

Technical Code Programme 2020

Awareness & Adoption of Technical Codes

Fixed Network Facilities - In-Building and External

MCMC MTSFB TC G024:2020

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Presentation Outline

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Background and Introduction

2

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Challenge/Conclusion



1

Background and Introduction

Background and Introduction

- This technical code for Fixed Network Facilities - In-building and External ('this Technical Code') was developed pursuant to section 185 of the Act 588 by the Malaysian Technical Standards Forum Bhd (MTSFB) via its Fixed Network Facilities Sub Working Group under the Network and Broadcast Infrastructure and Facilities Working Group.
- This Technical Code shall replace the following Technical Codes:
 - a) **MTSFB 008:2005, Technical Standard and Infrastructure Requirement (TSIR) - Part 1: Fixed Network Infrastructure (Revision 1);**
 - b) **MCMC MTSFB TC G006:2016, Technical Standard and Infrastructure Requirements (TSIR) - Fixed Network Infrastructure for Simple Development Properties; and**
 - c) **MCMC MTSFB TC G007:2016, Technical Standard of In-building Fibre Cabling for Fibre-To-The-Premise (First Revision).**
- The above Technical Codes shall be deemed to be invalid to the extent of any conflict with this Technical Code.
- This Technical Code shall continue to be valid and effective from the date of its registration until it is replaced or revoked.

Fixed Network Facilities - In-Building and External



No	Title	Technical Code number	Registration date
1.	Fixed Network Facilities - In-Building and External	MCMC MTSFB TC G024:2020	3 June 2020



2

Benefit

What are the benefits of the Technical Code?

- a) This Technical Code specifies the **requirements for in-building and external fixed network facilities for Single Dwelling Unit (SDU), Multi-Dwelling Unit (MDU) and campus type.**

- b) **Fixed network facilities include all infrastructure and cabling required for fixed network services.**



3

Objective

What are the objectives of the Technical Code?

- a) This Technical Code is intended as a reference for architects, consulting engineers, owners, property developers and others who are responsible for planning and erecting buildings.
- b) It is also to meet the requirements of end users for fixed communications services with minimum disruptions to all services offered by the service providers.



4

Technical Code Requirements

Technical Code Requirements

Part 1 Infrastructure Requirements

1. Building type
2. Fixed network services
3. Infrastructure demarcation
4. External infrastructure requirement
5. In-building infrastructure requirement

Part 2 Cabling Requirements

1. Cabling for Single-Dwelling Unit (SDU)
2. Cabling for Multi-Dwelling Unit (MDU)
3. Cabling for Campus
4. CPE cabling design
5. Cable specification
6. Labelling and tagging
7. Testing and commissioning

Part 3 Infrastructure and cabling acceptance procedure

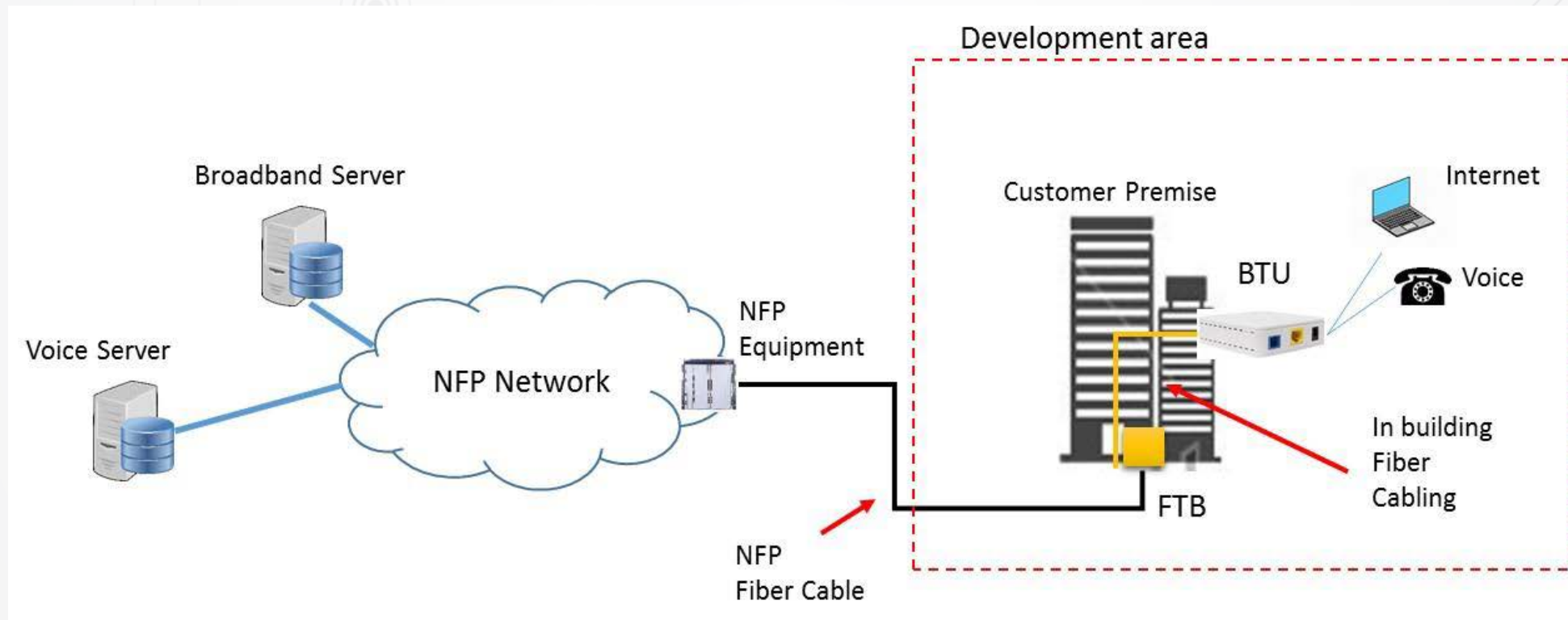
1. Building type

- There are several categories of buildings that can be categorized as shown in table below.

SDU	MDU	Campus
Bungalow	Condominium or apartment	Combination of SDU and MDU (e.g. university, hospital, complex, school)
Semi-detached		
Terrace single storey		
Terrace double storey		
Office building or shop house less than 6 floors	Office building or shop house more than or equal to 6 floors	Public transport facilities (e.g. airport, bus station, railway station, jetty)
Industrial or commercial lot	N/A	Shopping complex
Simple development	N/A	Amusement park

2. Fixed network services

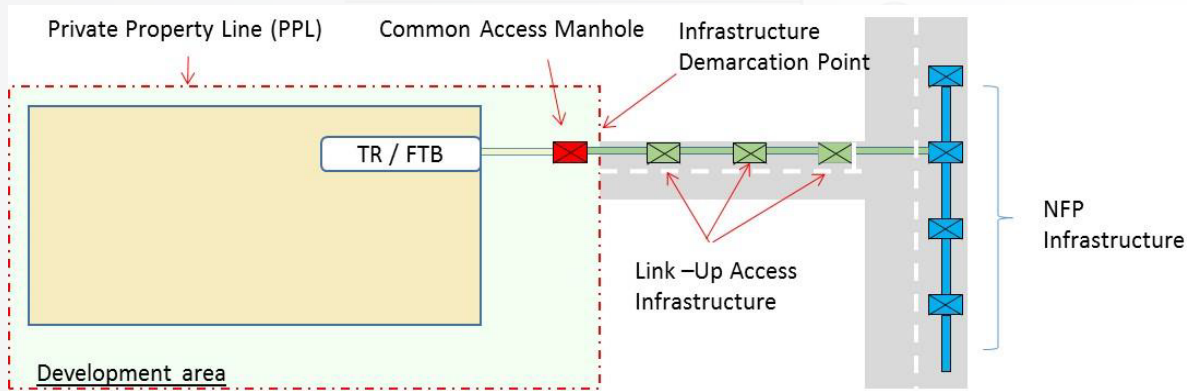
- The minimum services, also called as essential communications services, that shall be supported by a fixed network facility are voice and broadband.
- Typical connection between NFP network and customer premises is as shown in figure below.



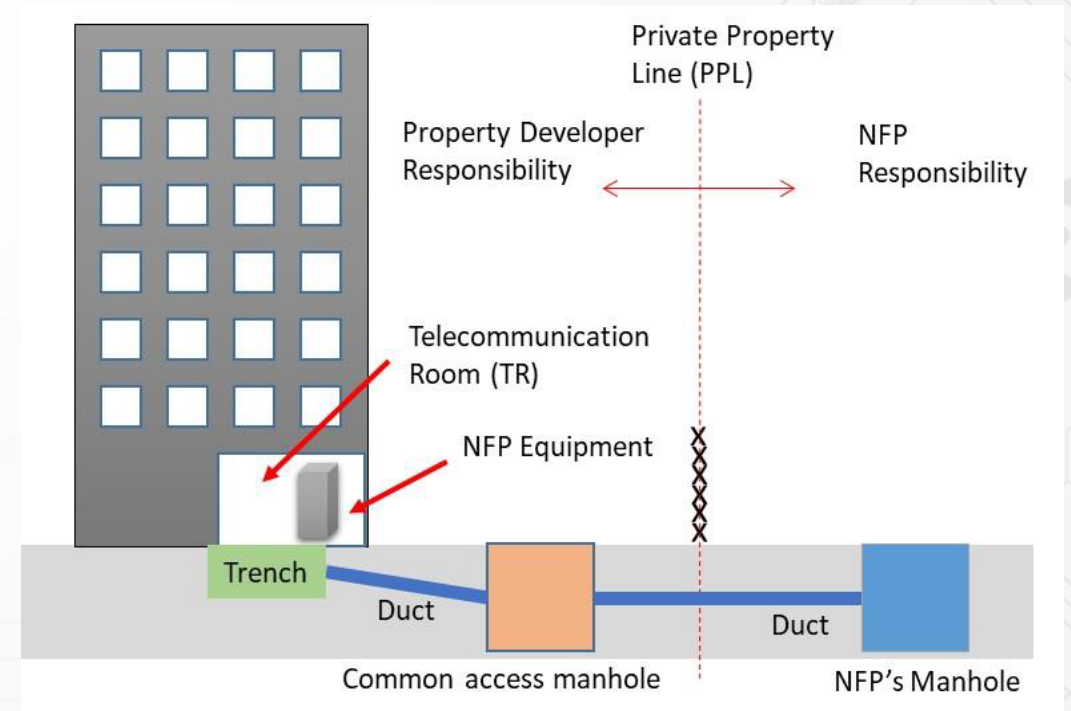
3. Infrastructure demarcation

a) Phase 1 - During development

- SDU infrastructure demarcation point

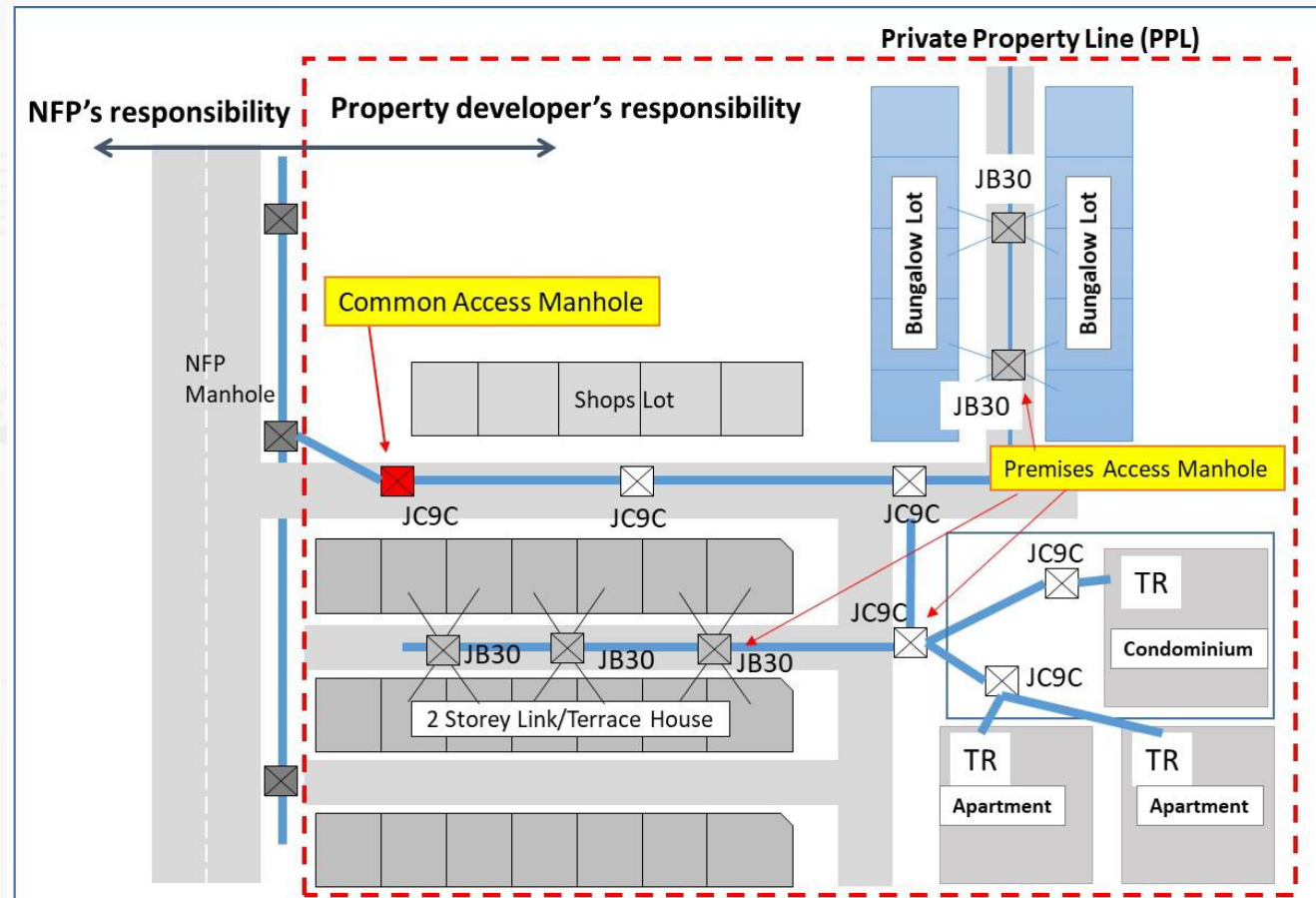


- MDU infrastructure demarcation point



3. Infrastructure demarcation

- a) Phase 1 - During development
 - Campus type infrastructure demarcation point



3. Infrastructure demarcation

b) Phase 2 - Post development

- For **SDU**, **premises owner** shall be responsible to maintain all the infrastructure inside the PPL.
- For **MDU**, property developer shall handover the infrastructure inside the PPL to **BM or JMB** that will be responsible to manage the infrastructure.
- For **Campus** type development, a property developer may handover the infrastructure inside the PPL to **selected NFP** with the proper handover agreement. Other parties who wish to utilize any of the infrastructure within the PPL are required to notify and obtain permission from the selected NFP.

4. External infrastructure requirement

4.1 (a) Underground infrastructure - Manhole

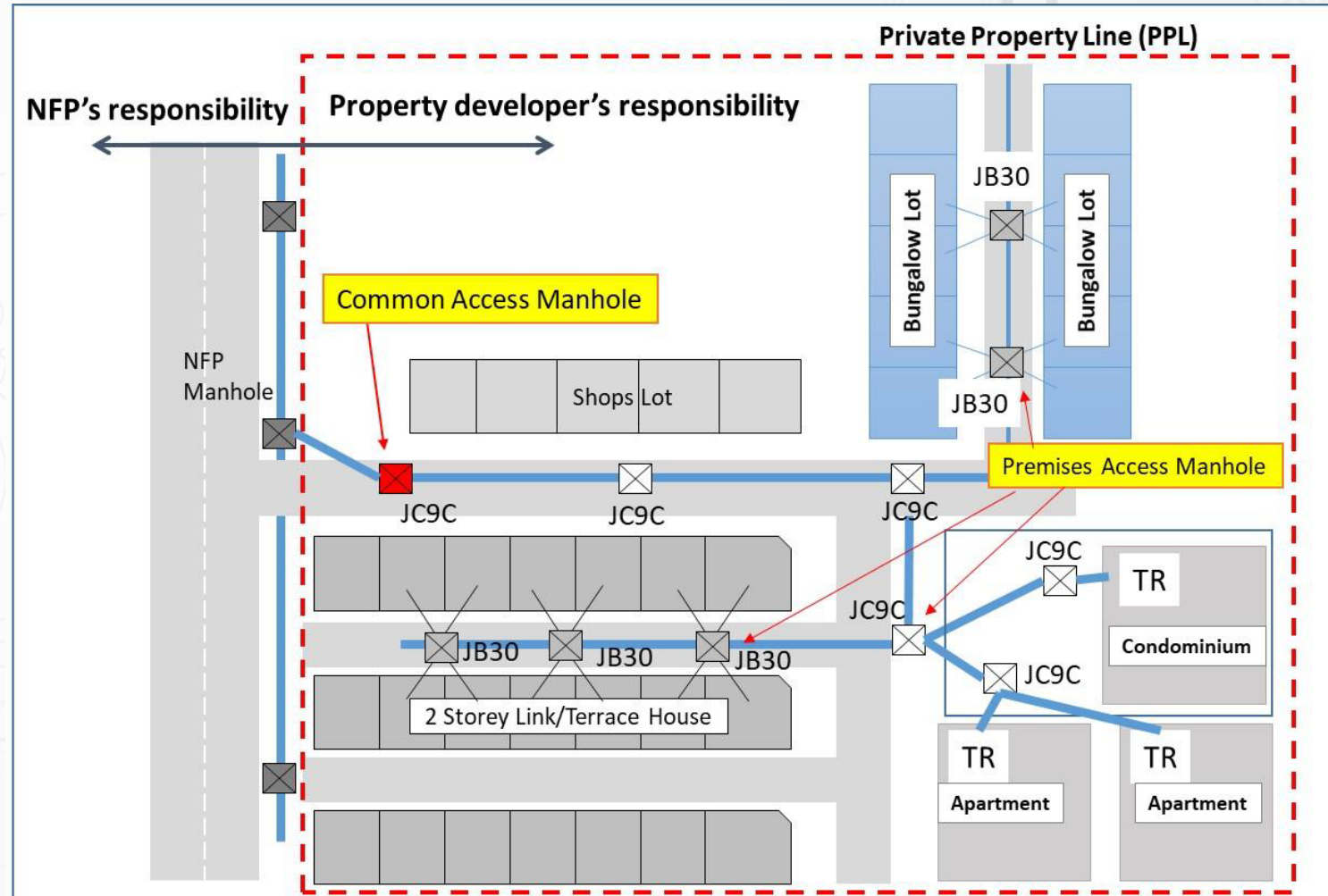
- Property developer shall consult NFP on the appropriate selection of the location and size of the manhole to be constructed.
- The recommended manhole size, number of duct ways and location are shown in table below.

No	Type of manhole	Recommended size (mm) (L x W x D)	No. of duct way	No. of premise linked duct way	No of premise	Location or criteria
1	JB30	850 x 850 x 650	2	4	< 4	a) Last connection to premises units. b) Premises access manhole.
2	JRC7	1,160 x 855 x 850	2	N/A	< 72	a) On small roadside to link up with JB30. b) Common access manhole. c) TR linked manhole.
3	JC9C	1,960 x 1,260 x 1,020	4	N/A	> 576	a) On heavy roadside to link up with JB30/JRC7. b) Common access manhole. c) TR linked manhole.
4	R1A	2,200 x 1,615 x 1,680	6 or 8	N/A	< 576	TR linked manhole.

4. External infrastructure requirement

4.1 (a) Underground infrastructure - Manhole

- **Common access manhole**
 - last manhole which is linked to NFP's manhole.
- **Premises access manhole**
 - a manhole connecting the premises with the underground ducting.



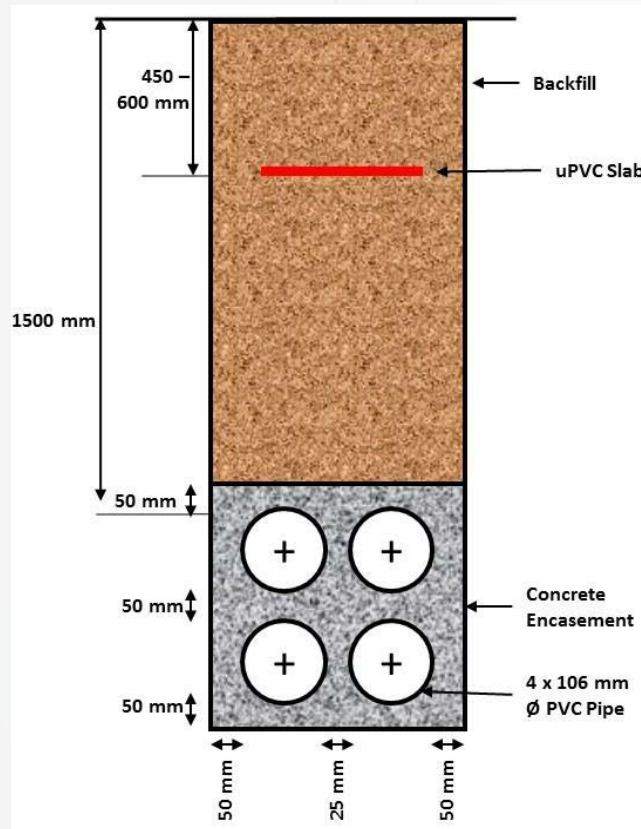
4. External infrastructure requirement

4.1 (b) Underground infrastructure – Underground duct

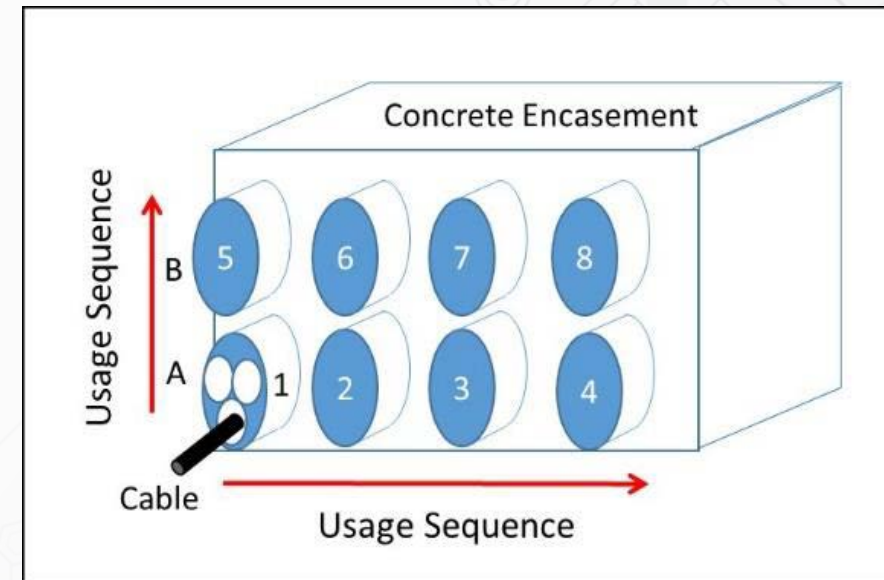
Usage	Duct size	Material	Subduct
Premises access manhole to bungalow, linked house or similar type of properties	40 mm	Polyvinyl Chloride (PVC) or harder material with minimum thickness of 2.0 mm.	Duct or Subducts shall be installed with a pull string or draw rope for cable installation.
Premises access manholes to other MDU, high rise SDU and all commercial properties	100 mm – 110 mm	minimum class B or equivalent Galvanised Iron (GI) pipe	a) 3 High-Density Polyethylene (HDPE) sub-ducts with 40 mm in diameter; or b) 5 HDPE sub-ducts with 32 mm in diameter.
Road crossing			

4. External infrastructure requirement

4.1 (b) Underground infrastructure – Underground duct



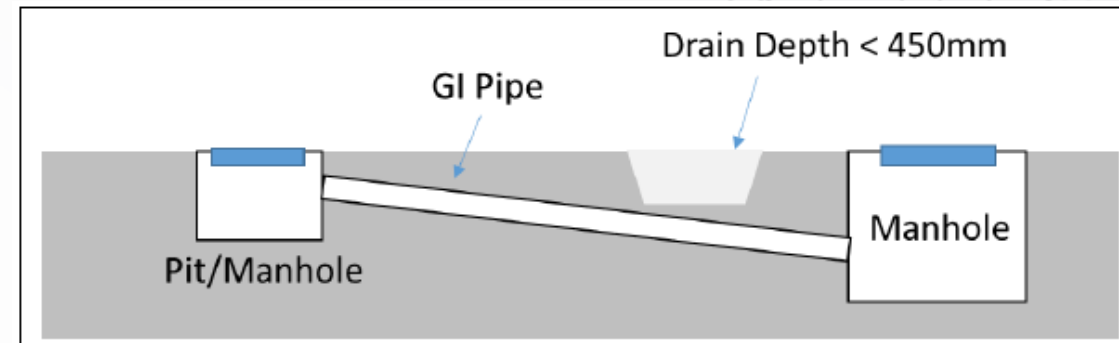
- **Concrete encasement**
 - for 4 duct ways and above
 - minimum mixer ratio of cement, sand and aggregate of 1:4:3.
- **uPVC slab**
 - Unplasticised Polyvinyl Chloride (uPVC) at the minimum depth of 450 mm from the ground surface as a warning indication.
- **Duct and cable arrangement**
 - ducts & cables arrangement as shown in figure below.



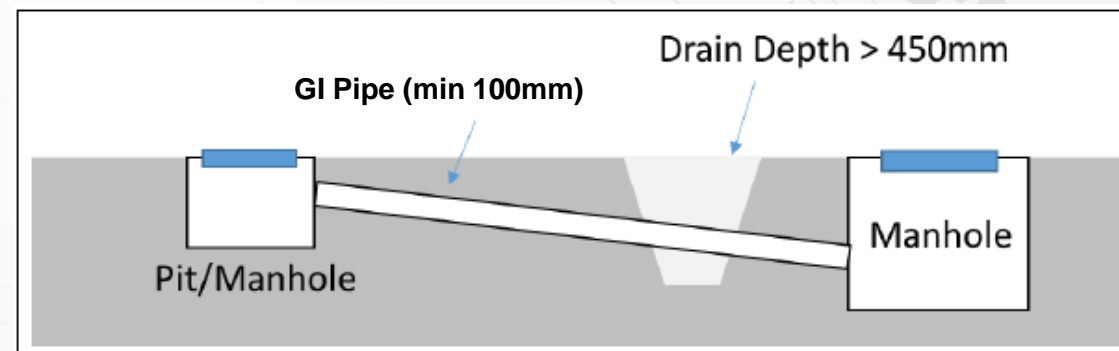
4. External infrastructure requirement

4.1 (b) Underground infrastructure – Underground duct

- For ducting crossing the drain, the construction shall be according to figures below depending on the drain depth.
- The GI pipe shall be placed in such a way to avoid trapping of garbage and water blockage.



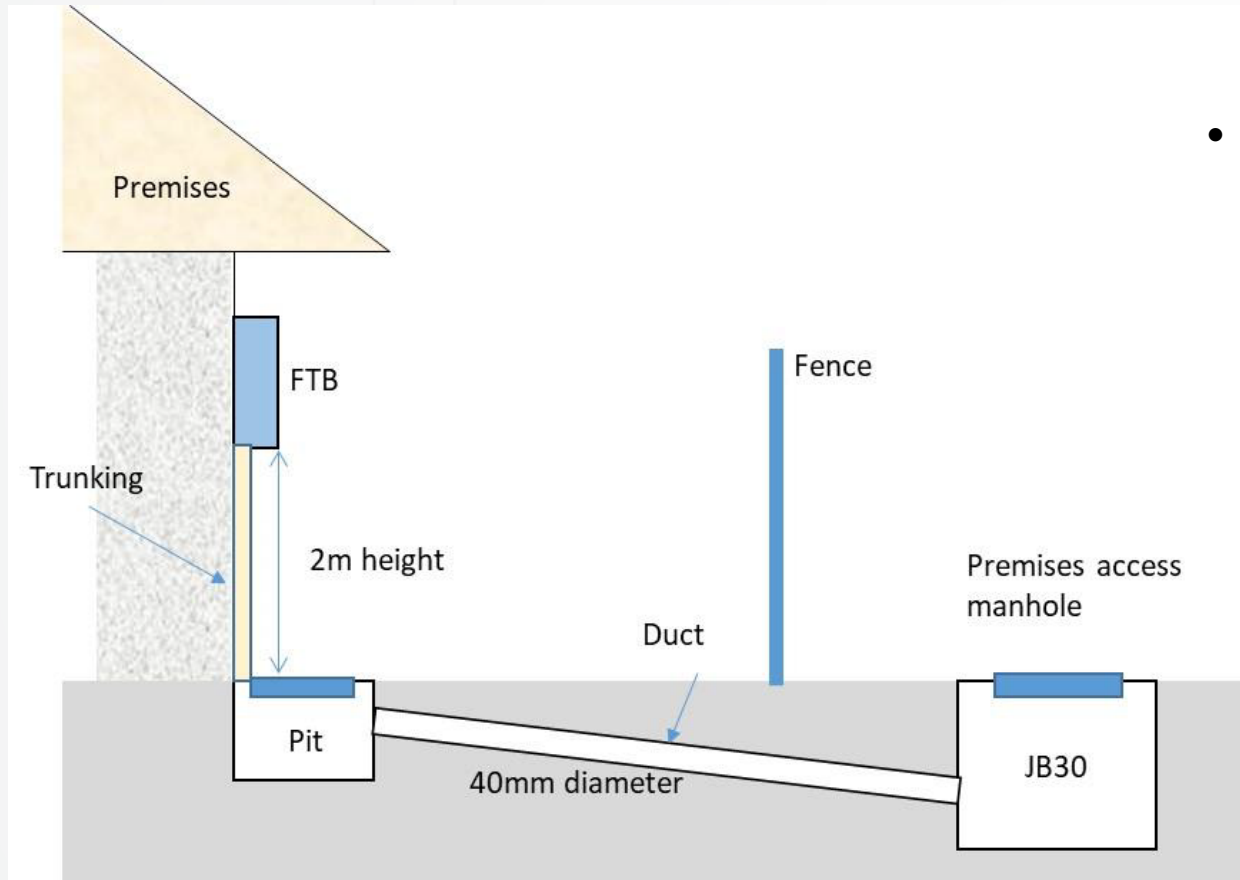
Ducting installation under the drain



Ducting installation through the drain

4. External infrastructure requirement

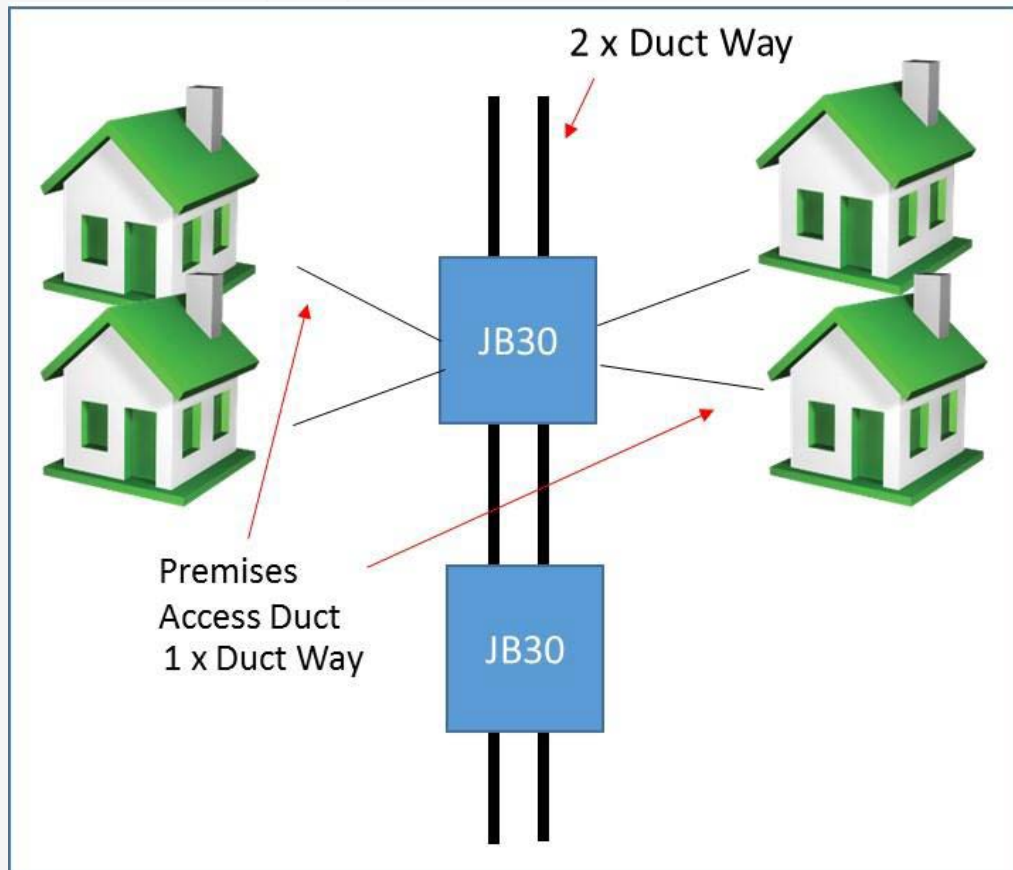
4.1 (c) Underground infrastructure – Access to premises



- Connection to Single-Dwelling Unit (SDU) premises
 - Location of premises access manhole can either be at premises back lane or in front of the premises.
 - Small pit with a minimum size of 300 mm x 300 mm x 300 mm shall be prepared for easy access during the maintenance work.
 - FTB shall be placed outside of the wall at 2 m height for easy future operation and maintenance.

4. External infrastructure requirement

4.1 (c) Underground infrastructure – Access to premises

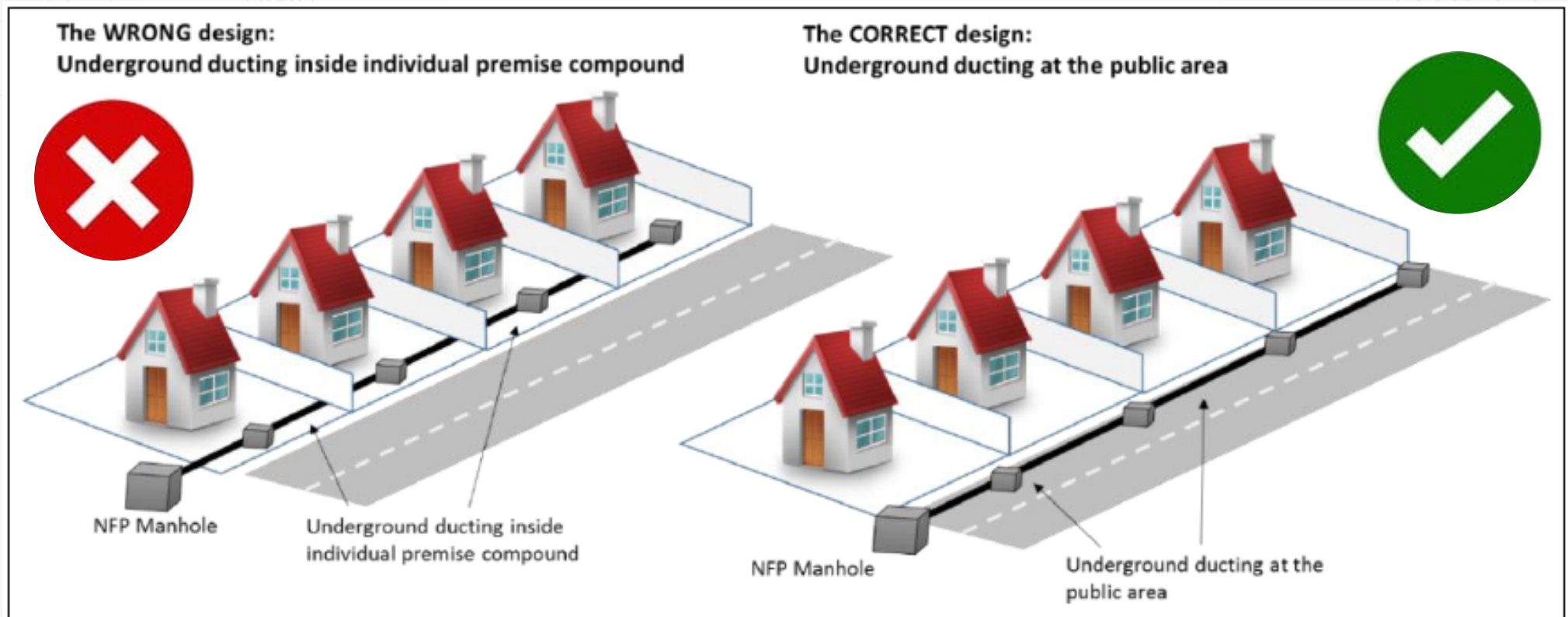


- Dedicated ducting shall be prepared for each connection from Premises Access Manhole to each Premises.
- Each duct shall be installed with a pull string or draw rope for easier drop cable installation.

4. External infrastructure requirement

4.1 (c) Underground infrastructure – Access to premises

- The duct route shall not be installed inside individual premises compound as shown in figure below.

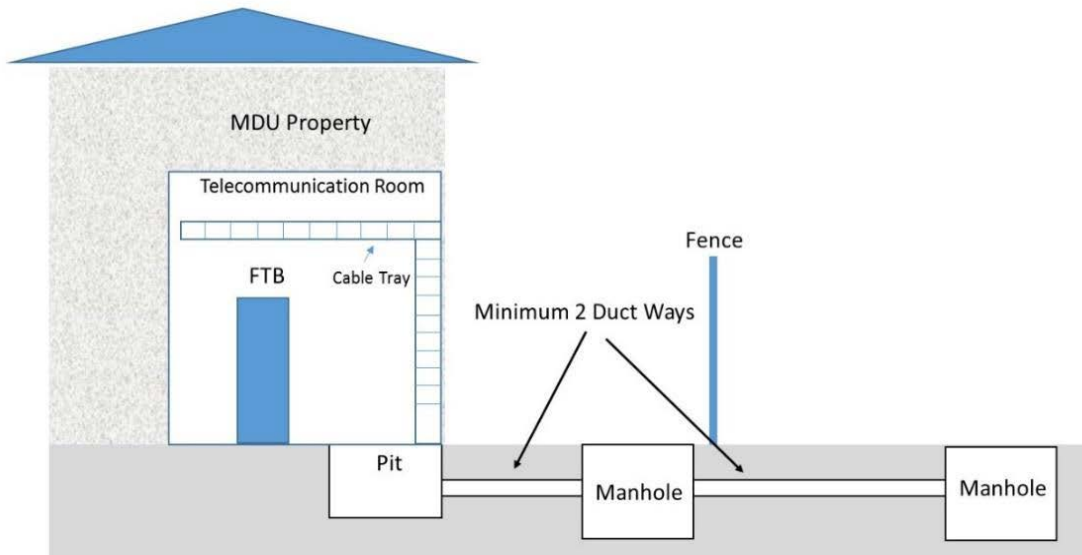


4. External infrastructure requirement

4.1 (c) Underground infrastructure – Access to premises

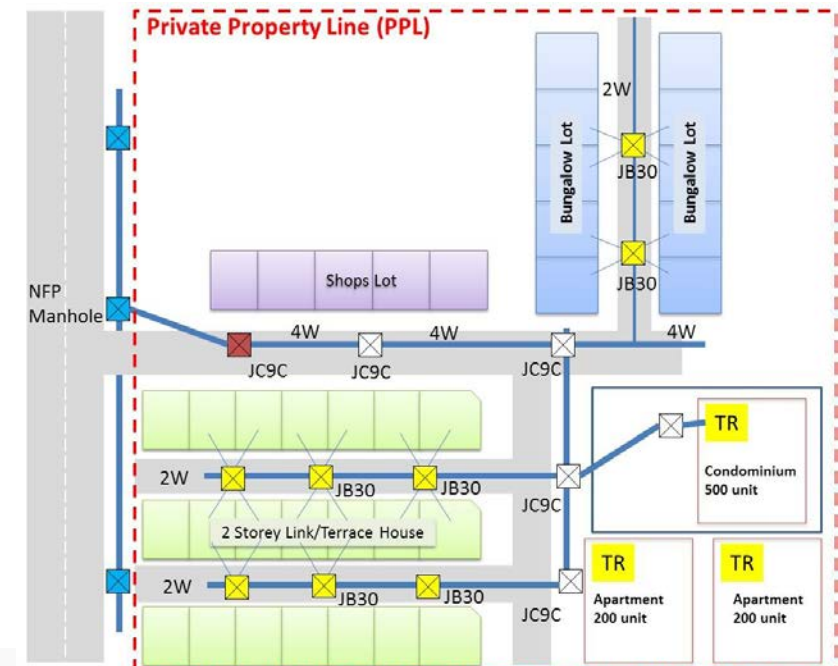
- Connection to Multi-Dwelling Unit (MDU) premises

- Minimum of 2 ways ducting with a pull string or draw rope
- A pit with size 600 mm (W) x 600 mm (D) x 600 mm (H)
- Wall mounted or rack type of FTB in TR



- Connection to housing estate or campus type premises

- Manholes between common access manhole and premises access manhole shall be at least JC9C with 2 duct ways.

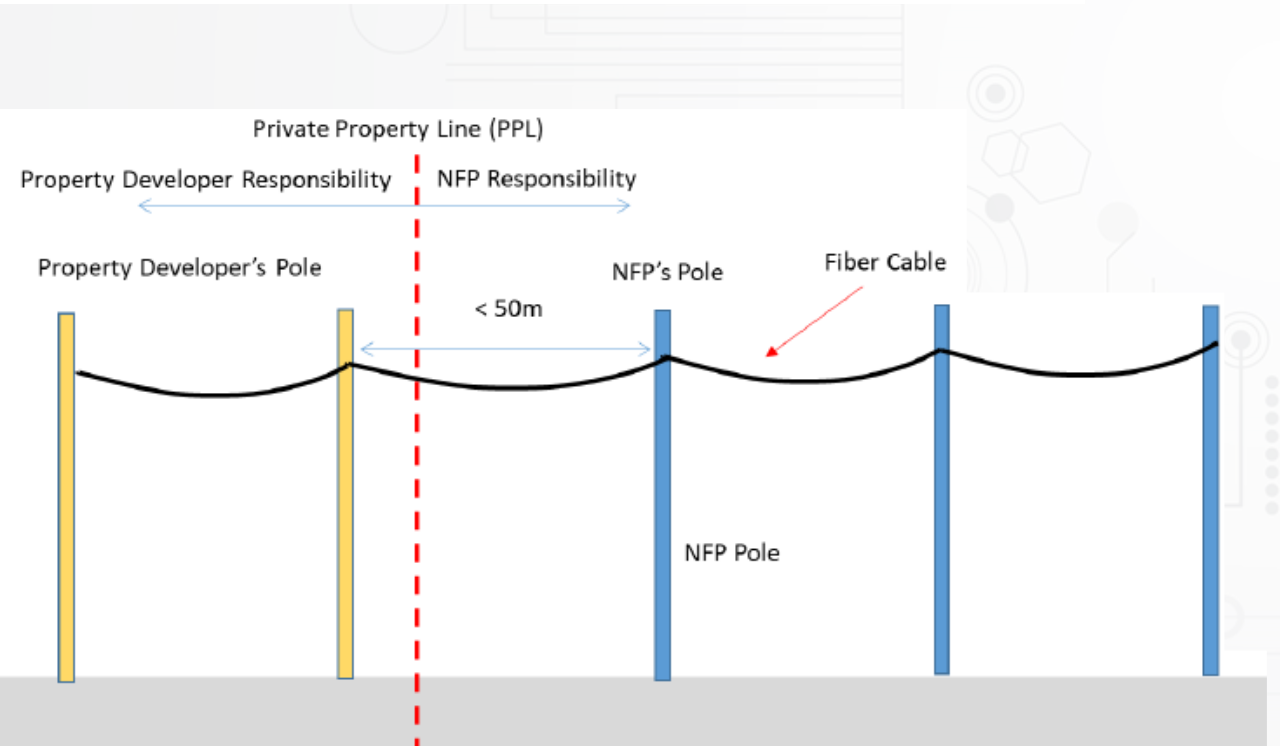


4. External infrastructure requirement

4.2 (a) Overhead infrastructure – Connection with NFP infrastructure

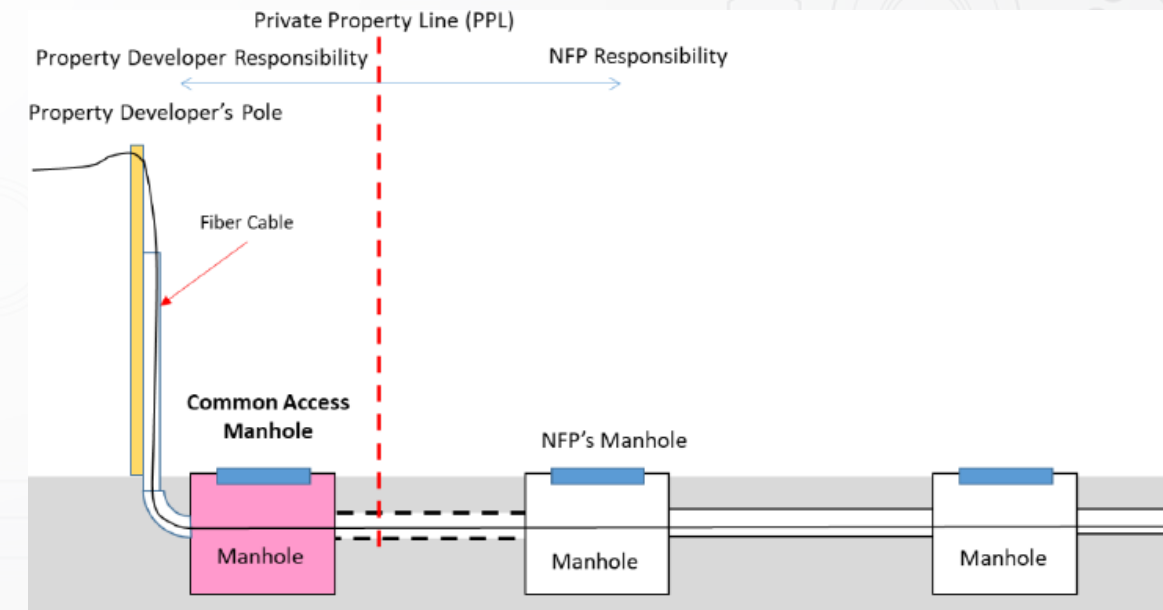
- Overhead connection with NFP's pole

- Maximum distance shall be 50 m from NFP pole.



- Overhead connection with NFP's manhole

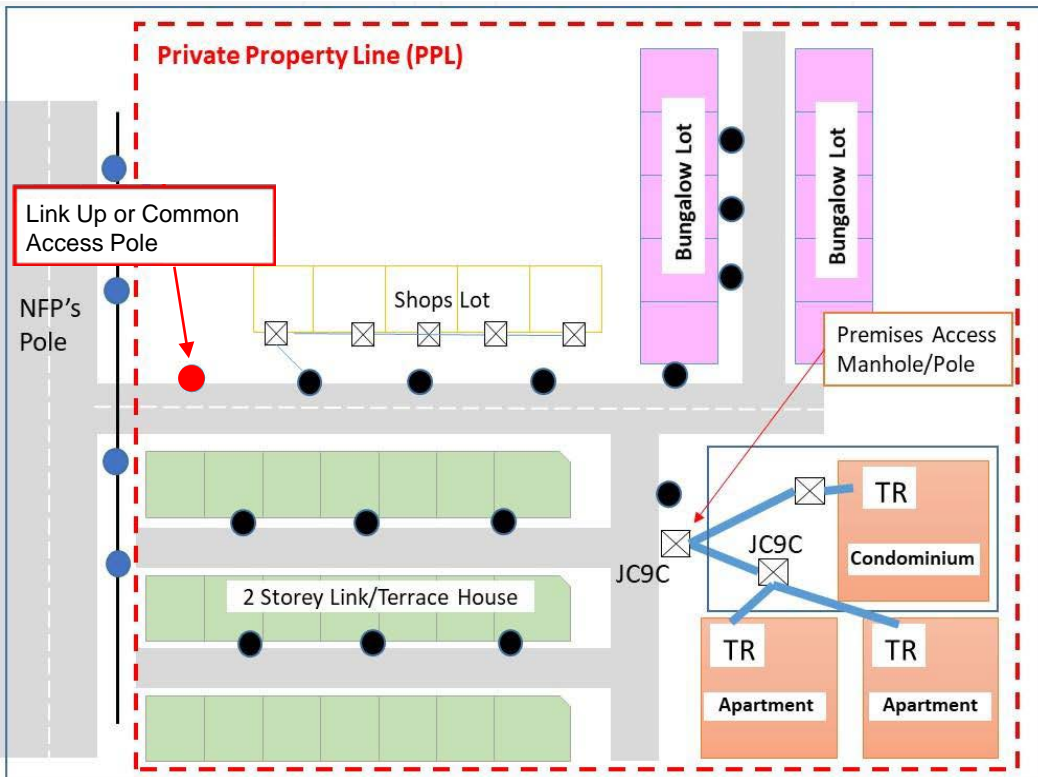
- A common access manhole adjacent to the first property developer's pole shall be provided by property developer.



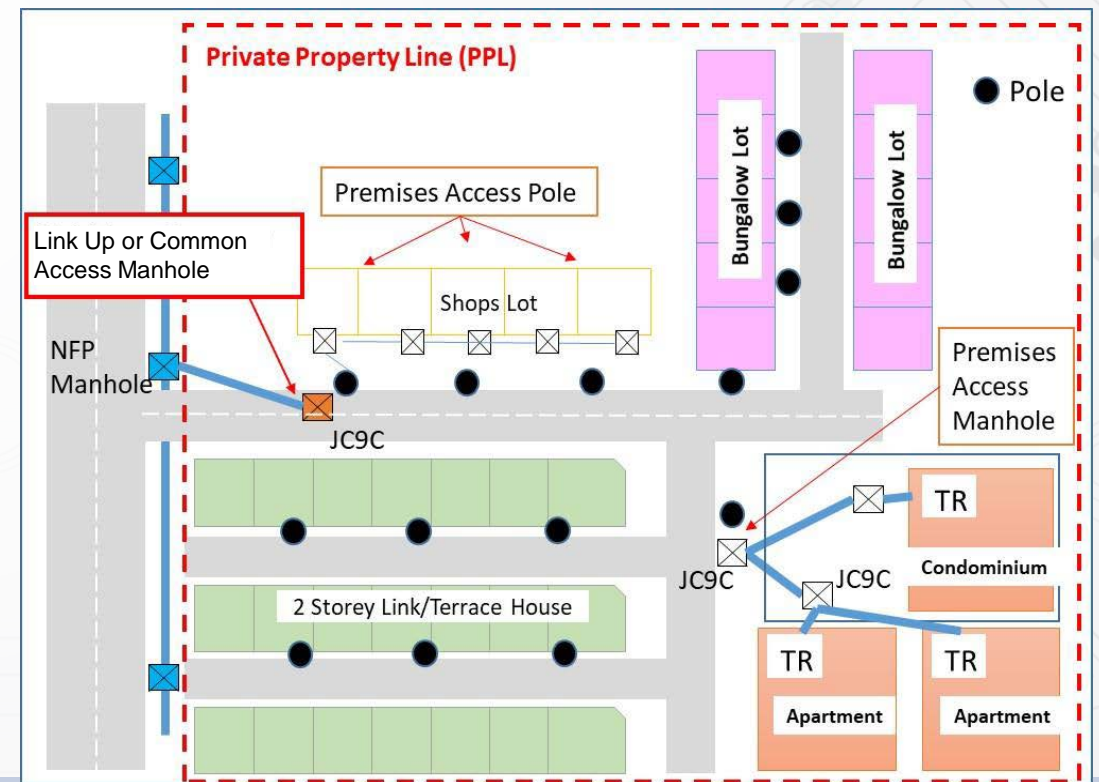
4. External infrastructure requirement

4.2 (b) Overhead infrastructure – Pole distribution design

- Pole distribution for connection via NFP's pole
 - Only landed residential SDU is recommended to be served via pole.



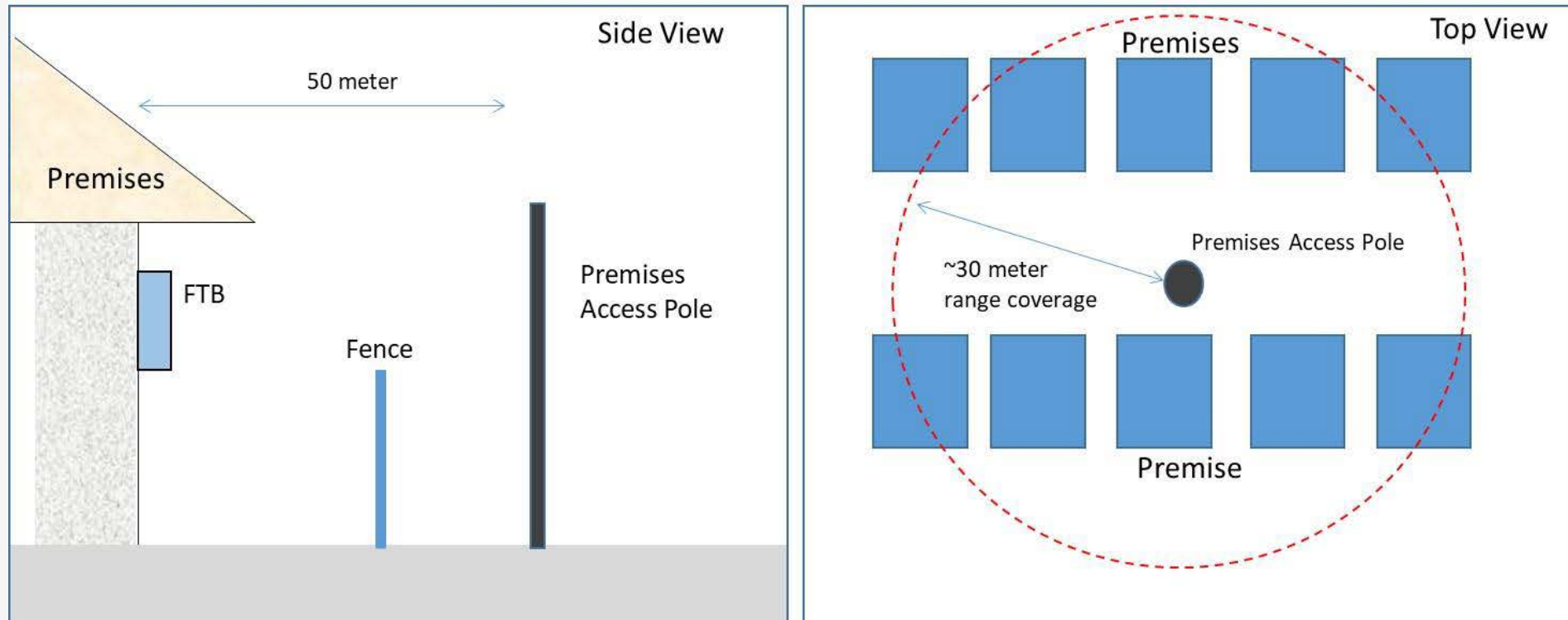
- Pole distribution for connection via NFP's manhole
 - Industrial or commercial properties is highly recommended to be served with underground infrastructure.



4. External infrastructure requirement

4.3 Premises access pole

- Every pole shall be located to serve 8 premises with maximum distance of 50 m as shown in figure below.
- The distance shall be measured between pole and premises FTB.



4. External infrastructure requirement

4.4 Pole specification & application

- All poles shall meet the specifications as specified in **Telcordia GR-3159**.

- The minimum length of pole shall be as specified in Table (a) below which depending on the application.

Table (a) Pole length and application

Pole length (m)	Application
6.7	<ul style="list-style-type: none">Premises access polePremises back lane
7.5	<ul style="list-style-type: none">Low traffic road
9.0	<ul style="list-style-type: none">Road crossing

- Concrete type of pole shall be used in development area.
- Every pole shall have a minimum of 8 points which shall be able to support with a minimum of 8 fibre cables.
- The load specifications shall be as specified in Table (b) below.

Table (b) Pole load specification

Specification	Minimum value
Maximum load/point	200 kg
Maximum total load	1,600 kg
Permanent bending load	30 %
Minimum bending load	224 kg

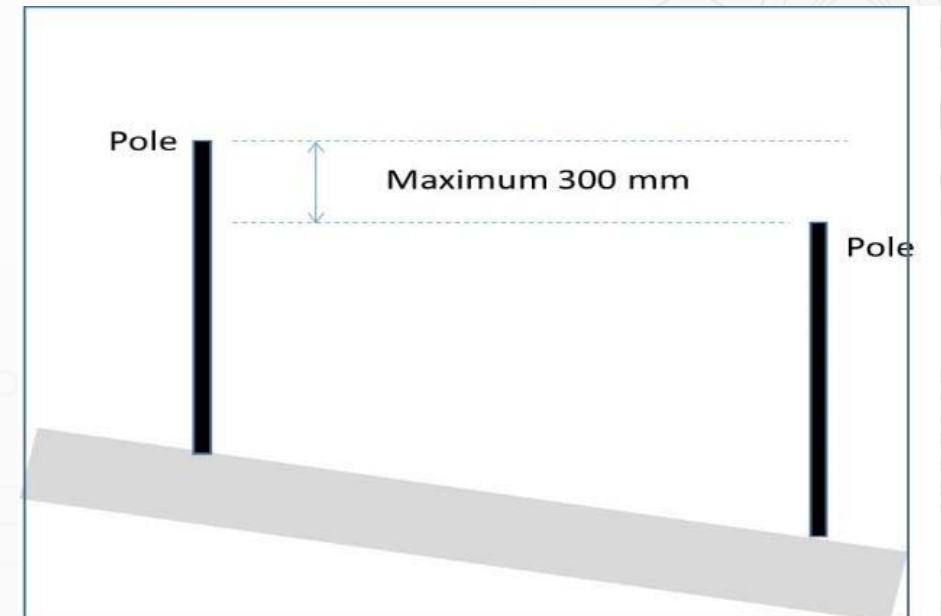
4. External infrastructure requirement

4.5 Pole installation

- Distance between poles shall be as shown in table below.

Location	Distance between poles (m)
<ul style="list-style-type: none">Premises access polePremises back lane	20 - 30
<ul style="list-style-type: none">Along the roadRoad crossing area	30 - 50

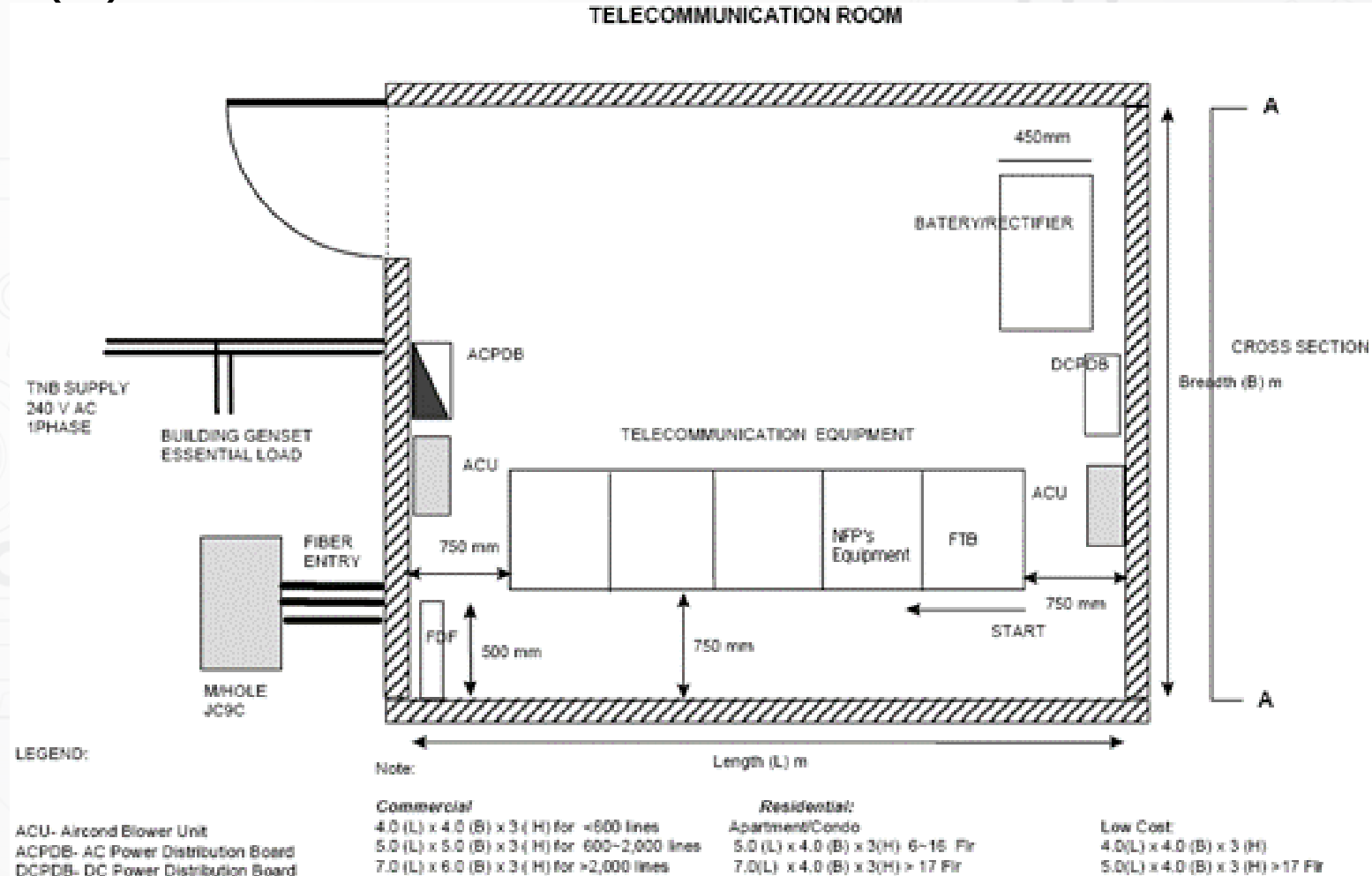
- For the case of non-flat ground level, the maximum difference of height between 2 poles shall be kept less than 300 mm as illustrated in figure below.
- If the difference cannot be met, distance between poles shall be reduced.



5. In-building infrastructure requirement

5.1 Telecommunication room (TR) for MDU

- Property developer shall provide TR for all MDU type of buildings.
- TR is required for the NFP to locate communications equipment and related elements to deliver the communication services to the building.



5. In-building infrastructure requirement

5.2 Space requirement for TR

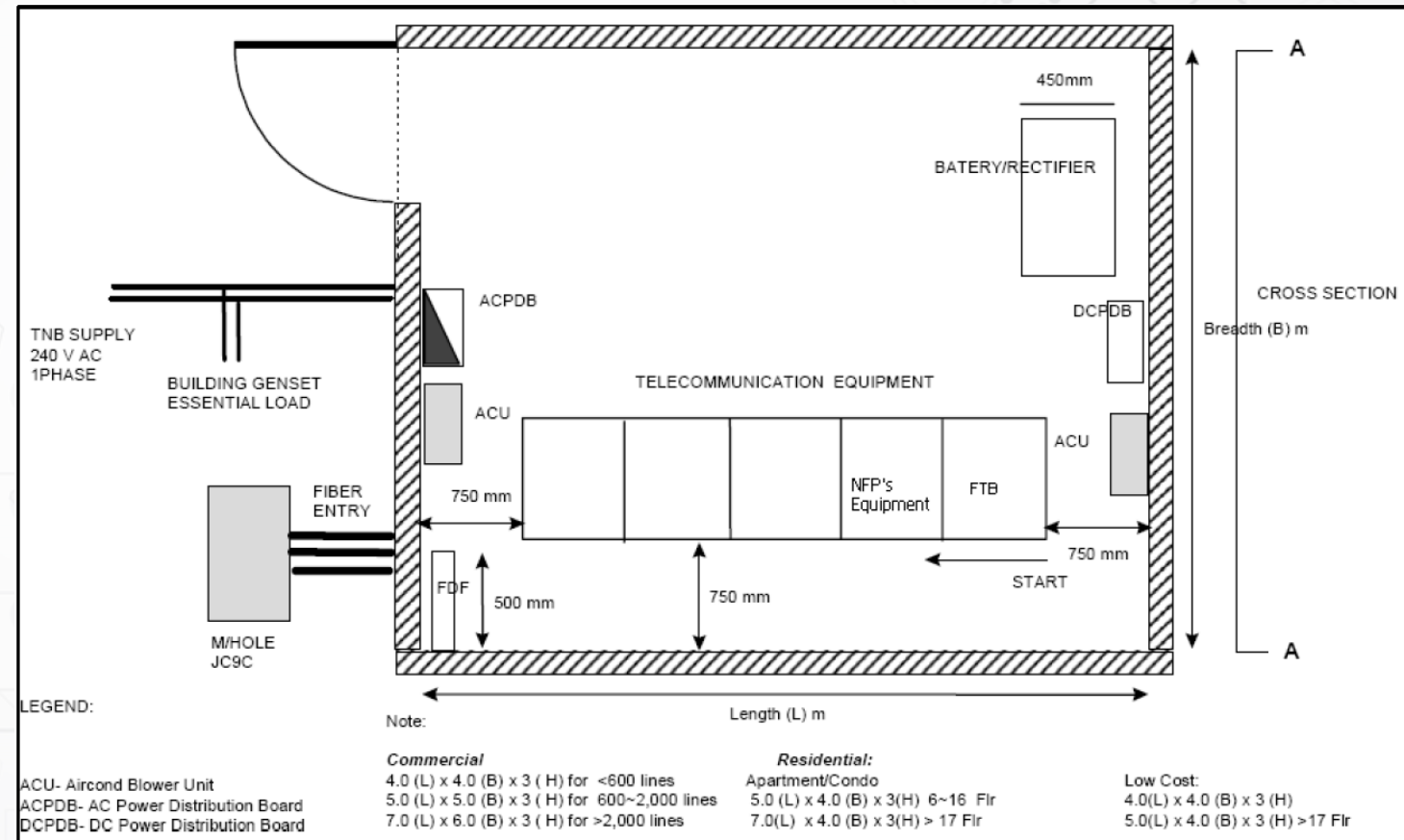
- The adequate floor space area is required to cater immediate and also future demand.
- The TR shall be placed on the ground-floor area and connected to the manhole and duct-ways as required.
- The room shall be flood-free where a 150 mm kerb across the doorway is required to prevent water from entering the room.

Building type	Floor space (L x B x H) (m)	# Floor/wall opening (W x D) (m)	Door opening (W x D) (m)
Condominium and apartment			
x < 6 floors	4 x 4 x 3	0.4 x 0.15	2.5 x 1
6 < x < 16 floors	5 x 4 x 3	0.6 x 0.15	2.5 x 1
x > 16 floors	7 x 4 x 3	0.9 x 0.2	2.5 x 1
Low-cost flats			
x < 6 floors	3 x 4 x 3	N/A	2.5 x 1
6 < x < 16 floors	4 x 4 x 3	0.6 x 0.15	2.5 x 1
x > 16 floors	5 x 4 x 3	0.9 x 0.2	2.5 x 1
Office building			
x < 6,000 m ²	4 x 3 x 3	0.7 x 0.15	2.5 x 1
6,000 m ² < x < 20,000 m ²	4 x 4 x 3	1.0 x 0.2	2.5 x 1
20,000 m ² < x < 60,000 m ²	5 x 5 x 3	1.1 x 0.2	2.5 x 1
x > 60,000 m ²	7 x 6 x 3	1.1 x 0.2	2.5 x 1
Shop house			
x < 6 storey	The requirement to be determined case by case	The requirement to be determined case by case	The requirement to be determined case by case
Others			
Industrial Lot	The requirement to be determined case by case	The requirement to be determined case by case	The requirement to be determined case by case
Hotel			
School			
Hospital			
Club house			

5. In-building infrastructure requirement

5.3 Arrangement in TR

- The FTB that connecting all the internal cabling to individual premises must be located at the rightmost position as this is the nearest point leading to the internal riser.
- Size of the FTB depends on the number of premises inside the building.
- NFP's network elements shall be located in the same row or adjacent to the FTB with less than 20 m distance.



5. In-building infrastructure requirement

5.4 Other requirements for TR

No	Items	Descriptions
a)	Electrical requirement	<ul style="list-style-type: none">Nominal of 415 V, 3 phase, 4 wires, 50 Hz system or 240 V AC single-phase system with standard 20 A DB300 Lux lighting
b)	Earthing system	<ul style="list-style-type: none">< 10 ohm
c)	Temperature	<ul style="list-style-type: none">30° C all the time with;ventilation system
d)	Security	<ul style="list-style-type: none">Only accessible with authorized.No water tank, main water drainage pipes shall be installed directly above the room.
e)	Room height	<ul style="list-style-type: none">> 3 meter
f)	Trunking system	<ul style="list-style-type: none">Recommended size is 6 inch (150 mm)

5. In-building infrastructure requirement

5.5 Riser for MDU

- To obtain maximum benefit from the distribution system, the riser shall be placed centrally with respect to the distribution in which it is to serve at floor level.
- The riser shall only be used for fixed network services.

Building type	Riser		
	Cable trunking	Floor opening (W x D)	Closet space (W x D)
Condominium and apartment			
x < 6 floors	100 mm x 75 mm x 3	0.4 m x 0.15 m	0.9 m x 0.6 m
6 < x < 16 floors	150 mm x 100 mm x 3	0.6 m x 0.15 m	1.2 m x 0.6 m
x > 16 floors	150 mm 100 mm x 3	0.9 m x 0.2 m	1.5 m x 0.8 m
Low-cost flats			
x < 6 floors	100 mm x 75 mm x 3	N/A	N/A
6 < x < 16 floors	150 mm x 100 mm x 3	0.6 m x 0.15 m	1.2 m x 0.6 m
x > 16 floors	150 mm x 100 mm x 3	0.9 m x 0.2 m	1.5 m x 0.8 m
Office building			
x < 6,000 m ²	150 mm x 100 mm x 3	0.7 m x 0.15 m	1.2 m x 0.9 m
6,000 m ² < x < 20,000 m ²	150 mm x 100 mm x 3	1.0 m x 0.2 m	1.5 m x 0.9 m
20,000 m ² < x < 60,000 m ²	150 mm x 100 mm x 3	1.1 m x 0.2 m	1.8 m x 1.2 m
x > 60,000 m ²	150 mm x 100 mm x 3	1.1 m x 0.2 m	1.8 m x 1.2 m
Shop house			
x < 6 storey	100 mm x 75 mm x 3	N/A	N/A
Others			
Industrial lot	Requirement to be determined case by case.		
Hotel			
Schools			
Hospital			
Club house			

5. In-building infrastructure requirement

5.6 Vertical & Horizontal trunking for MDU

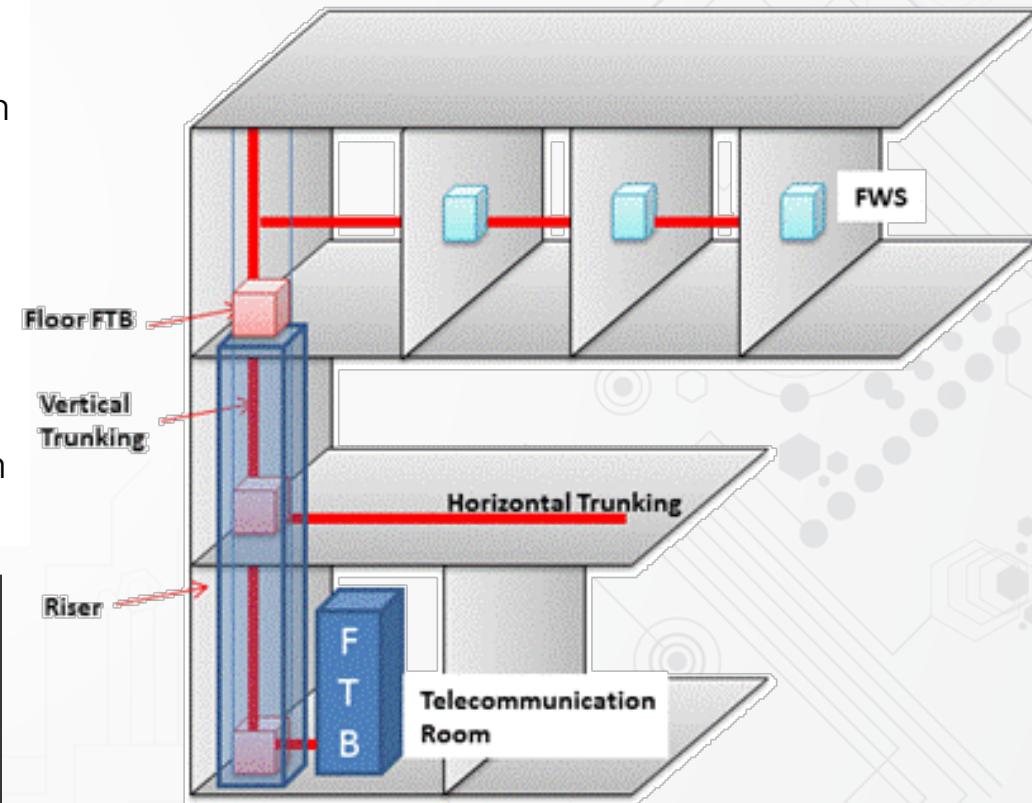
Vertical trunking

- Inside the riser - connecting each floor to protect and as a cable guide.
- Open ladder, cable tray and closed trunking are the types of trunking that can be used.

Horizontal trunking or conduit

- Connecting from riser on each floor to every Fibre Wall Socket (FWS).
- PVC or harder type of trunking or conduit can be used but shall keep the aesthetics either within or outside of the premises.
- Size of horizontal trunking shall be according to the number of cables as shown in table below.

Number of cables	Number of trunkings on wall /floor (100 mm x 25 mm)	Number of trunkings on ceiling (100 mm x 50 mm)
Less than 10	1 unit	1 unit
10 to 20	2 units	2 units
More than 20	N/A	Comply with 50 % space factor



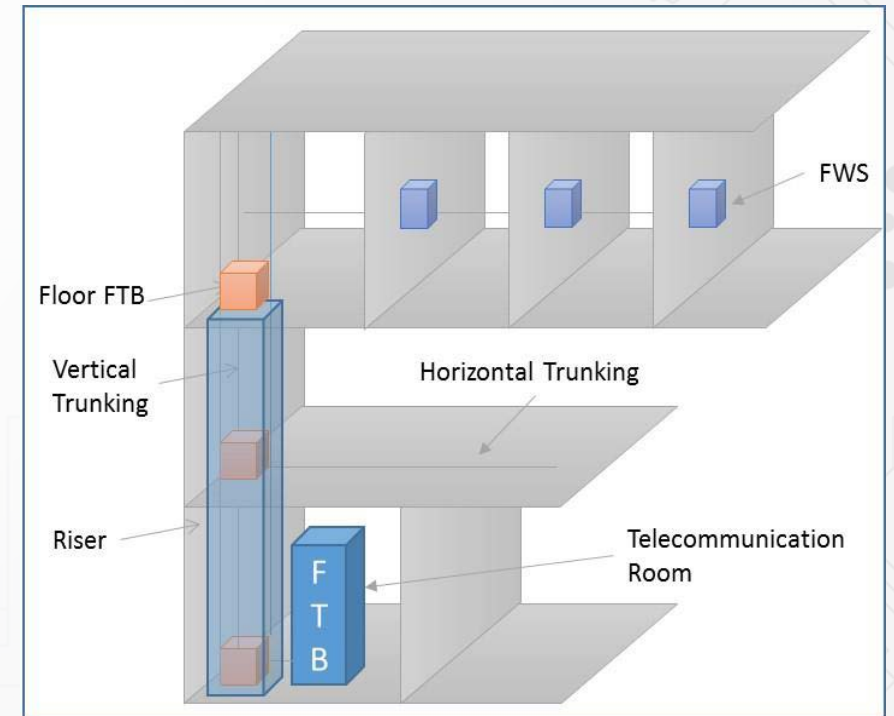
5. In-building infrastructure requirement

5.7 Fibre Termination Box (FTB)

- FTB shall be provided as the connection point between in-building and external fibre.
- The connector type shall be SC/UPC or SC/APC which depends on NFP and type of services.

- **FTB for MDU**

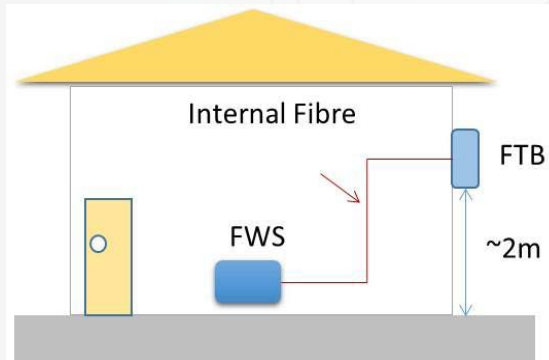
- FTB for MDU shall be placed in the TR.
- Floor FTB may also be placed at riser for MDU as distribution point of high capacity to smaller capacity fibre.



5. In-building infrastructure requirement

5.7 Fibre Termination Box (FTB)

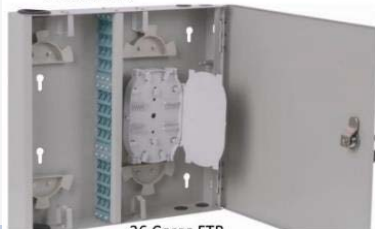
- **FTB for landed SDU**
 - shall be located at 2 m height from the ground



2 Cores FTB



4 Cores FTB

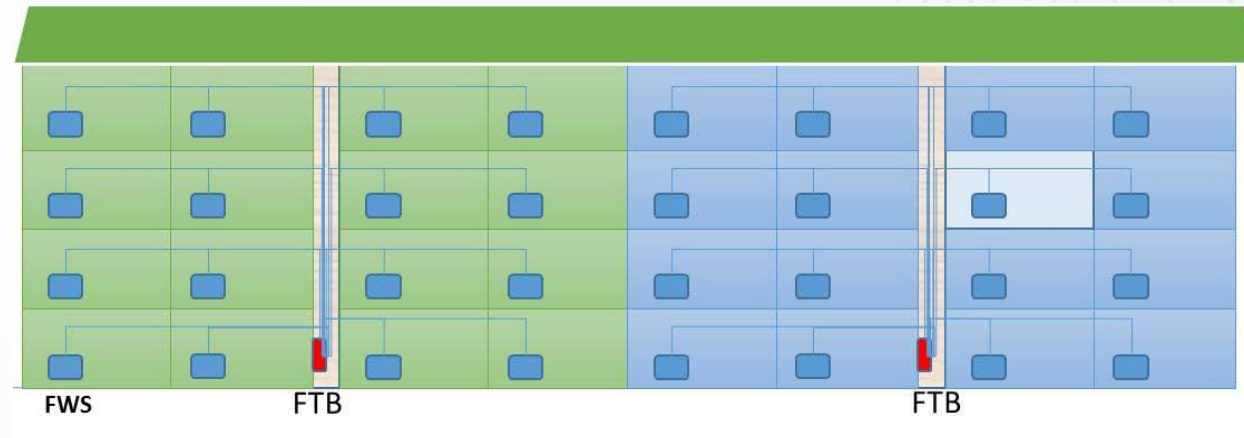


36 Cores FTB



8 Cores FTB

- **FTB for high-rise SDU**
 - shall be located at 2 m height from the ground level at staircase area or in the riser.



- Samples of FTB for SDU.

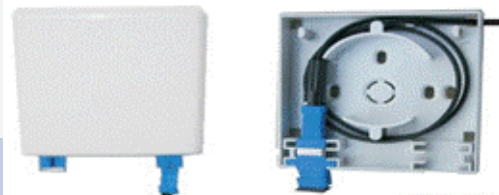
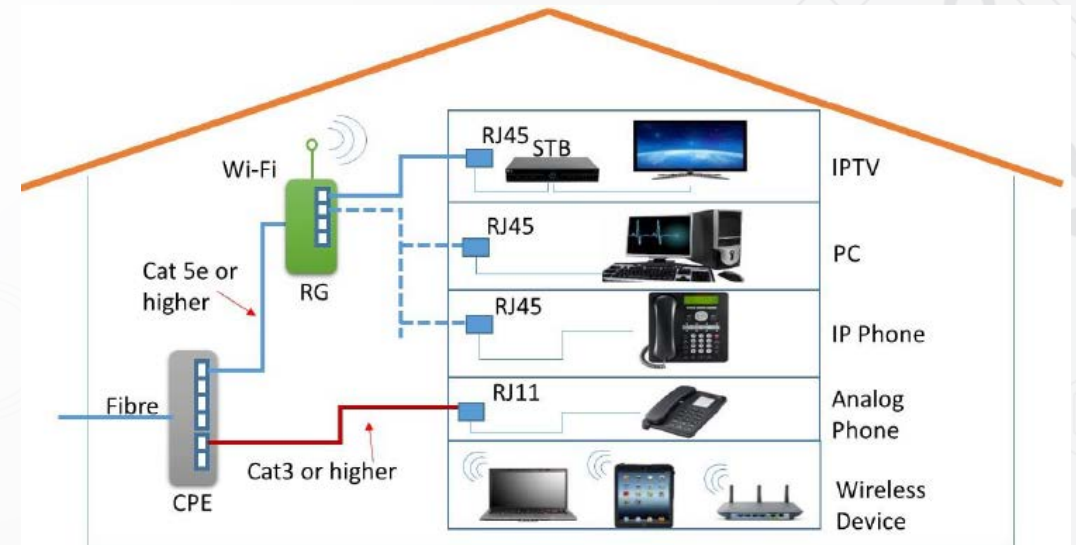
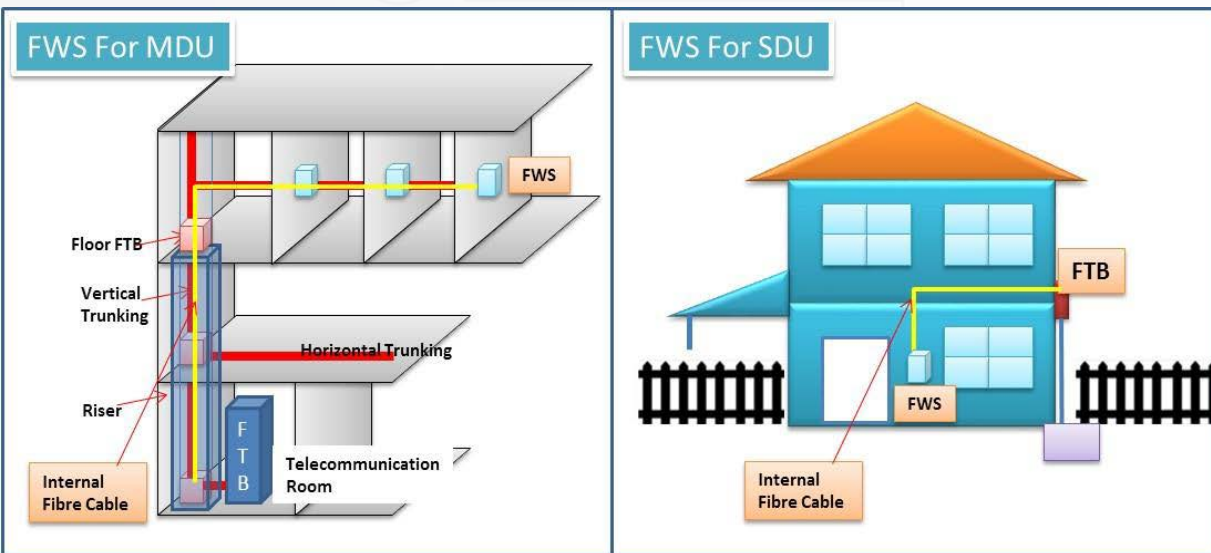
5. In-building infrastructure requirement

5.8 Fibre Wall Socket (FWS)

- Requirements for FWS:
 - Shall support 2 sets of SC/UPC or SC/APC connectors.
 - Located 300 mm above the floor level and 300 mm from the corner of the wall;

5.9 Customer Premises Equipment (CPE) outlet

- The minimum type of CPE outlet shall be provided as below:
 - RJ45 outlet socket for internet-based (Data & IPTV) CPE
 - RJ11 outlet socket for analogue telephone



Sample of FWS.

4 Technical Code Requirements

Stage 2

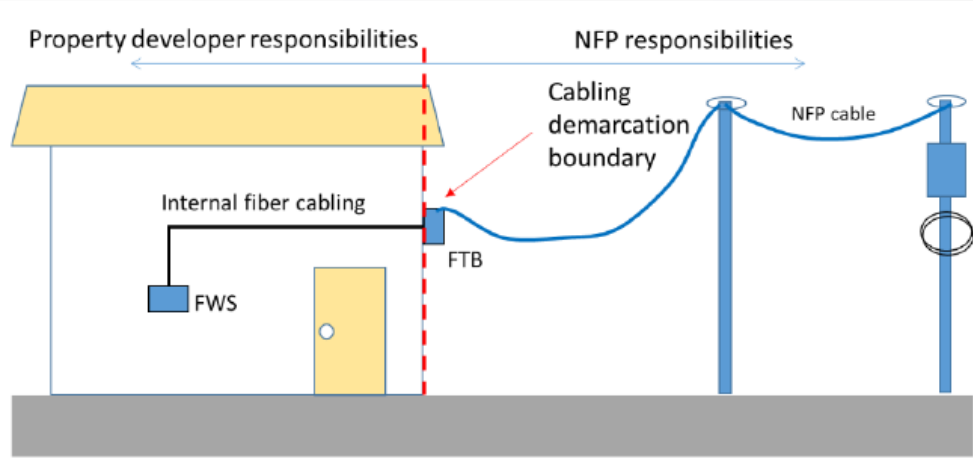
Cabling Requirements

1. Cabling for Single-Dwelling Unit (SDU)
2. Cabling for Multi-Dwelling Unit (MDU)
3. Cabling for Campus
4. Cable specification
5. Labelling and tagging
6. Testing and commissioning

1. Cabling for Single-Dwelling Unit (SDU)

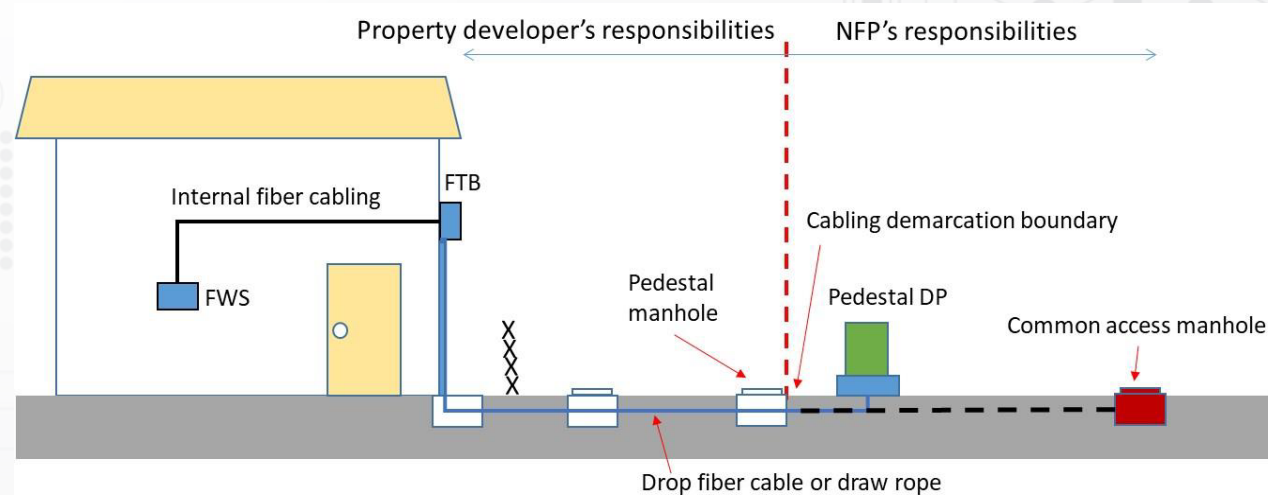
1.1 Cabling for Single-Dwelling Unit (SDU)

- served via Pole



1.2 Cabling for Single-Dwelling Unit (SDU)

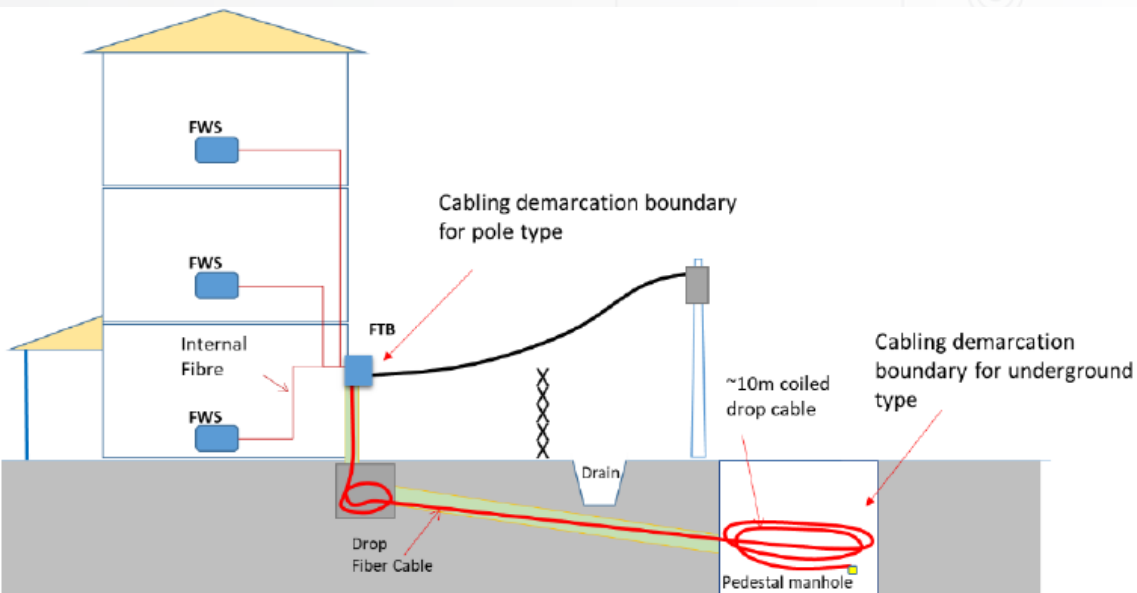
- served via Underground
 - for SDU served via underground, drop fibre cable or draw rope (<20m) shall be prepared between FTB and pedestal's manhole.



1. Cabling for Single-Dwelling Unit (SDU)

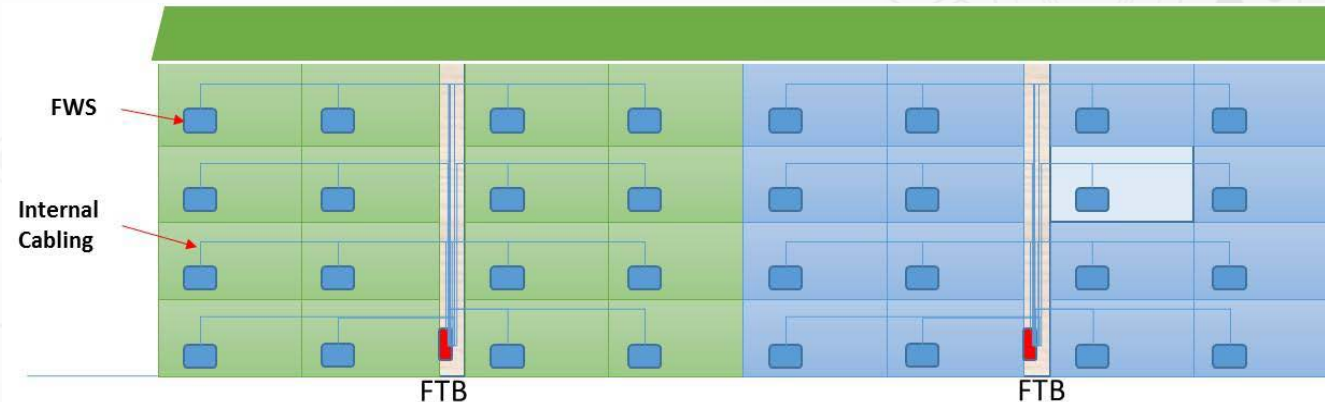
1.3 Cabling for town house type

- A properties that have multiple units inside the building with a single access.
- FTB shall be installed at a common area and be accessible at all time.



1.4 Cabling for high-rise SDU

- A property with < 6 floors and generally without TR.
- The example of high-rise SDU are shop lots, apartment and business building.



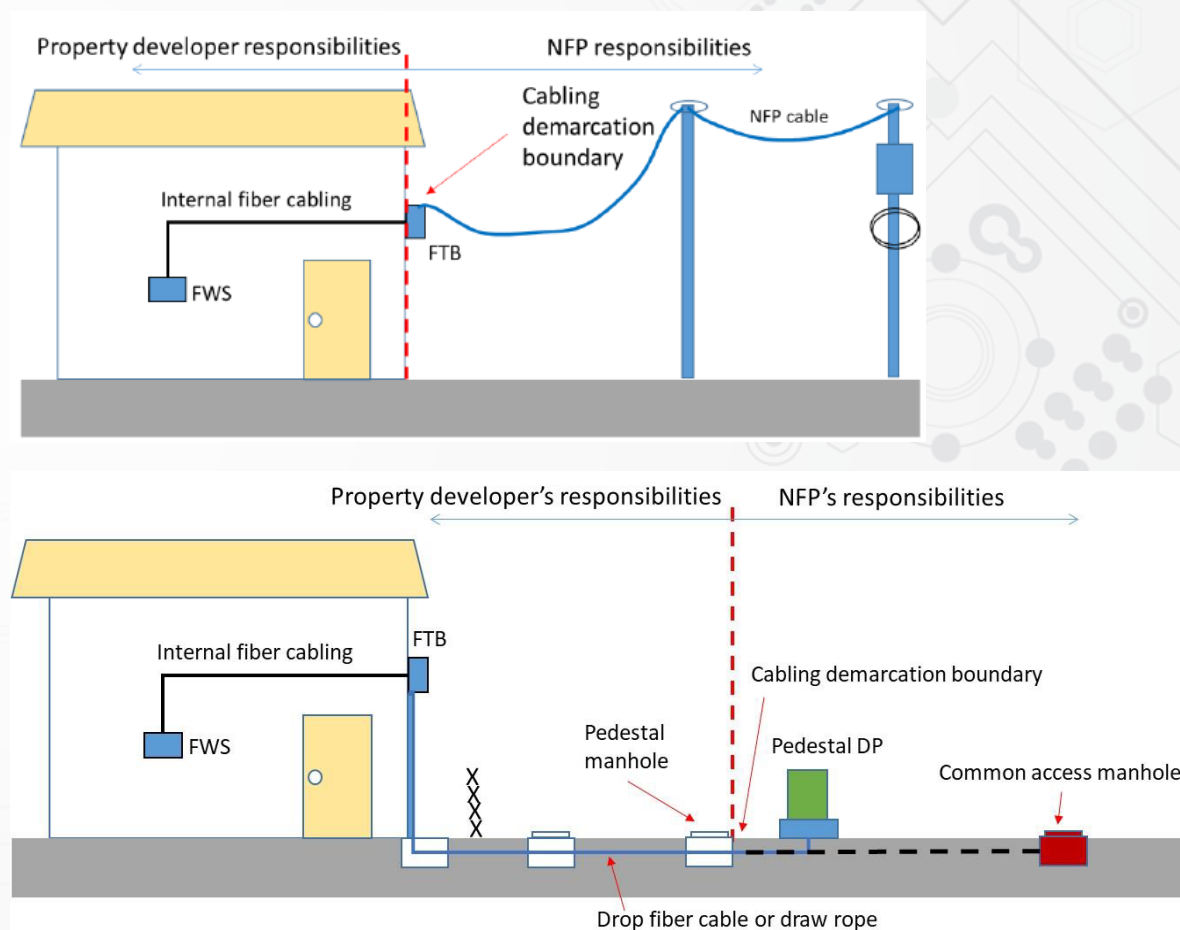
1. Cabling for Single-Dwelling Unit (SDU)

1.5 Power link budget for SDU cabling

- Total attenuation loss for SDU cabling shall not exceed the following requirement:

	Between FWS and FTB
Served via Pole	1.6 dB

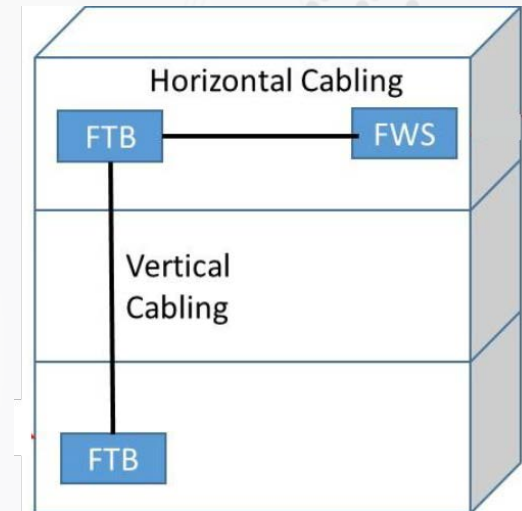
	Between FWS and pedestal manhole
Served via Underground	2.3 dB



2. Cabling for Multi-Dwelling Unit (MDU)

2.1 Vertical cabling

- a) Vertical cabling shall be provided by the property developer.
- b) Minimum number of fibre cores shall follow the rules as below.
 - For residential building
 - Minimum number of fibre core = 2 x total premise unit + 30% extra
 - For commercial building
 - Minimum number of fibre core = 4 x total premise unit + 30% extra



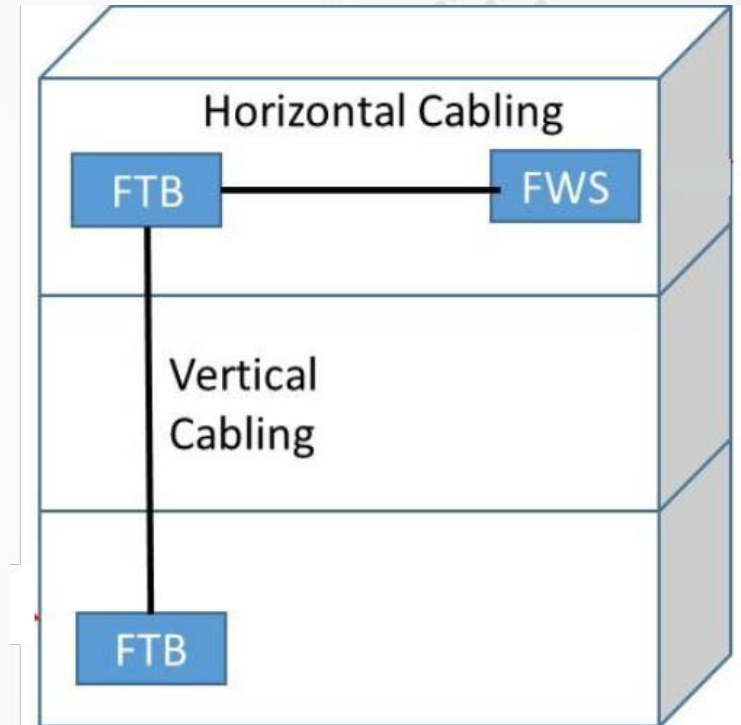
Example calculation of minimum number of vertical fibre core for residential building is as below.

Minimum number of fibre core	= 2 x total premise unit + 30% extra
Number Unit in building	= 100 units
Min. number of fibre core	= (2 x 100) + (30% x 100)
	= 200 + 30
	= 230 cores

2. Cabling for Multi-Dwelling Unit (MDU)

2.2 Horizontal cabling

- a) Horizontal cabling shall be provided by the property developer.
- For residential building
 - Minimum 2 fibre core per premise.
 - For commercial building
 - Minimum 4 fibre core per premise.
 - 10% extra cores are recommended to be prepared.



2. Cabling for Multi-Dwelling Unit (MDU)

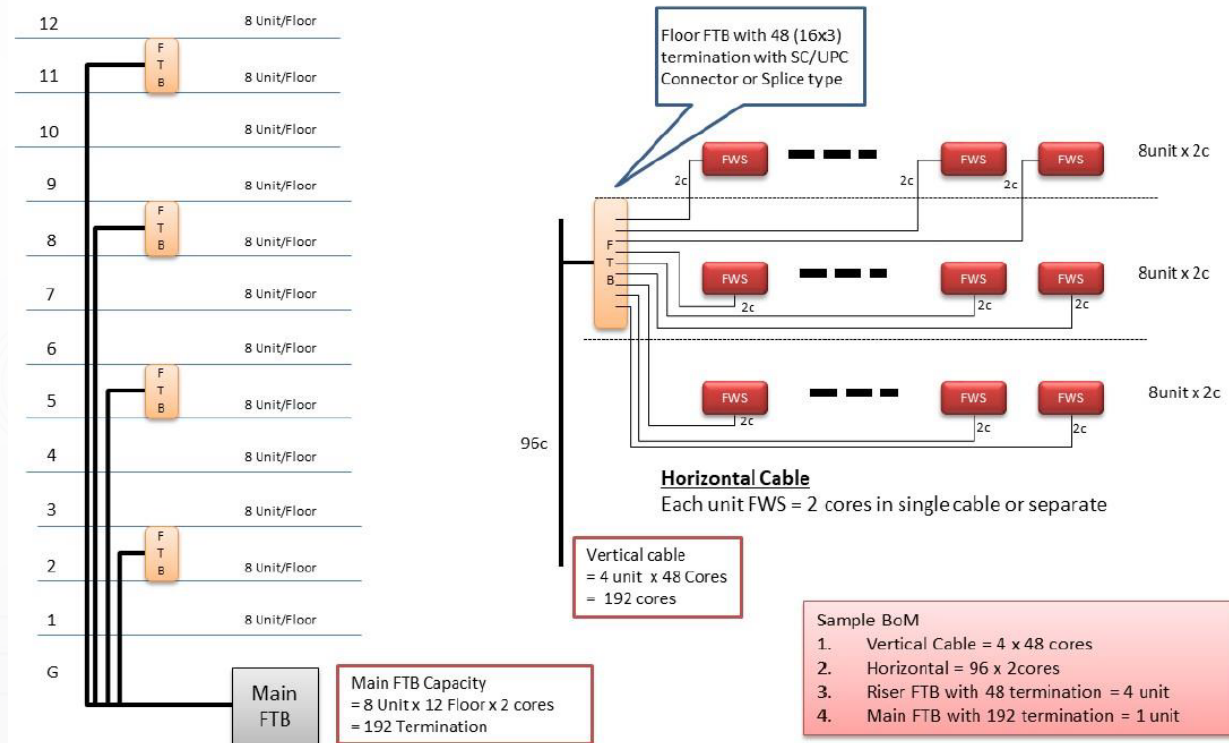
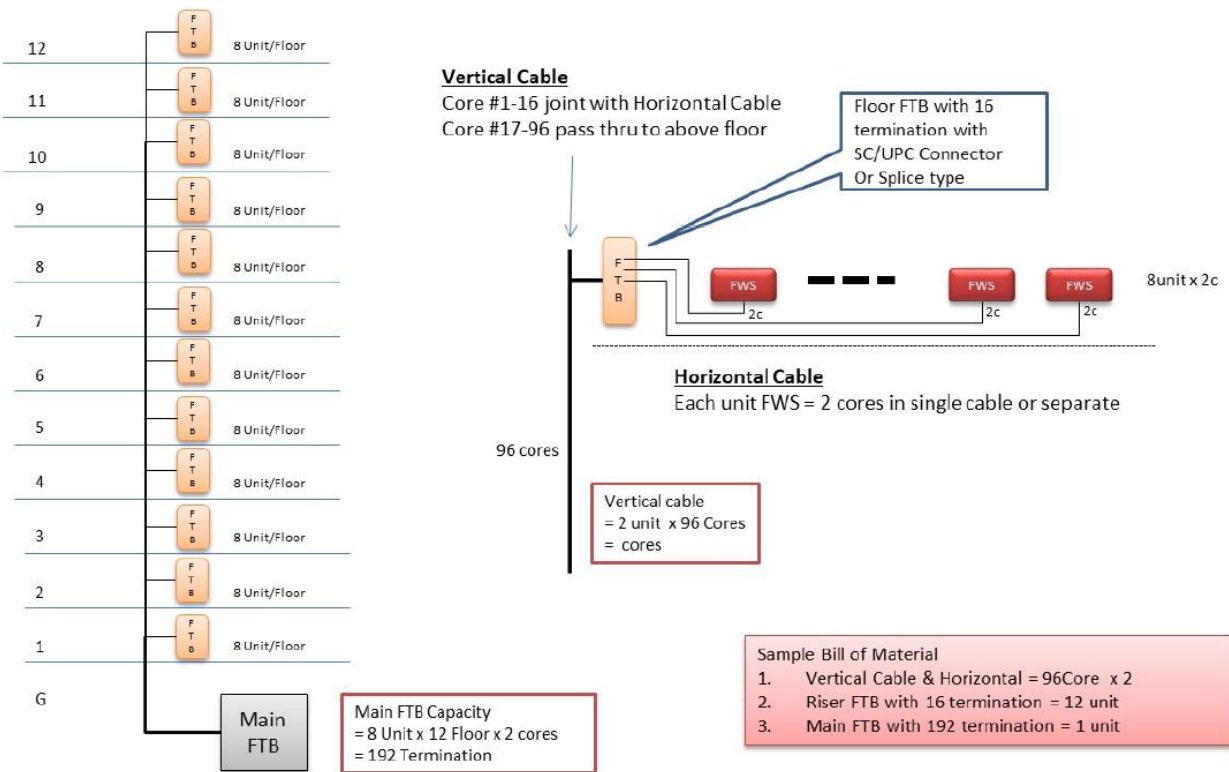
2.3 MDU internal cable distribution design

Design 1: High capacity vertical cable

- Highly recommended for high capacity building.

Design 2: Medium capacity vertical cable

- Recommended for high or medium capacity building.



2. Cabling for Multi-Dwelling Unit (MDU)

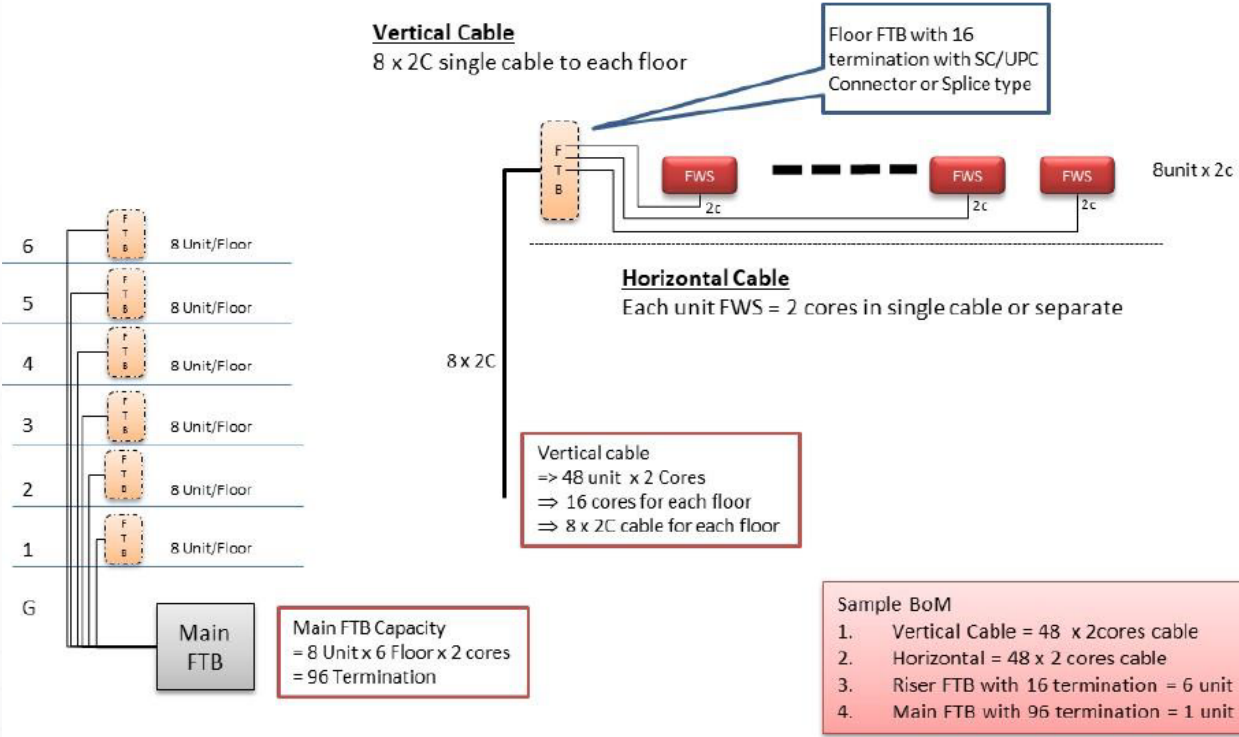
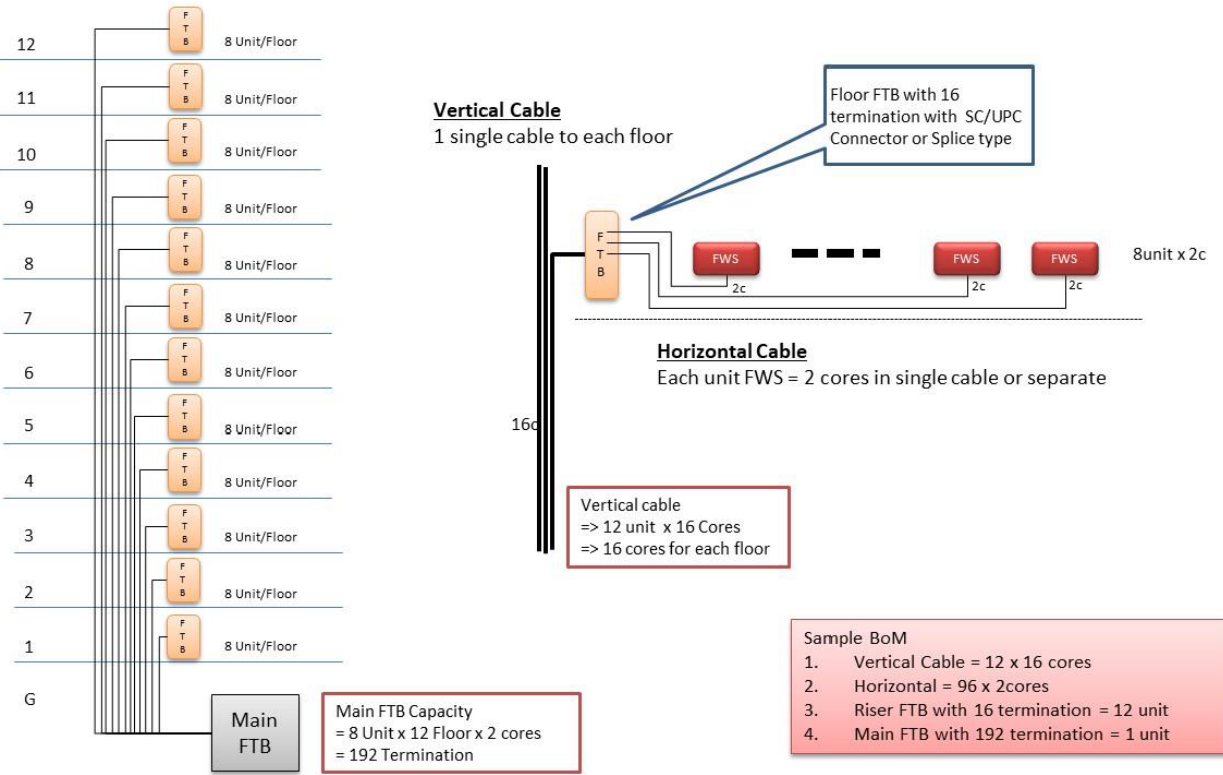
2.3 MDU internal cable distribution design

Design 3: Single vertical cable to every floor

- Recommended for medium or low capacity building

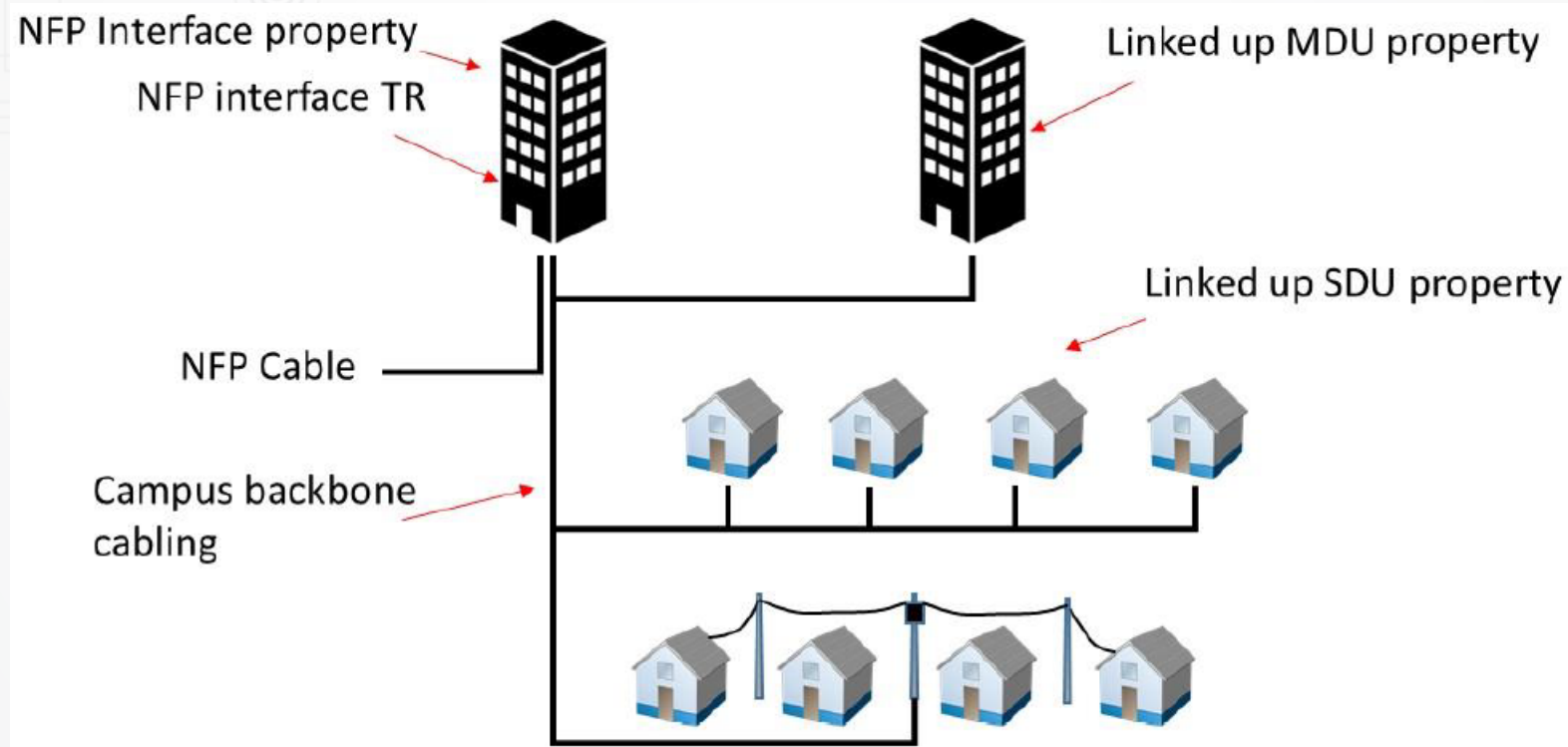
Design 4: Single cable direct to each premise unit

- Highly recommended for low capacity building.



3. Cabling for Campus

- For campus type, generally all the properties are connected to a single NFP interface FTB through campus backbone cabling.



4. Cable specification

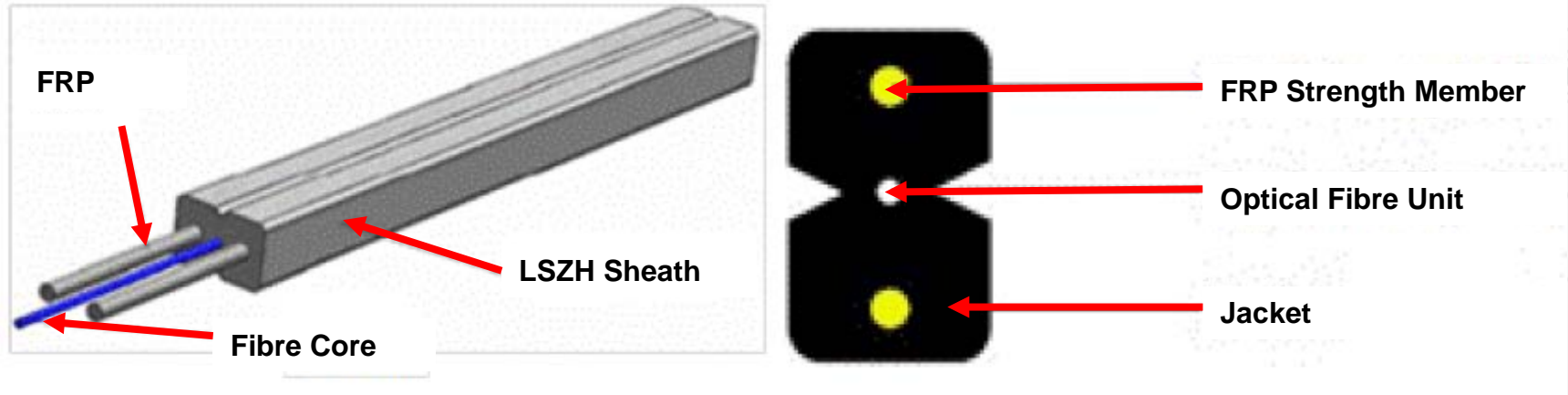
- All fibre cables shall be made from Low Smoke Zero Halogen (LZSH).
- For business area, anti-rodent material is recommended to prevent the fibre breakdown in future.
- Cable specification for premises internal fibre shall be as shown in table below.

Cable	Cabling portion	Specification
Campus backbone	Main building's FTB TR to other building's FTB	Single mode ITU-T G.652.D
Vertical cable	FTB at TR to each floor FTB	Single mode ITU-T G.652.D or ITU-T G.657.A
Horizontal cable and premises internal cable	FTB or floor FTB to individual unit premises FWS	Single mode ITU-T G.657.A
Drop cable	Individual unit premises and underground type premises	Single mode ITU-T G.657.A

4. Cable specification

4.1 Internal fibre cable

- Internal fibre cable is used for corridor and indoor cabling.
- The fibre shall be single mode type and comply with ITU-T G.657.
- The structure of internal fibre is shown in figure below.



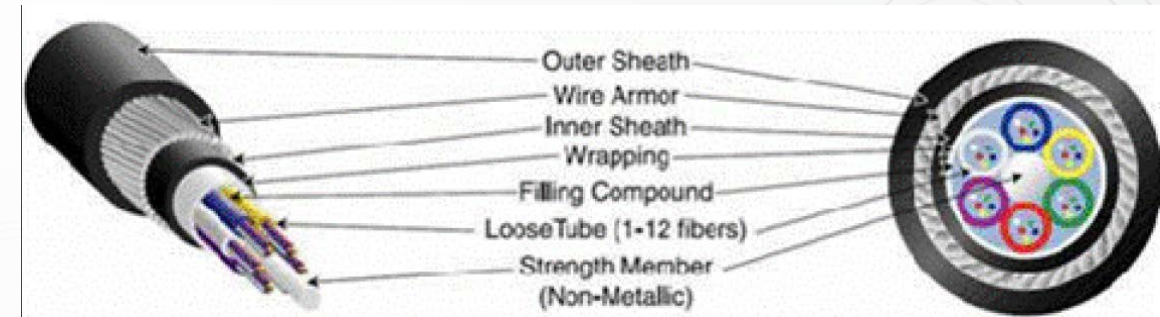
4. Cable specification

4.2 Vertical and campus backbone cable

- All cables shall be single mode type and comply with the specifications of ITU-T G.652.D or G.657.A.
- Sample of vertical and campus backbone cable is shown in figures below.



Possible vertical & campus fibre cable design –
Ribbon fibre type



Possible vertical & campus fibre cable design -
Loose tube type

4. Cable specification

4.2 Vertical and campus backbone cable

- Blown fibre technique may be used as an alternative to install the vertical and campus backbone cabling.



Microduct for microcable



Microcable in Microduct

Possible microcable with microduct

5. Labelling and tagging

5.1 Tag material and specification

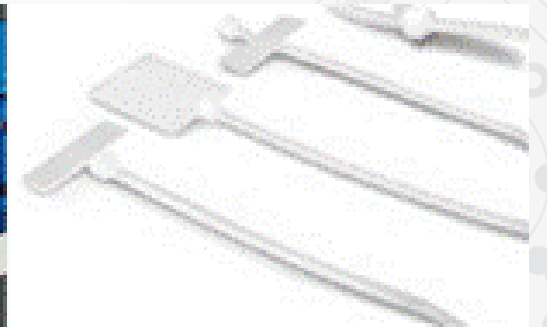
- Cable tag is used to identify the cable information such as core number, origin and destination of the cable.



Sample of recommended Tagging System



Cable Tag

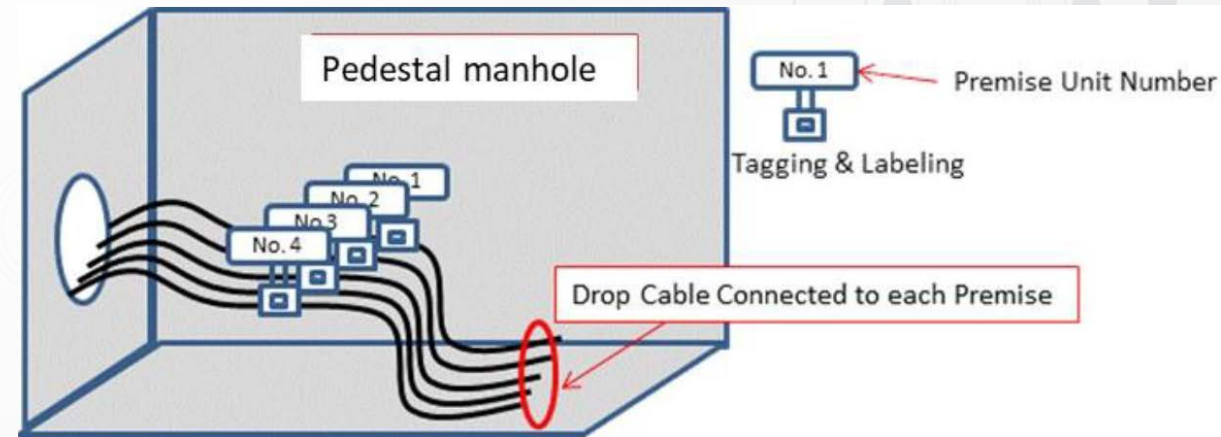
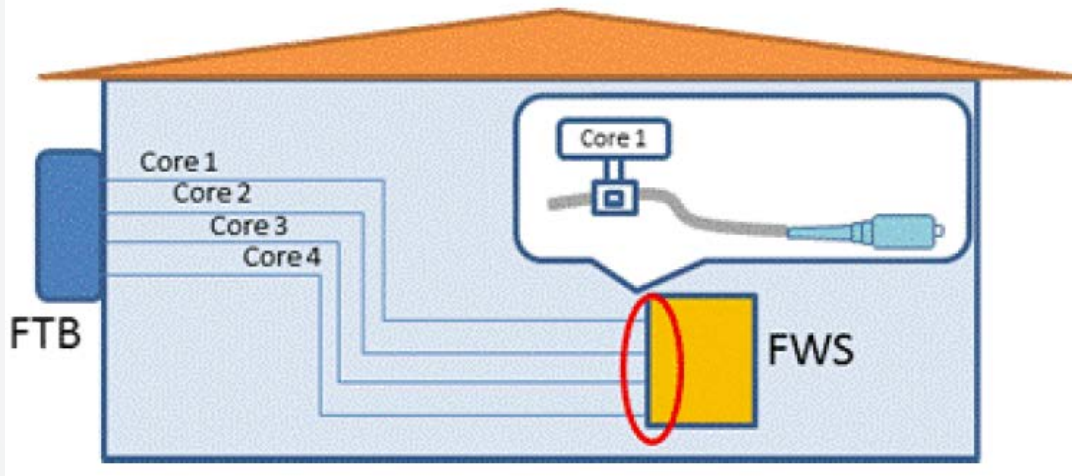


Flat type cable tag

5. Labelling and tagging

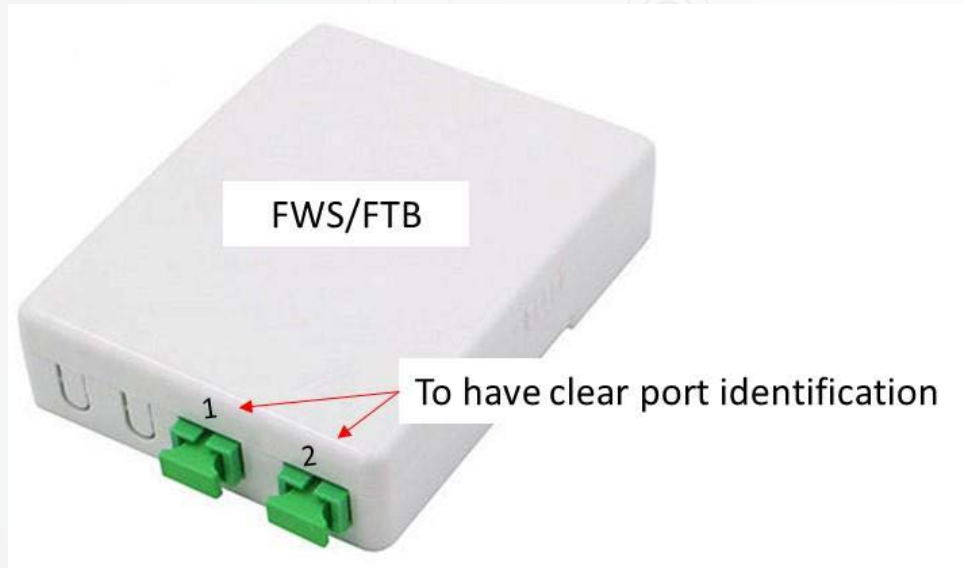
5.2 Labelling and tagging for SDU cabling

- All internal cabling fibre cores shall be tagged and labelled with core number or any relevant information.
- Tagging and labelling of drop cable are required at the pedestal manhole interfacing with the NFP network side for SDU served via underground infrastructure.



5. Labelling and tagging

5.3 Labelling and tagging of FWS and FTB



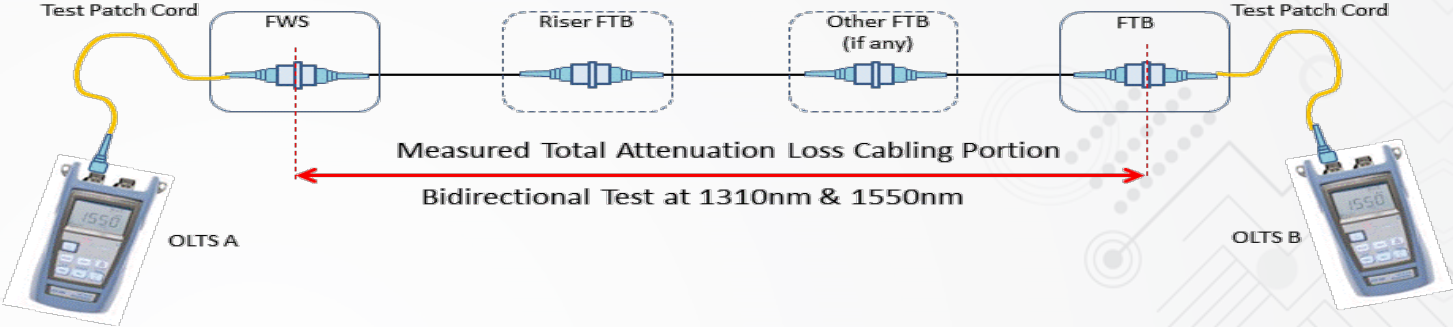
FTB and FWS port identification

5.4 Labelling and tagging for MDU's cabling

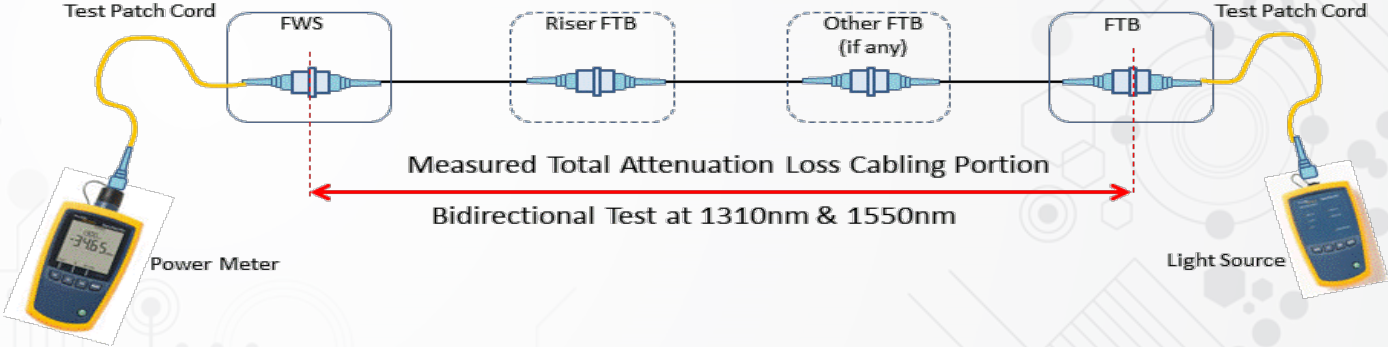
Item	Vertical cable		Riser info	Horizontal cable	
	Cable number	Core number	Floor	Cable number	Core number
Code	FV xxx	xxx	FLxxx	FHxxx	xxx
Example	FV001 - FV999	000 - 999	FL020	FH001 – FH999	000 - 999

6. Testing and commissioning

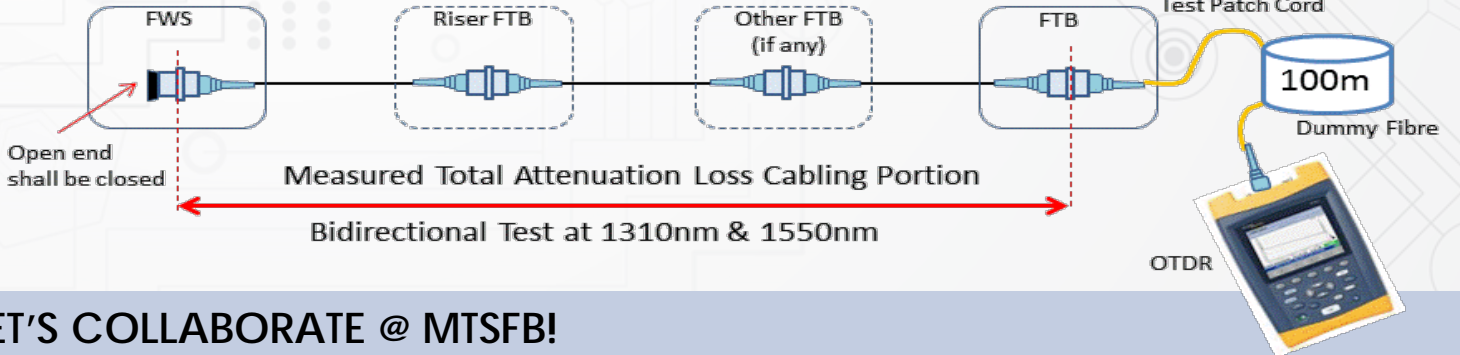
6.1 Optical loss test set (olts) test method



6.2 Power meter and light source test method



6.3 Optical time domain reflectometer (otdr) test method



6. Testing and commissioning

6.4 Test result

Building name	Seri Pinang Condominium						
Vertical cable no.	FV001						
FTB rack no.	Rack 1						
FTB sub-rack no.	Sub-rack 1						
Test item			Insertion loss		Optical return loss - optional		
Test direction			Downstream	Upstream	Downstream	Upstream	
Rise FTB adaptor no.	Premise unit no.	Floor no.	1310 nm (dB)	1310 nm (dB)	1310 nm (dB)	1310 nm (dB)	Distance (m)
No. 1	A-1-01	1	1.1	1.1	33	33	100
No. 2	A-1-02	1	1.1	1.1	34	34	110
No. 3	A-1-03	1	1	1	36	36	120
No. 4	A-1-04	1	0.9	0.9	34	34	130
No. 5	A-2-01	2	1.1	1.1	34	34	100
No. 6	A-2-02	2	1.1	1.1	35	35	110
No. 7	A-2-03	2	1	1	34	34	120
No. 8	A-2-04	2	0.9	0.9	34	34	130
Remarks							
Tester							
Verified by NFP representative name							

4

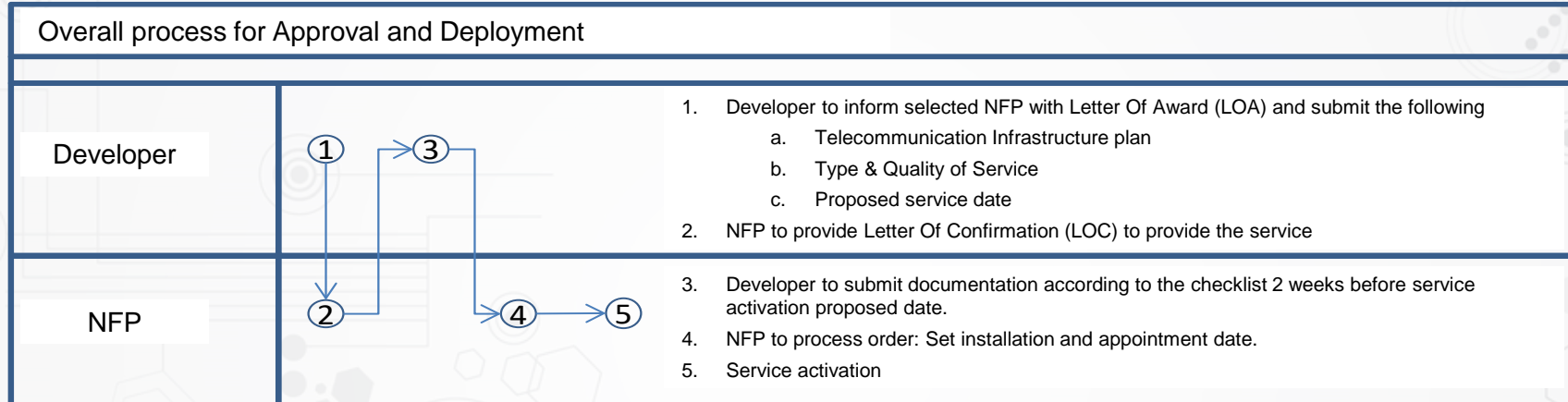
Technical Code Requirements

Stage 3

Infrastructures and cabling acceptance procedure

Infrastructures and cabling acceptance procedure

- Timeline to provide services & service application process flow



- Documentation

1. Acceptance checklist endorsed by consultant or contractor
2. Internal infrastructure floor plan – sample as shown in Annex G
3. External infrastructure Development Plan – sample as shown in Annex H
4. As-built and cabling Schematic Line Diagram (SLD) – sample as shown in Annex I
5. Fibre Core Assignment – sample as shown in Annex J
6. Cabling test result – as explained in Section 13.5
7. Calibration certificate of test gear
8. NFP Type Approve Certificate of each material used



5

Challenges/Conclusion

Challenges

- a) No proper handover agreement between NFP and Property Developer, BM or JMB.
- b) All materials used by property developer related to any material specified in this document shall be certified by MCMC's registered certifying agency or NFP according to the specified standards.
- c) Liability period for rework process on any defect.
- d) No charges shall be imposed by property developer or BM on NFP to access any in-building and external infrastructure including the installation of any equipment for fixed network facilities.
- e) Only authorized personnel by NFP shall be allowed to access in-building and external infrastructure.

Conclusions

- a) The Fixed Network Facilities – In-building & External is a document which serves as guidelines and standards in support of the National Broadband Fiberisation and JENDELA initiatives.
- b) This document shall provide standard designs and specifications for any property developers or relevant parties related to property development.

Q&A

*Thank
You*

Let's Collaborate



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