupler, 10 mm to 10 mm, 10 pack
FS-CPLR-12.7MM-12.7MM-10	FieldShield Microduct Airtight Coupler, 12.7 mm to 12.7 mm, 10 pack
FS-CPLR-14MM-14MM-10	FieldShield Microduct Airtight Coupler, 14 mm to 14 mm, 10 pack

Airtight Transition Coupler

Description

Airtight Transition Couplers are used to join two different sizes of microduct.

Pre-Configured Part Numbers

Part Number	Description
FS-CPLR-8MM-10MM-10	FieldShield Microduct Airtight Transition Coupler, 8 mm to 10 mm, 10 pack
FS-CPLR-10MM-12.7MM-10	FieldShield Microduct Airtight Transition Coupler, 10 mm to 12.7 mm, 10 pack
FS-CPLR-12.7MM-14MM-10	FieldShield Microduct Airtight Transition Coupler,12.7 mm to 14 mm, 10 pack

End Cap

Description

End caps are airtight caps used to keep debris out of the end of the microduct when pulling duct through existing conduit and plowed holes, sealing the end of the conduit temporarily. The end cap is a clear cap that installs much like the couplers providing an airtight seal.

Pre-Configured Part Numbers

Part Number	Description
FS-END-STP-10MM-10	FieldShield Microduct End Caps, 10 mm, 10 pack
FS-END-STP-12.7MM-10	FieldShield Microduct End Caps, 12.7 mm, 10 pack
FS-END-STP-14MM-10	FieldShield Microduct End Caps, 14 mm, 10 pack

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Tools and Accessories

Couplers

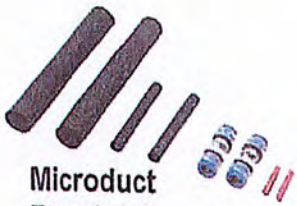
Part Number	Description
FS-CPLR-7MM-7MM-10	FieldShield Microduct Airtight Coupler, 7 mm to 7 mm, 10 pack
FS-CPLR-8MM-8MM-10	FieldShield Microduct Airtight Coupler, 8 mm to 8 mm, 10 pack
FS-CPLR-10MM-10MM-10	FieldShield Microduct Airtight Coupler, 10 mm to 10 mm, 10 pack
FS-CPLR-12.7MM-12.7MM-10	FieldShield Microduct Airtight Coupler, 12.7 mm to 12.7 mm, 10 pack
FS-CPLR-14MM-14MM-10	FieldShield Microduct Airtight Coupler, 14 mm to 14 mm, 10 pack

Transition Couplers

Part Number	Description
FS-CPLR-8MM-10MM-10	FieldShield Microduct Airtight Transition Coupler, 8 mm to 10 mm, 10 pack
FS-CPLR-10MM-12.7MM-10	FieldShield Microduct Airtight Transition Coupler, 10 mm to 12.7 mm, 10 pack
FS-CPLR-10MM-14MM-10	FieldShield Microduct Airtight Transition Coupler, 10 mm to 14 mm, 10 pack
FS-CPLR-12.7MM-14MM-10	FieldShield Microduct Airtight Transition Coupler,12.7 mm to 14 mm, 10 pack

End Caps

Part Number	Description
FS-END-STP-10MM-10	FieldShield Microduct End Caps, 10 mm, 10 pack
FS-END-STP-12.7MM-10	FieldShield Microduct End Caps, 12.7 mm, 10 pack
FS-END-STP-14MM-10	FieldShield Microduct End Caps, 14 mm, 10 pack

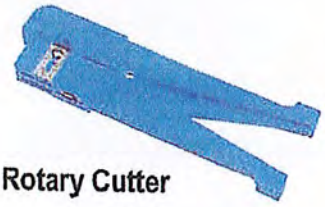


Microduct Repair Kit

Part Number	Description
FS-MD-FLD-RPR-KIT-7MM	FieldShield Microduct Field Repair Kit, 7 mm
FS-MD-FLD-RPR-KIT	FieldShield Microduct Field Repair Kit, 10 mm
FS-MD-FLD-RPR-KIT-14MM	FieldShield Microduct Field Repair Kit, 14 mm

Field Installable FlexConnector

Part Number	Description
FSD-FIFC-4PAK	Field installable FlexConnector in 4 pack
FSD-FIFC-SCA-4PAK	Field installable FlexConnector with splice-on SC/APC connectors, 4 pack

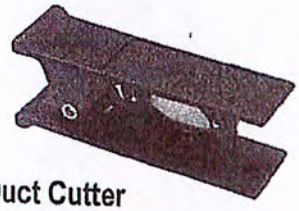


Rotary Cutter

Part Number	Description
FS-TCUT-8-10MM	FieldShield Rotary Duct Cutter, 8 to 14 mm microducts
FS-TCUT-3-4MM	FieldShield Rotary Duct Cutter, 3 to 4 mm jackets

Clearfield
For FieldShield® Microduct and Fiber

CLEARFIELD

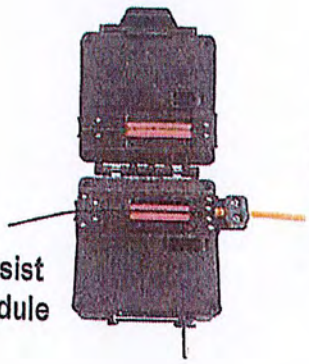


Duct Cutter

Part Number	Description
FS-DCUT-8-10MM	FieldShield Duct Cutter, 8 to 14 mm microducts

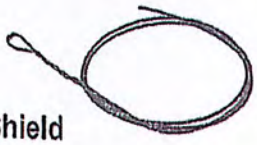
De-Burring Tool

Part Number	Description
FS-MD-DBR-TOOL	FieldShield Microduct De-Burring Tool, 8 mm to 10 mm, blue



Assist Module

Part Number	Description
FS-ASSIST-T	FieldShield, Assist Module, with mounting tripod
FS-ASSIST-KIT-BELT	FieldShield Assist Module, replacement belt kit (includes two belts)
FS-ASSIST-KIT-PLATE	FieldShield Assist Module, replacement wear plate kit (includes two wear plates)



FieldShield Pull Sock

Part Number	Description
FS-PUL-3-4MM	FieldShield Pull Sock, for 3 to 5.5 mm FieldShield Pushable Fiber
FS-PUL-5-9MM	FieldShield Pull Sock, for 5 to 9 mm FieldShield Pushable Fiber

Microduct Pulling Eyes

Part Number	Description
FS-PUL-CRT-6MM-M	FieldShield Microduct Pulling Carrot, 6 mm ID, metal, with string tie on
FS-PUL-CRT-10MM-M	FieldShield Microduct Pulling Carrot, 10 mm ID, metal, with string tie on

Clearfield

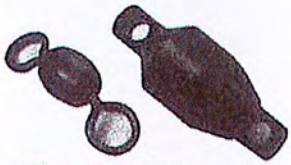
For FieldShield® Microduct and Fiber

Aerial Microduct Attachment

Part Number	Description
FS-DEADEND	FieldShield Aerial Microduct Attachment, dead end
FS-DEADEND-AD10	FieldShield Aerial Microduct Attachment, large cable
FS-AERIAL-SPLICE	FieldShield Aerial Microduct Attachment, open wire splice, galvanized, BWG-10 0.134" x 14"

Turn Table

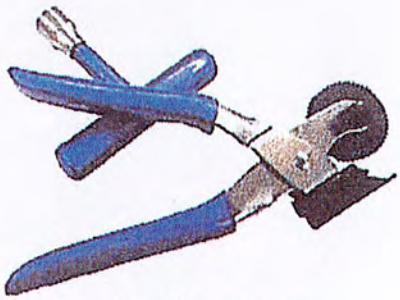
Part Number	Description
FMA-XXX-100	Turn Table, Small, for deploying FieldShield products, 12" base
FMA-XXX-101	Turn Table, Large, for deploying FieldShield products, 24" base



Proofing Mandrels

Part Number	Description
FS-DUCT-PROOFING-TOOL	Includes both 6mm and 10mm proofing mandrels
FS-DUCT- PROOFING-KIT	Includes both proofing mandrels and a spool of string

D-ROP Deadend
FS-DEADEND-LG7

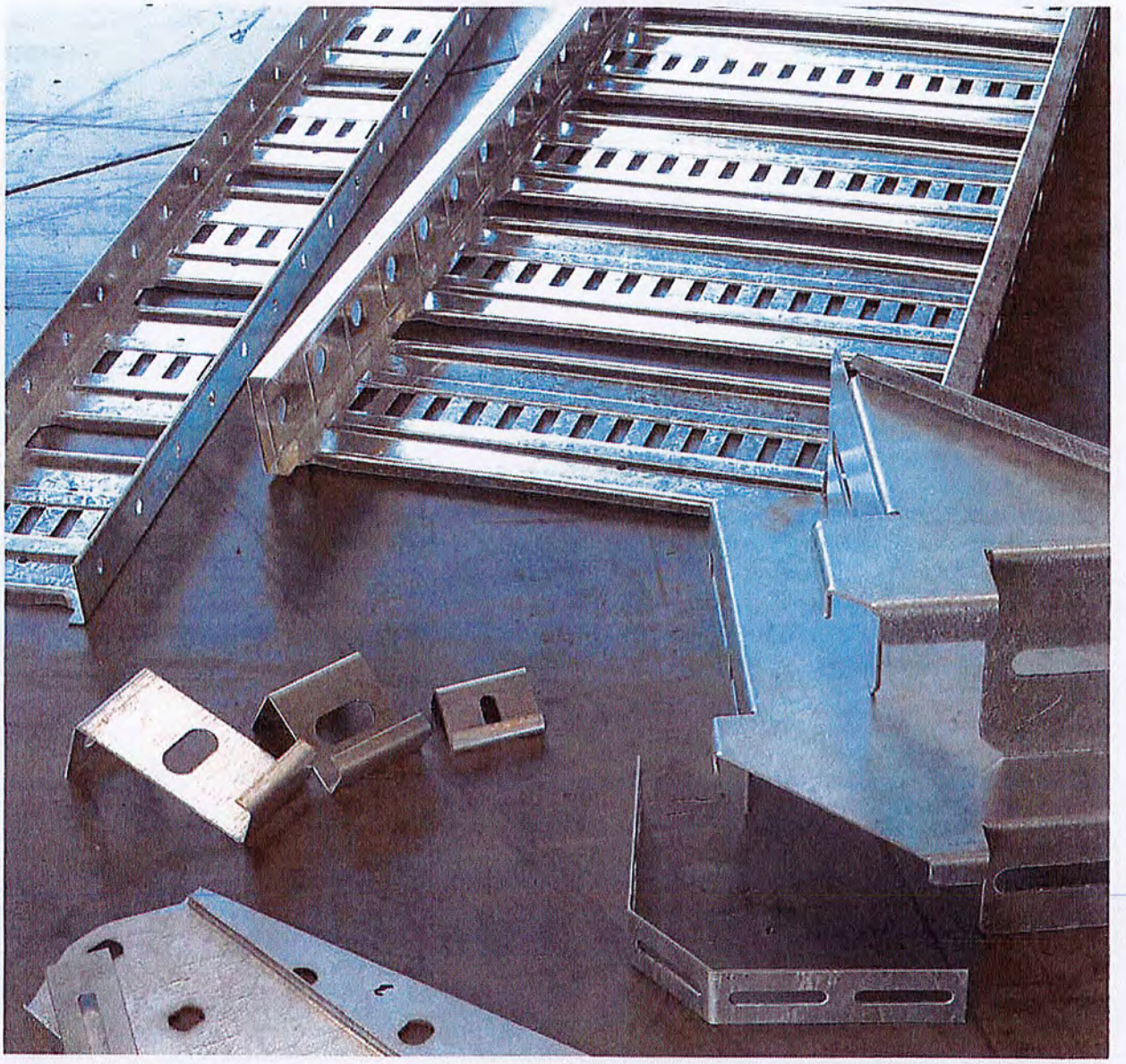


D-ROP Opener
FS-DUCT-OPENER

FieldShield Dispensing Box
FS-SPOOLBOX-10

YOURx Breakout Pulling Tool
FS-PUL-YOURX

Unistrut Laddertray : Unitray



Our Unitray system offers the contractor the ability to site-manufacture all required junctions, thereby reducing installation cost over traditional cable trays and ladders.

Unitray also presents the most comprehensive range of accessories such as cost effective prefabricated reducers for speed of installation on site and a more appealing finish.

Unitray is used widely as an architectural cable support, and the comprehensive range of light, medium, and heavy duty products ensure that the Unistrut Unitray system is an aesthetically pleasing and cost effective cable support medium.

Unistrut has the widest distribution organization throughout both Australia and New Zealand, ensuring easy access to the Unitray range and the full range of complementary Unistrut support systems plus other cable support ranges.

Unitray by Unistrut without question offers a comprehensive and cost effect support medium with the famous unrivalled

UNISTRUT QUALITY GUARANTEE.

QUALITY UNISTRUT GUARANTEE

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Unistrut - Tables and Key

To assist you in navigating through this catalogue we have divided this catalogue into defined sections :

Material Finish

Finish	Code
Galvabond	GB
Hot Dipped Galvanised	HG
Stainless Steel	SS
Zinc Plated	ZP
Aluminium	AL

Icon Key - Features


Time Saving


New!


Self Splice


Sold as Pair


Light Weight


Sold as individual

Galvabond (GB)
Base material is supplied ex the Steel Mill in pre-galvanised finish, in accordance with AS/NZS 1397, with a coating class of Z275.
The material is slit to width, punched and formed in to the Unitray profile.

Hot Dipped Galvanised (HG)
Coatings are applied generally in accordance with AS/NZS 4680. The thickness of the coating is dependent on the material thickness of the component being galvanised. It should be noted that due to the galvanising process, the thickness of the coating will vary over the surface and should be taken into account during component assembly. It may be necessary to remove excess build-up prior to use.

Stainless Steel (SS)
Corrosive resistant stainless steel with no additional surface treatment. This material option provides the best corrosion resistance available. Stainless steel is used primarily in marine environments or food processing facilities.

Zinc Plated (ZP)
Fasteners are electroplated generally in accordance with AS 1897.

Aluminium (AL)
Lightweight and corrosive resistant - ideal for marine industry

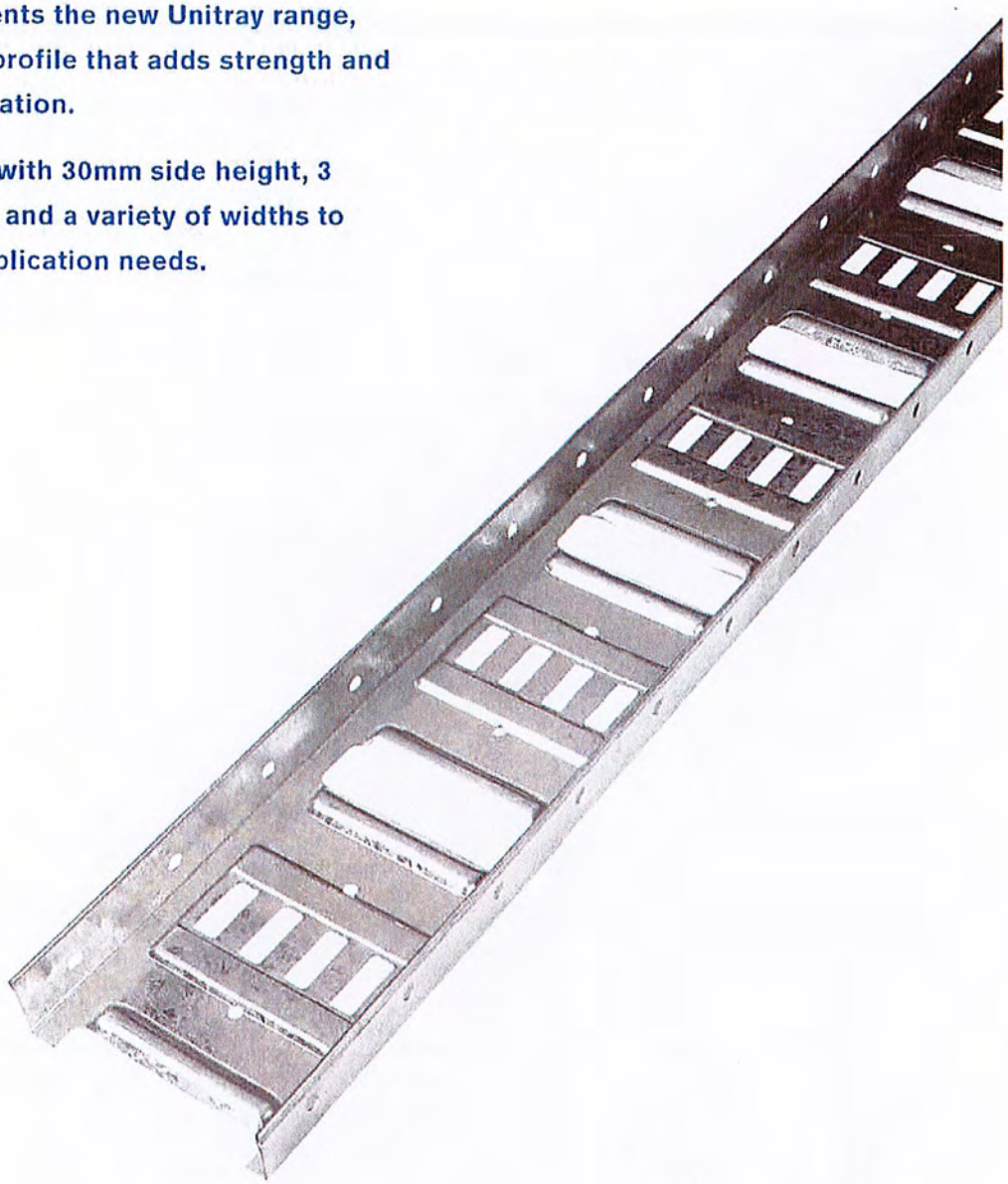
Other – Powder Coated (EPC)
When specific applications require other commercially available finishes, they can be supplied according to specification.

Special Materials and Coatings available upon request

UT1 Unitray

UNISTRUT presents the new Unitray range, with a versatile profile that adds strength and simplifies installation.

UT1 is available with 30mm side height, 3 metres in length and a variety of widths to meet all your application needs.



Light Weight

Sold as individual

Nominal **Size (W)**	**Length**	**Part No.**	
mm	mm	GB	HDG
100	3000	UT1-100G	UT1-100H
125	3000	UT1-125G	UT1-125H
175	3000	UT1-175G	UT1-175H
250	3000	UT1-250G	UT1-250H
325	3000	UT1-325G	UT1-325H

Basic load 20kgs/linear meter on 1.5m span

UT3 Unitray

UNISTRUT presents the new Unitray range, with a versatile profile that adds strength and simplifies installation.

UT3 is available in differing finishes with 50mm side height, 3 metres in length and a variety of widths to meet all your application needs.

Light Weight

Sold as individual

NOTE : Normal size (W) is measured from inside of top return flanges.
Actual width W1 = W+22mm

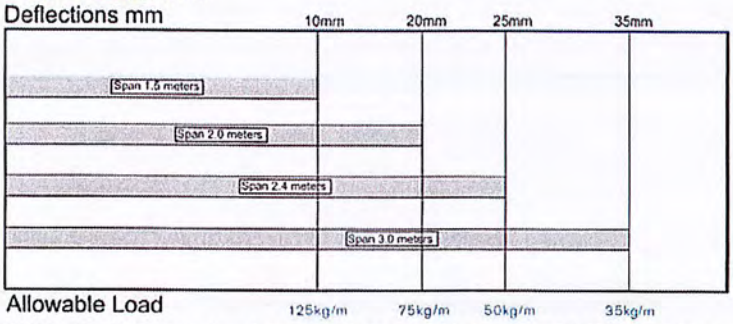
Nominal Size (W)	Actual Size (W1)	Length	Part No.			
mm	mm	mm	GB	HDG	AL *	SS *
150	172	3000	UT3-150G	UT3-150H	UT3-150AL	UT3-150SS
300	322	3000	UT3-300G	UT3-300H	UT3-300AL	UT3-300SS
450	472	3000	UT3-450G	UT3-450H	UT3-450AL	UT3-450SS
600	622	3000	UT3-600G	UT3-600H	UT3-600AL	UT3-600SS

NOTE : * Special order only - non-returnable

Basic load 125kgs/linear meter on 1.5m span

UT3 CABLETRAY

Deflections mm



Allowable Load

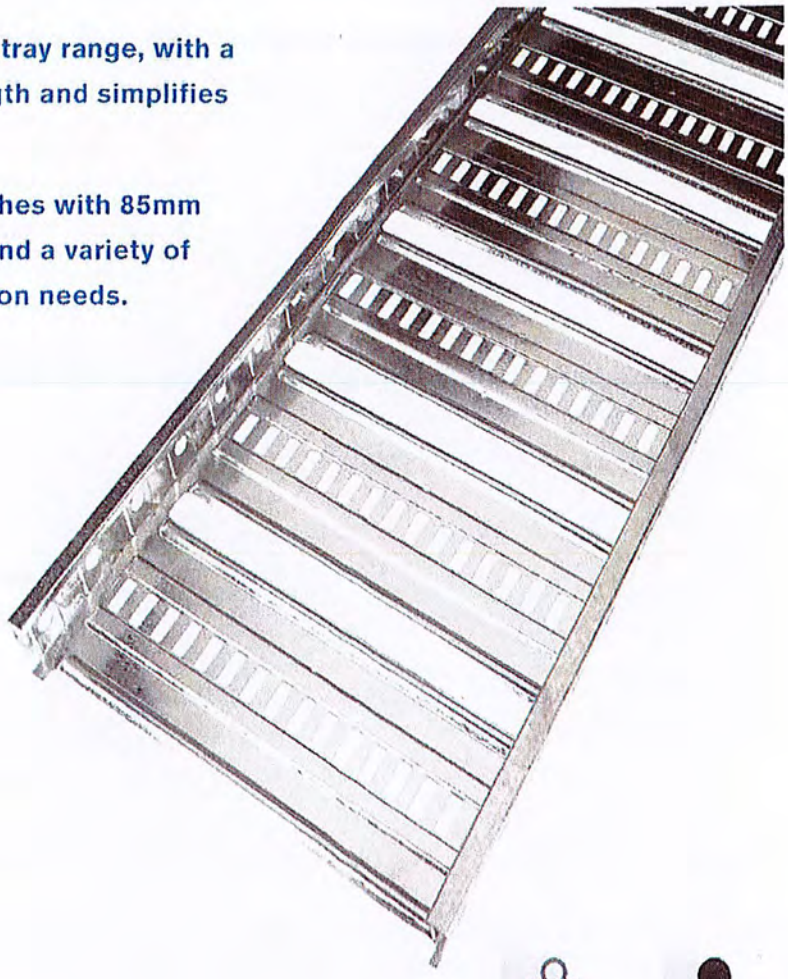
125kg/m	75kg/m	50kg/m	35kg/m

NOTE : The deflections have been provided as a guide based on CONTINUOUS spans.

UT5 Unitray

UNISTRUT presents the new Unitray range, with a versatile profile that adds strength and simplifies installation.

UT5 is available in differing finishes with 85mm side height, 3 metres in length and a variety of widths to meet all your application needs.



Light Weight

Sold as individual

NOTE : Normal size (W) is measured from inside of top return flanges.
Actual width W1 = W+22mm

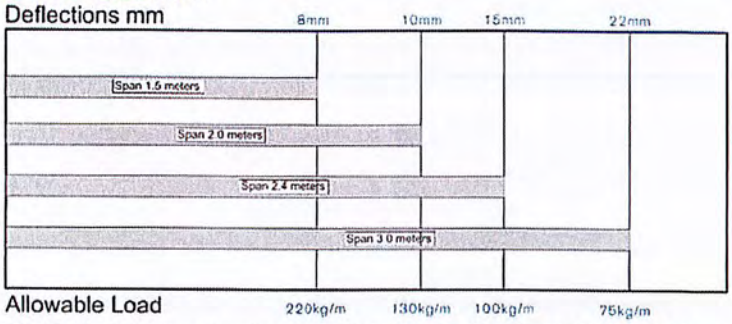
Nominal Size (W)	Actual Size (W1)	Length	Part No.			
mm	mm	mm	GB	HDG	AL *	SS *
150	172	3000	UT5-150G	UT5-150H	UT5-150AL	UT5-150SS
300	322	3000	UT5-300G	UT5-300H	UT5-300AL	UT5-300SS
450	472	3000	UT5-450G	UT5-450H	UT5-450AL	UT5-450SS
600	622	3000	UT5-600G	UT5-600H	UT5-600AL	UT5-600SS

NOTE : * Special order only - non-returnable

Basic load 75kgs/linear meter on 3.0m span

UT5 CABLETRAY

Deflections mm



Allowable Load 220kg/m 130kg/m 100kg/m 75kg/m

NOTE : The deflections have been provided as a guide based on CONTINUOUS spans.

UT1 - Unitray Fittings

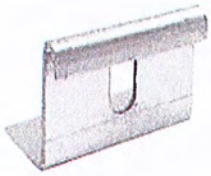
UT1 - 30mm Tray Gusset

Type	Part No.		
	GB	HDG	EPC *
UT1	UT1AG-G	UT1AG-H	UT1AG-E

UT1 - 30mm Splice Plate

Type	Part No.		
	GB	HDG	EPC *
UT1	UT1SP-G	UT1SP-H	UT1SP-E

UT1 - 30mm Hold Down Bracket



Type	Part No.		
	GB	HDG	EPC *
UT1	UT1HDB-G	UT1HDB-H	UT1HDB-E

UT1 - 30mm Link Plate

Type	Part No.		
	GB	HDG	EPC *
UT1	UT1LP-G	UT1LP-H	UT1LP-H

UT1 - 30mm Radius Plate

Type	Part No.		
	GB	HDG	EPC *
UT1	UT1RP-G	UT1RP-H	UT1RP-E

1.2 metre length

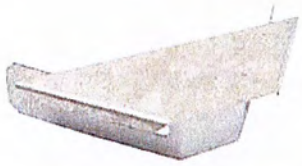
Key

Code	Material
GB	Galvabond
HDG	Hot Dipped Galvanized
EPC *	Electro Powder Coated

NOTE : * Special order only - non-returnable

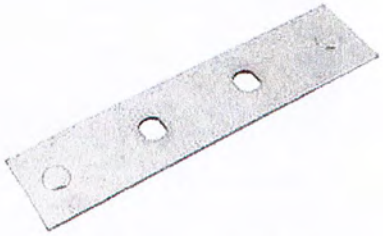
UT3 - Unitray Fittings

UT3 - Tray Gusset



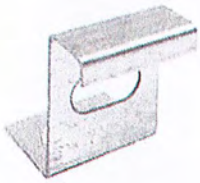
Type	Part No.			
	HDG	EPC *	AL *	SS *
UT3	UT3AG-H	UT3AG-E	UT3AG-AL	UT3AG-SS

UT3 - 50mm Splice Plate



Type	Part No.				
	GB	HDG	EPC *	AL *	SS *
UT3	UT3SP-G	UT3SP-H	UT3SP-E	UT3SP-AL	UT3SP-SS

UT3 - 50mm Hold Down Bracket



Type	Part No.				
	GB	HDG	EPC *	AL *	SS *
UT3	UT3HDB-G	UT3HDB-H	UT3HDB-E	UT3HDB-AL	UT3HDB-SS

UT3 - 50mm Link Plate

Type	Part No.				
	GB	HDG	EPC *	AL *	SS *
UT3	UT3LP-G	UT3LP-H	UT3LP-E	UT3LP-AL	UT3LP-SS

UT3 - 50mm Radius Plate

Type	Part No.				
	GB	HDG	EPC *	AL *	SS *
UT3	UT3RP-G	UT3RP-H	UT3RP-E	UT3RP-AL	UT3RP-SS

3 metre length

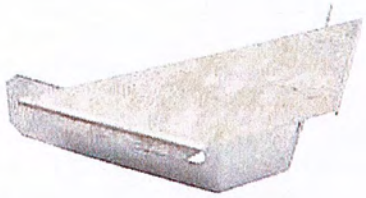
Key

Code	Material
GB	Galvabond
HDG	Hot Dipped Galvanized
AL *	Aluminium
SS *	Stainless Steel
EPC *	Electro Powder Coated

NOTE : * Special order only - non-returnable

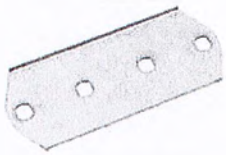
UT5 - Unitray Fittings

UT5 - 85mm Tray Gusset



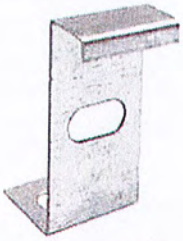
Type	Part No.			
	HDG	EPC *	AL *	SS *
UT5	UT5AG-H	UT5AG-E	UT5AG-AL	UT5AG-SS

UT5 - 85mm Splice Plate



Type	Part No.				
	GB	HDG	EPC *	AL *	SS *
UT5	UT5SP-G	UT5SP-H	UT5SP-E	UT5SP-AL	UT5SP-SS

UT5 - 85mm Hold Down Bracket



Type	Part No.				
	GB	HDG	EPC *	AL *	SS *
UT5	UT5HDB-G	UT5HDB-H	UT5HDB-E	UT5HDB-AL	UT5HDB-SS

UT5 - 85mm Link Plate

Type	Part No.				
	GB	HDG	EPC *	AL *	SS *
UT5	UT5LP-G	UT5LP-H	UT5LP-E	UT5LP-AL	UT5LP-SS

UT5 - 85mm Radius Plate

Type	Part No.				
	GB	HDG	EPC *	AL *	SS *
UT5	UT5RP-G	UT5RP-H	UT5RP-E	UT5RP-AL	UT5RP-SS

3 metre length

Key

Code	Material
GB	Galvabond
HDG	Hot Dipped Galvanized
AL *	Aluminium
SS *	Stainless Steel
EPC *	Electro Powder Coated

NOTE : * Special order only - non-returnable

Accessories and Technical cutting fittings

Centre Hold Down Clamp

Type	Part No.
Universal	GB
Each	UTCHD

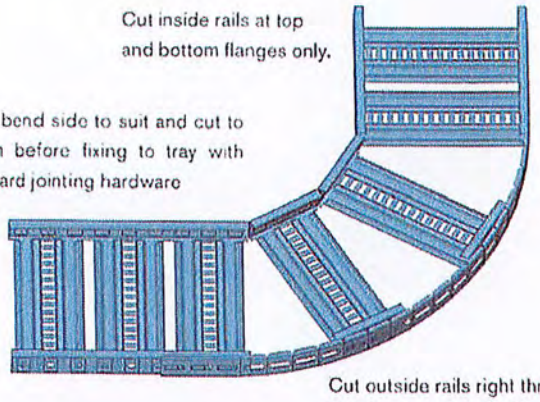
Nuts & Bolts

	Part No.	
	Bolt	Nut
Each	UTBZ	UTNZ

Flat Bend

Cut inside rails at top and bottom flanges only.

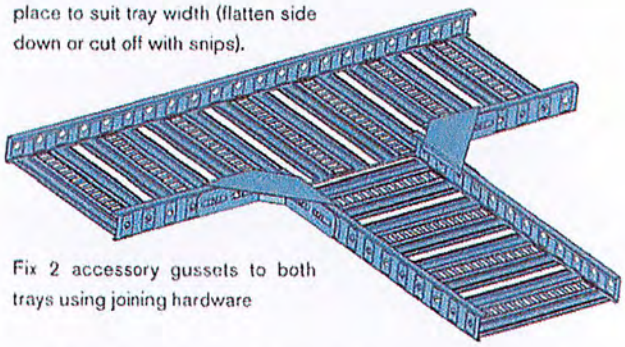
Form bend side to suit and cut to length before fixing to tray with standard jointing hardware



Cut outside rails right through (3 full cuts makes 90° bend).

Tee

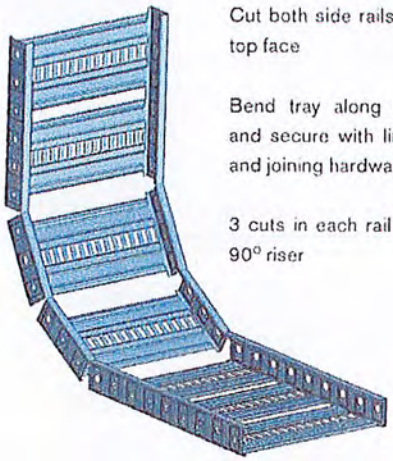
Cut side rail to bottom face in 2 place to suit tray width (flatten side down or cut off with snips).



Fix 2 accessory gussets to both trays using joining hardware

Note. Cross is the same proceedure repeated on both sides

Inside Riser

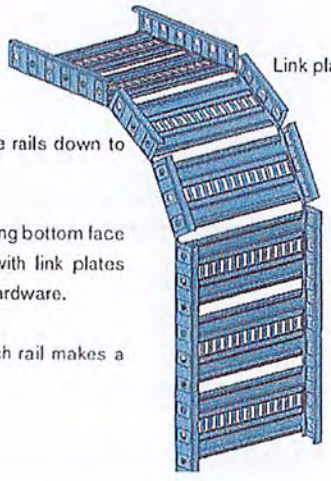


Cut both side rails down to top face

Bend tray along top face and secure with link plates and joining hardware.

3 cuts in each rail makes a 90° riser

Outside Riser



Link plate

Cut both side rails down to bottom face

Bend tray along bottom face and secure with link plates and joining hardware.

3 cuts in each rail makes a 90° riser

Technical - Materials

Often the most difficult decision to be made is the selection of material, because it involves the most cost-sensitive of compromises.

Material choice is directly related to service life and the longer the required life the more expensive will be the materials. The cost of these materials also must be considered as an equation of initial investment versus maintenance costs and eventual replacement.
Because service conditions for Unitray can vary over an enormously wide range, even within a single installation, it is impossible to write down any hard and fast rules on the subject of corrosion and expected lifespan.
The following may be considered a guide as to what can be expected from the various materials and finishes currently available for our cable support systems.

Galvabond

Galvabond, also known as Pre-Galvanised, is the most commonly used product finish for internal installations.The Z275 impregnated coating shows good resistance to corrosion in protected environments,and is cost effective against all other coating options.

Aluminium

Aluminium is also a popular choice of material for Unitray. Most frequently it is selected because of its excellent performance in marine environments such as is found on wharves, coal loaders or similar Port Facilities where salt spray or salt laden atmosphere is present. Another reason for using aluminium is that it offers a long maintenance free life which is important in cases where access for future painting or repairs may be costly and difficult.
For any given load class or capacity, aluminium Unitray is more expensive than their galvanised steel counterparts. Aluminium Unitray can also be expected to have a greater deflection than an equivalent steel system. On the other hand, they are lighter, more readily handled and are easy to work with, resulting in faster installation and therefore lower installation cost.

Hot-Dip Galvanized Steel

Hot-dipped galvanised steel (after fabrication) is a common selection, as it is economical to purchase and suitable for most conditions of outdoor exposure. For indoor applications, or anywhere that is essentially free from moisture, galvanised Unitray can be considered to have an indefinite life. That is, they should last as long as the plant, building, cabling or equipment which they service.

On a typical industrial or processing plant installation, exposed to weather, moisture and airborne industrial pollution, a basic life of approximately ten years can be expected. This is not to say that the Unitray will be completely corroded in that time but it is the probable life of the corrosion protection finish. Beyond that time, rapid decay can be expected and maintenance costs will increase substantially in order to keep the Unitray serviceable.
If installed near the coast, the effect of salt laden air may shorten the expected life. Also galvanising is sensitive to some chemicals, especially sulphurous compounds, which may be intrinsic to plant operations where the Unitray is installed. Correspondingly, a longer life will be expected in lighter industrial situations and if drier conditions exist.

Stainless Steel

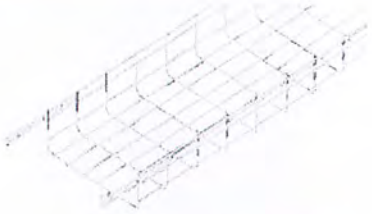
Stainless Steel is sometimes considered as a material for Unitray, usually where extremely high corrosion resistance, coupled with difficulty of servicing after installation and a high degree of reliability are essential requirements. An off-shore oil drilling platform may be one example where these conditions exist.

Unistrut, more than you imagine.

Product range

Wire Baskets

Ideal for a variety of applications, our wire baskets feature a self splicing system, designed to be simple to assemble and proven to be 80% faster in mounting time than standard splicing – eliminating the need for nut and bolt connections.

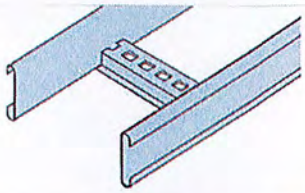


Cable Trays

A simple and cost effective support for communication and power cable distribution. Slots running down the length of the trays enable easy installation of cable ties,and the joggled end for joining lengths and accessories eliminates the requirement for separate joiners. Aestheticallly pleasing for architectural requirements.

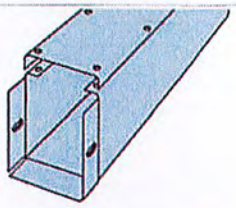
Cable Ladders

Unistrut cable ladders are the ideal solution when installing large power cables that need to be supported safely. Available in light, medium and heavy duty patterns to suit your application and in Aluminium, glavanised steel, stainless steel and fibreglass materials.



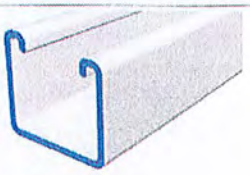
Cable Duct

The Unistrut Trunking system is designed to be quick and simple to assemble, providing real time saving as well as remaining a reliable product throughout its natural life cycle. Preassembled Internal Trunking Connectors allow you to securely connect trunking lengths in seconds, giving a neat external finish.



Metal Framing

The original Unistrut metal framing offers unrivalled quality and durability and is designed to work with the full range of new Unistrut parts and accessories. Designed and created by us, our metal framing underlines our commitment to produce products you'll be proud to install.



Sector focus

Oil and gas | Rail | Petrochemical | Aviation | Datacentres

For additional information visit
www.unistrut.com.au or www.unistrut.co.nz

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Annex 03

Concept Design Submission

HOUSING
DEVELOPMENT
CORPORATION

PLANNING & DEVELOPMENT DEPARTMENT

MID-RANGE HOUSING SUBMISSION CRITERIA

Planning & Development Department, Housing Development Corporation Ltd, Tel: 3353535, Fax: 3358892, Email:planning@hdc.com.mv

1.0 SUBMISSION (DELIVERABLES AND CRITERIA)

1.1 CONCEPT DESIGN STAGE

Initial concept design should be submitted during the proposal submission stage.
Concept drawings should focus on how it is integrated to site and surrounding context. All floor plans should indicate the usage of specific floor spaces with its area as well as built Up Area (BUA) along with gross floor area (GFA);

Concept design should include the following drawings & documents (minimum requirement);

- Concept brief
- Location plan
- Site plan showing the surrounding context
- Vehicular and pedestrian circulation layout addressing the surrounding context
- Floor plans, sections and elevations
- Relevant blow-up details
- Proposed material schedule and mood board
- Proposal for building services systems
- Proposed structural system
- Interior and exterior perspective images (3D rendered visuals)

Note: Format of submission should include(but is not limited to) a PowerPoint presentation of the concept design stage submission. A compiled PDF of the above documents should be submitted in digital format.

1.2 DETAILED DESIGN STAGE

Detailed design will be submitted after concept design approval as follows:

- Architectural drawings (by a locally registered professional architect) of all plans, elevations and major sections. (Refer to local planning guidelines)
- Structural drawings and calculations, methodology (stamped and signed by a locally registered professional engineer)
- Important and relevant details
- Any other drawings or documents required for local authority approval, including but not limited to Fire Drawings and Panel board drawings.
- Minimum three (3) sets of the above mentioned drawings and documents should be submitted
- Drawings Submission Form with the appropriate parts filled and signed by Registered Architect and Engineer.

Line diagrams and other relevant documents of GPON fiber cabling systems

Note: Must comply with the General building permit regulations, submission criteria and procedures. Local authorities set standards should be complied. Design should comply to "The disability act of Maldives"

1.3 SHOP DRAWINGS AND AS BUILT

The following drawings shall be submitted during implementation and after completion of construction.

- As built Architectural drawings
- As built Structural drawings
- As built Services drawings (Water, Sewage, Electrical, Ventilation & Air-conditioning, Firefighting and Communication/GPON)
- Copy of approvals given by Authorities, such as but not limited to MNDF Fire, Ministry of Health, STELCO, MEA, MWSC

Annex 04

Customer Consent Form for Add-ons

Annex 05

Procedure to Eliminate Outliers

Maximum Acceptable Price
1000.00

Step 1: Comparison of Price of acceptable proposals

Proponent	Price	
Proponent 1	**1,200.00**	**Reject**
Proponent 2	1,000.00	**Accepted**
Proponent 3	**900.00**	**Accepted**
Proponent 4	960.00	**Accepted**
Proponent 5	**900.00**	**Accepted**
Proponent 6	990.00	**Accepted**
Proponent 7	**1,000.00**	**Accepted**
Proponent 8	500.00	**Reject**
Proponent 9	**600.00**	**Reject**
Proponent 10	800.00	**Accepted**

Step 2: Calculating Quartile Range

LQ	**750.00**
UQ	1000.00
IQR	250.00

Step 3: Calculating Acceptable Range

LB	**625.00**
UB	1000.00

Note:
* LQ = Lower Quartile (25%)
* UQ = Upper Quartile (75%)
* UB = Max Price Acceptable
* LB = Lower Boundary (LQ-(IQRx0.5))

NOTE: This is a sample of how the outliers are eliminated

Annex 06

Bid Security Format

WHEREAS, *(name of Proponent)* (hereinafter called "the Proponent") has submitted their bid dated *(date of submission of bid)* to Development and Sale of Mixed Residential Building on *(Lot Number___)*, Hulhumalé (hereinafter called "the Bid").

KNOW ALL PEOPLE by these presents that We *(name of bank)* having our registered office at *(address of bank)* (hereinafter called "the Bank") are bound unto the Housing Development Corporation Ltd of the Republic of Maldives, registration number C-793/2008 (hereinafter called "the Plot Owner") in the sum of *MVR/USD ..... (Amount in words) for* which payment well and truly to be made to the said Unit Owner, the Bank binds itself, its successors, and assigns by these presents.

SEALED with the Common Seal of the said Bank this ..... Day of 2020.

THE CONDITIONS of this obligation are:

1. If the Proponent

(a) Withdraws its Bid during the period of bid validity

2. If the Proponent, having been notified of the acceptance of its Bid by the Housing Development Corporation Ltd during the period of bid validity:

(a) Refuses to accept the award;

(b) Fails or refuses to pay Acquisition Fee; or

(c) Fails to submit the Performance Guarantee; or

(d) Fails to execute the term and conditions of Development and Sale Agreement; or

We undertake to pay to the Plot Owner up to the above amount upon receipt of his first written demand, without the Plot Owner having to substantiate his demand, provided that in his demand the Plot Owner will note that the amount claimed by him is due to him owing to the occurrence of the above condition.

This Guarantee will remain in force up to and including the date (*22nd March 2021*) 180 days from (24th September 2020) after the deadline for submission of this Guarantee or as it may be extended by the Plot Owner, notice of which extension(s) shall be given to the Bank. Any demand in respect of this Guarantee shall reach the Bank not later than the above date.

This guarantee shall supersede all agreements between us and the Proponent in relation to this Bid. If there are any inconsistencies between this guarantee and any other document exchanged between us and the Proponent, the terms of this guarantee shall prevail.

This guarantee shall be governed by and construed in accordance with the laws of Republic of Maldives.

(Seal and signature of the bank / financial institution)

Note: The bid security should be of MVR/USD..... (Amount in words) should remain in force until 22nd March 2021 (180 days from date of bid submission).

Annex 07

Comfort Letter Format

(Bank or Licensed Financial Institutions Letterhead)

Housing Development Corporation Limited
HDC Building, Hulhumalé,

Republic of Maldives

[Date]

Dear Sir/ Madam

Re; Comfort Letter for [Project] at Hulhumalé,

This is to confirm that our mutual client [developer] maintain a banking account with us and is in good standing with our bank.

At their instructions we, [full name of the bank] with full authority and mandate hereby confirm that the said client is ready, willing and financially able to develop/execute the [project name] with an amount of [project value].

We certify that our client named above has sufficient funds and/or have credit facility with our bank to complete the proposed [project].

Should you require further clarification, please contact [focal point] at [contact info]

Yours sincerely,

[Name of signatory] [Title]

Annex 08

Letter of Price Proposal

Date: _____

Proposal Reference No: _____

Plot number: _____

To: Housing Development Corporation Ltd.
Ground Floor, HDC Building
Hulhumalé, Maldives

We, the undersigned, declare that:

(a) We have examined and have no reservations to the Request for Proposal (RFP) documents including all addenda issued in accordance with Instruction to Proponents (ITP) 6.

(b) We meet the eligibility requirements and have no conflict of interest in accordance with ITP 3;

(c) We have not been suspended nor declared ineligible by the Lessor in accordance with ITP 3.5.

(d) We have no litigation history and non-performance of a contract in accordance with ITP 3.6 and ITP 3.7.

(e) We, (insert *company name and company registry number)*, offer to Develop and Sell a Mixed Residential Building in Lot *(Insert Lot number).*

(f) We propose the Residential Sale Rate (for Price Capped Housing Units) (exclusive of GST), at MVR.....L..... (amount in numbers) (Rufiyaa.....Laari.....) (amount in words), (per square feet of completed saleable area) where the proposal is accepted.

(g) We propose the Commercial Sale Rate (exclusive of GST), at MVR.....L..... (amount in numbers) (Rufiyaa.....Laari.....) (amount in words), (per square feet of completed area) where the proposal is accepted.

NB: The rates should be proposed at the rate of per square feet. Rates proposed in any other format will be rejected at the time of the Proposal opening. Rates (Residential Sale rate, and Commercial Sale rate) proposed not according to the RFP will result in the disqualification of the proposal.

(a) Our proposal shall be valid for a period of One Hundred and Eighty (180) days from the date of proposal submission deadline in accordance with RFP document and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

(b) We understand that this proposal, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and

(c) We understand that Lessor is not bound to accept the highest evaluated proposal or any proposal that may receive.

Proponent:

Name: .....

Address: .....

(Stamp)

Duly authorized to sign the proposal for and on behalf of the Company:

Name: .....

Title: .....

Signature: .....

Date: .....

Annex 09

Information of the Authorized Representative

Date: _____

Proposal Reference No: _____

To: Housing Development Corporation Ltd.
Ground Floor, HDC Building
Hulhumalé, Maldives

This is to authorize (*Name, ID number*) as a representative of (*Name of the Proponent*) to carry out the works related to RFP (ref no) and to liaise with Lessor on behalf of the (*Name of the Proponent*)

Proponent:

Name: .....

Address: .....

.....

Signature and Stamp

Authorized Representative (preferably fulltime personal):

Name: .....

Designation: .....

ID Number: .....

Contact Number: .....

Email Address: .....

.....

Signature

Annex 10

Proposal Checklist

Please attach this checklist outside the sealed envelope of the Proposal

Proponent	For HDC use	
☐	☐	Copy of Business Registration Certificate (As in Section IV (a))
☐	☐	Copy of Board Resolution (As in Section IV 3 (h))
☐	☐	Bid Security; (As in Annex 06)
☐	☐	Letter of Price Proposal (As in Annex 08)
☐	☐	Checklist Attached Outside Sealed Proposal (As in Annex 10)

Note:

- Any proposal without the specified documents as stated in the Annex 10 of RFP will be rejected at the time of proposal opening.