Briefing to Building Owners and Building Managers

- **Fibre Ready Scheme**

By Mr Koh Wee Sain
Assistant Director, National Information Infrastructure
5 Aug 2014

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Agenda

1. ICT for Productivity and Growth (IPG)
2. Fibre Ready Scheme
3. Applying for the Grant
4. Q&A

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1 ICT for Productivity and Growth (IPG)

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Background – Announced at Budget 2014

Adopting ICT Solutions to Increase Productivity

Enabling High-Speed Connectivity for Businesses

"We will promote **high-speed connectivity for SMEs**. It is difficult for SMEs to take full advantage of cloud computing and data analytics solutions without high-speed Internet access.

We will ***subsidise SMEs' fibre broadband subscription plans of at least 100 Mbps* (Megabits per second)** and provide support for them to implement *Wireless@SG services* at their premises.

We will also ensure that more buildings have facilities to bring fibre broadband to their business tenants. **We will *subsidise building owners for up to 80%* of the costs of *new in-building infrastructure*, capped at $200,000 per building.**"

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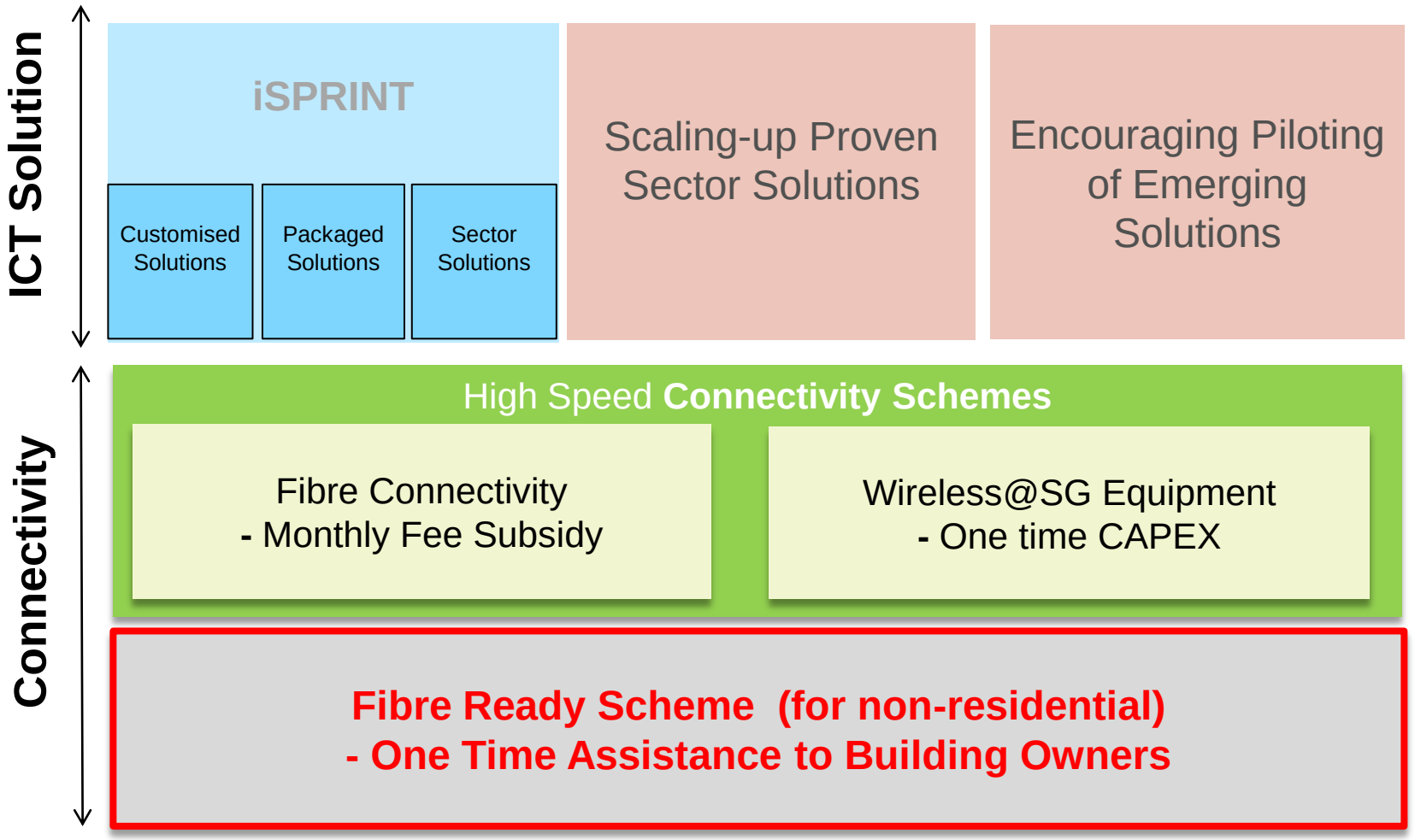
ICT for Productivity & Growth (IPG) Programme



Government keen to pair ICT solutions with connectivity to enhance and grow SME productivity in Singapore

2 Fibre Ready Scheme

IDA's Role

- Statutory board under the Ministry of Communications and Information (MCI)

- Responsible for the development and growth of the info-communication sector in Singapore

- Code of Practice for Info-communication Facilities in Buildings (COPIF)
  - Developers and/or owners of buildings and developments are to provide adequate space and telecommunication facilities for the deployment and operation of installation and plant

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Purpose of Fibre Ready Scheme

- To facilitate seamless installation of fibre broadband for enterprises, **Government has set aside $200m to prepare buildings for fibre infrastructure**

- Grant to Building Owners / Building Managers for additional infrastructure costs (cable trays, access panels, etc.)

- Operators remain responsible for installation and maintenance of fibre cables

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Terms and Conditions

Draft Guidelines – Final Terms and Conditions after Launch

- Subsidy amount will be pegged at 80% of incurred cost, up to a max of $200,000 per building

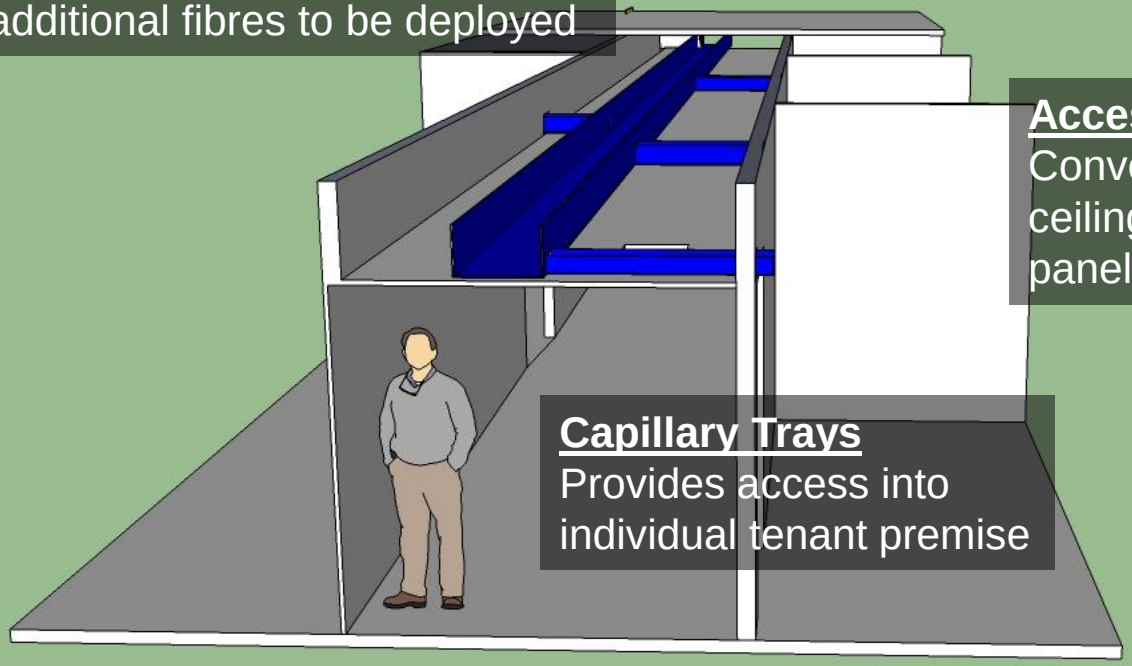
- For Building Owners/Managers to qualify
  1. Applies to commercial premises only
  2. Buildings must be multi-tenanted i.e. 5 tenants and above
  3. **No additional charges to tenants, operators or other providers or consumers of fibre services when fibre services are taken up**
  4. Infrastructure must be able to facilitate fibre services to 100% of tenants
  5. Must support RSP / Operator Marketing efforts over 3 years from payment of grant e.g. No charge to RSPs for roadshows within buildings

- See next slides for examples of eligible infrastructure

Type of Facilities Enhancement Supported (1/4)

Fish-bone structure to serve all premises

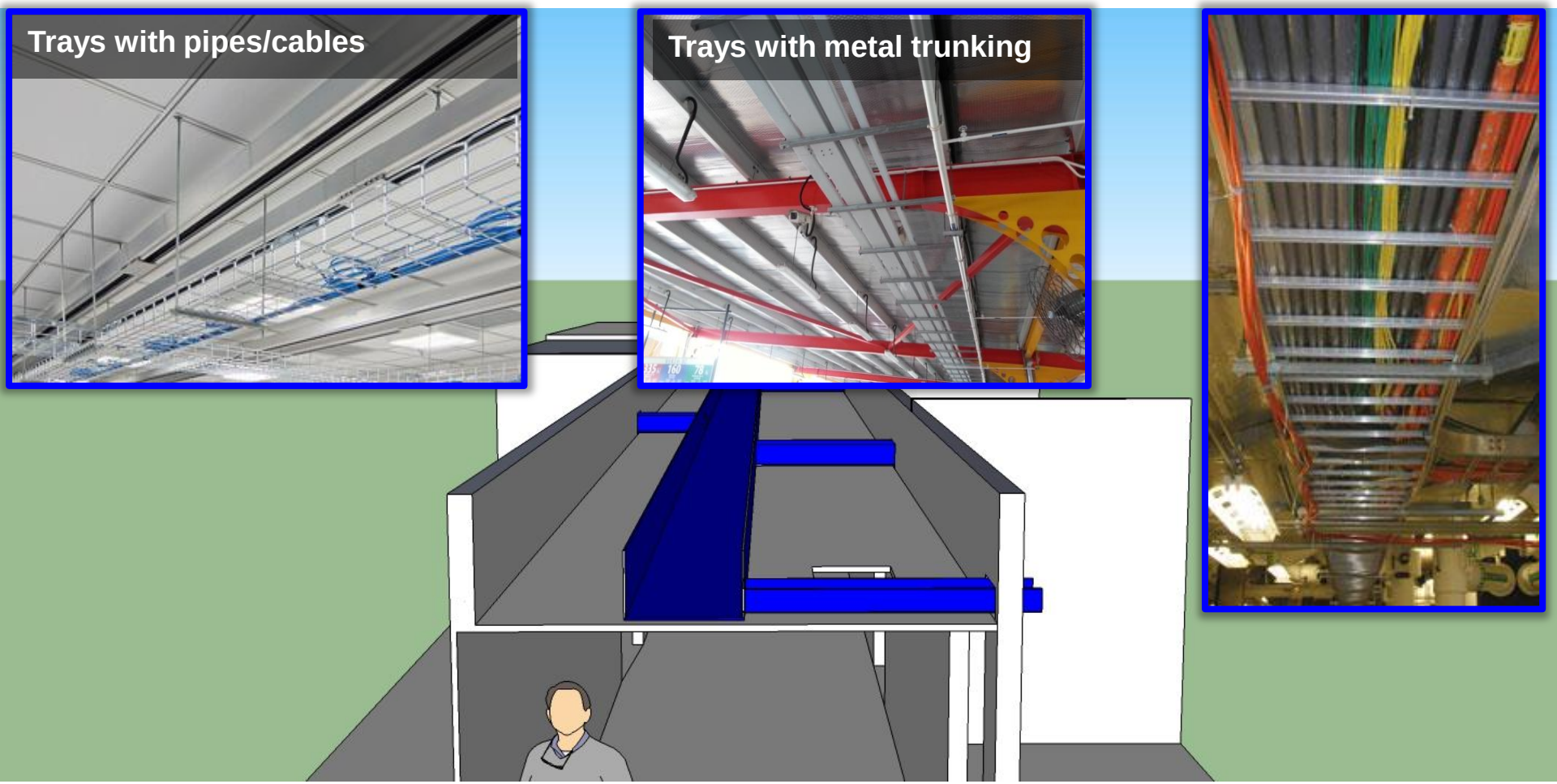
Main Cabling Tray
Expand with new cabling trays to support additional fibres to be deployed



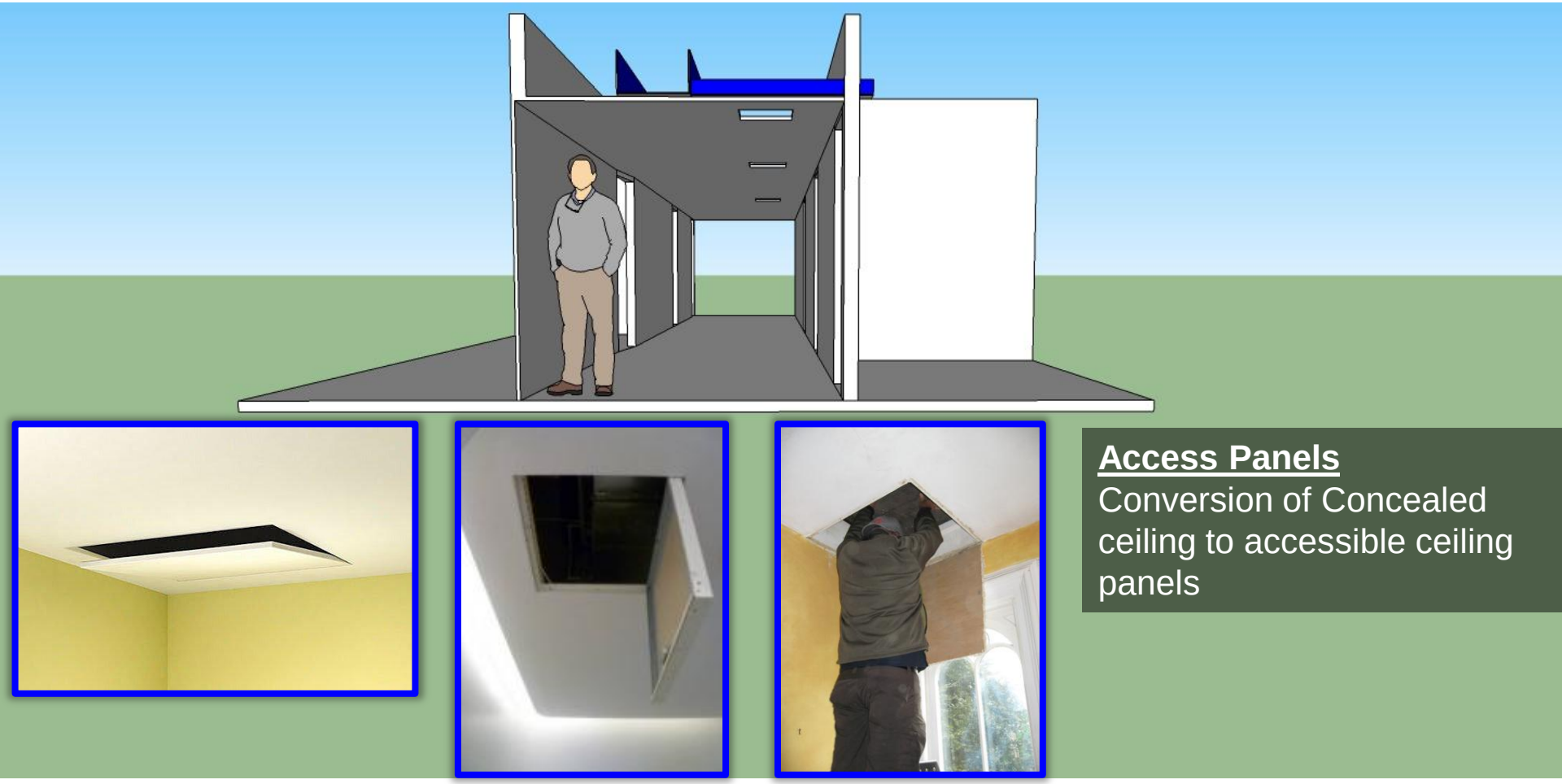
Access Panels
Conversion of Concealed ceiling to accessible ceiling panels

Capillary Trays
Provides access into individual tenant premise

Type of Facilities Enhancement Supported (2/4)



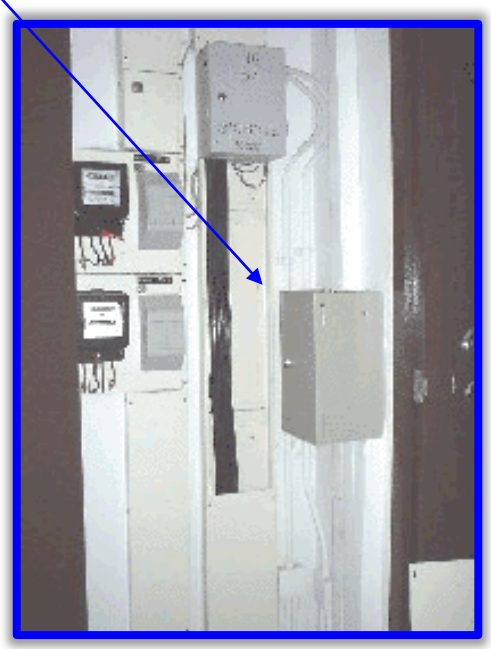
Type of Facilities Enhancement Supported (3/4)



Access Panels
Conversion of Concealed ceiling to accessible ceiling panels

Type of Facilities Enhancement Supported (4/4)

New Trunkings in riser



Open Access of In-Building Infrastructure

- Infrastructure such as cable trays are shareable by multiple operators

- When Building Owners take up grant, they are encouraged to install their in-building infrastructure concurrently with as many RSPs as possible in the deployment of their fibre to minimise disruption to their tenants

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3 Applying for the Grant

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Grant Process

Draft Process – Final Process After Launch

1. Registration	*Recommended step to facilitate dialogue with IDA* *Registration Form:* https://www.ida.gov.sg/Infocomm-Landscape/Infrastructure/Wired/Fibre-Ready-Scheme/FRSregister.aspx
2. Submission	*Submission of proposal, see next page for more information*
3. Evaluation	*Estimated 3 months for IDA to complete evaluation process*
4. Letter of Offer	*Letter of Offer will state terms of grant, require Building Owners/Managers to complete installation within a certain period (provisionally 3 months)*
5. Proof of Completion	*Proof of completion – requires invoicing, as well as allowing access for random audits by IDA appointed auditors*
6. Grant Disbursement	*Disbursement of grant – IDA reserves the right to claw back grant if Building Owners/Managers found not to comply with T&Cs*
7. Listing	▪ ***Building to be listed on Fibre Ready Scheme Web Portal*** ▪ *Building Owners/Managers to keep contacts updated* ▪ *As-built report to be uploaded for Operators to login and download from the Portal when needed*

Grant Application Information Requirements

Brief Draft Application – Final Template After Launch

- Address
- Owner (if not owner, *certification of manager status*)
- Management category, i.e. Building Managers / MCST / Private / REIT
- Names/Number of tenants (including business reg no)
- Proposal for new infrastructure
  - Description of current infrastructure capacity
  - Costing of build out materials
  - Floor plans and routing of infrastructures, including trunking, openings, location of MDF and last mile access (in BIM format)
- Partnership with RSPs/OpCos, if any
- Declaration of relationship with contractor (Related Party Transactions)

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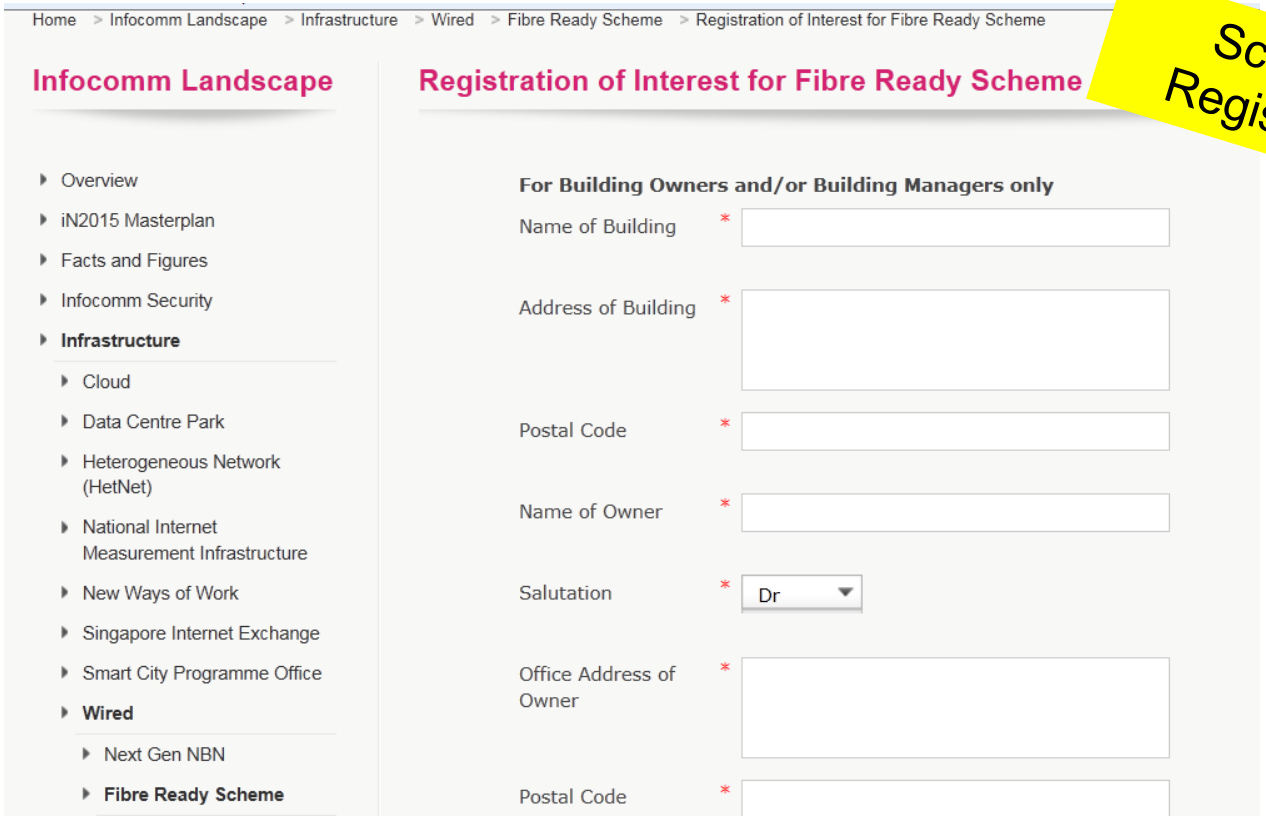
Next Steps for Building Owners/Managers

- To register interest for Fibre Ready Scheme
  - https://www.ida.gov.sg/Infocomm-Landscape/Infrastructure/Wired/Fibre-Ready-Scheme/FRSregister.aspx



Screen shot of Registration page

- To provide feedback on Fibre Ready Scheme
  - Send feedback via email to broadband@ida.gov.sg; or
  - Provide contact details via the above email to arrange a meeting for discussion with IDA

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After Registration

- Approach contractors for site visit and quotation

- Submit the following to apply for grant
  - Description of current infrastructure capacity, and proposal on new infrastructure for fibre broadband
  - Costing of build out materials
  - Existing and proposed floor plans and routing of infrastructures, including trunking, openings, location of MDF and last mile access (in BIM format)

A list of contractors' contact information can be obtained upon request

4 Q & A

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Briefing to Building Owners and Building Managers

- **Design and Specifications of Infrastructure Enhancement**

By Mr Low Chee Kiong
National Information Infrastructure
5 Aug 2014

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Agenda

1. Cable Tray/Metal Trunking
2. ABF Microduct Network
3. ABF Microduct Network Planning - Fibre Ready Scheme
4. Building Plan Submission & Requirement
5. Q&A

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1 Cable Tray/Metal Trunking

Cable Tray/Metal Trunking

For existing building, the installation of cable tray / Trunking and ABF Microduct is required to refer and comply with the **COPIF 2013 & Internal Wiring Code of Practice**.

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Open Access of In-Building Infrastructure

- Cable trays/Trunking are shareable by **multiple operators** for use of Fibre cables only.

- "**Fibre Only**" should be printed at every 3m interval.

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Common Sizing of Metal Trunking

Nominal Material Thickness for SS249 Cable Trunking

Nominal external size (mm)	Nominal body thickness (mm)	Nominal cover thickness (mm)	Nominal external size (mm)	Nominal body thickness (mm)	Nominal cover thickness (mm)
50 x 25	1.0	1.0	200 x 50	1.6	1.4
50 x 50	1.0	1.0	200 x 75	1.6	1.4
75 x 50	1.2	1.2	200 x 100	1.6	1.4
100 x 50	1.2	1.2	200 x 150	1.6	1.4
100 x 75	1.2	1.2	225 x 50	1.6	1.4
100 x 100	1.4	1.2	250 x 50	1.6	1.4
125 x 50	1.4	1.2	275 x 50	1.6	1.4
150 x 50	1.4	1.2	300 x 50	1.6	1.6
150 x 75	1.4	1.2	300 x 75	1.6	1.6
150 x 100	1.4	1.2	300 x 100	1.6	1.6
150 x 150	1.4	1.2	300 x 150	1.6	1.6
175 x 50	1.4	1.2	350 x 50	1.6	1.6
			375 x 75	1.6	1.6

If insufficient space in riser, one possible way is to put metal trunking outside the riser, subject to approval from the relevant party (e.g. Building Owner, BCA)

Cable Trunking Accessories

Reducer

External Cover 90° Bend

Flat Bend 45°

Flat Bend 90°

Flat Equal Tee

Coupler

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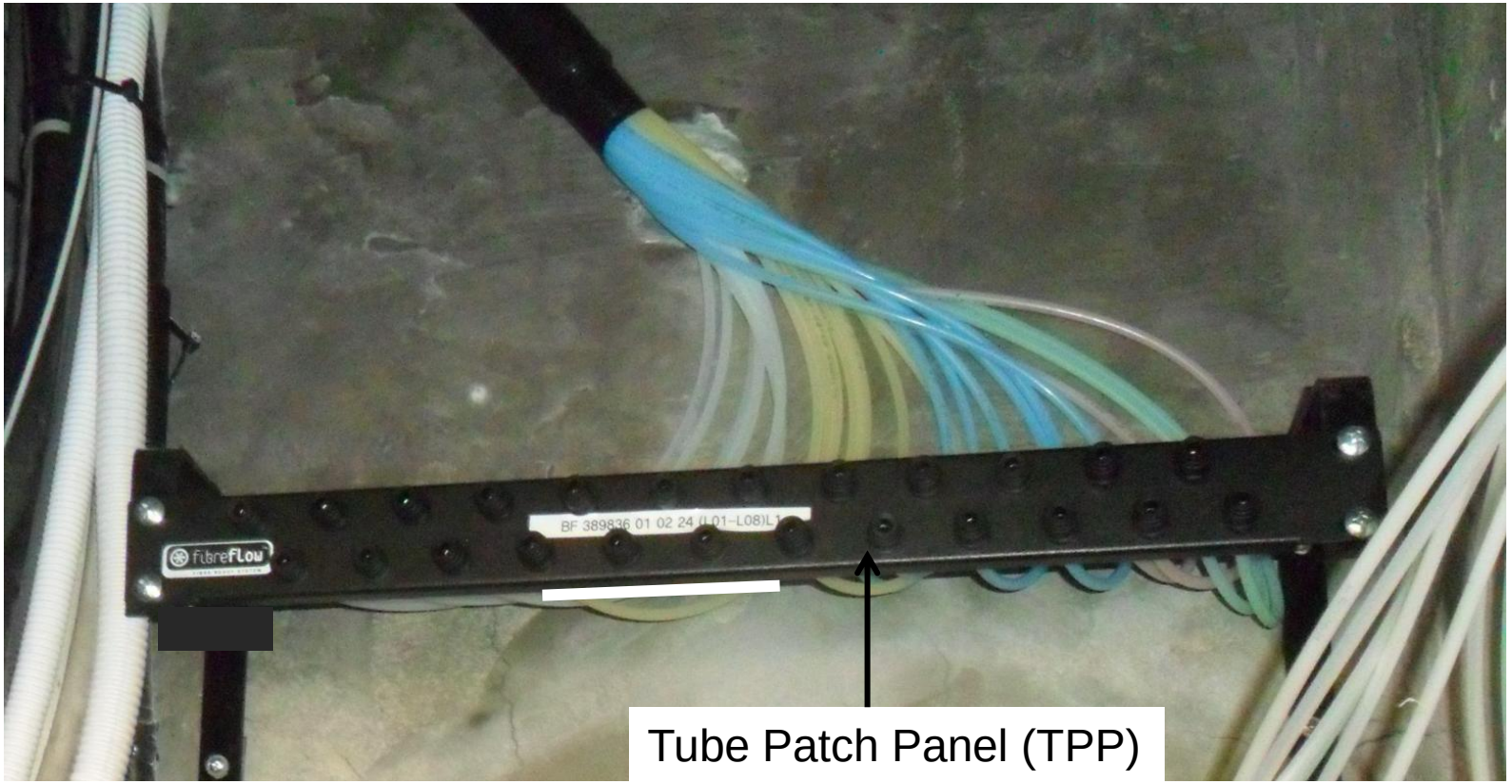
2 ABF Microduct Network

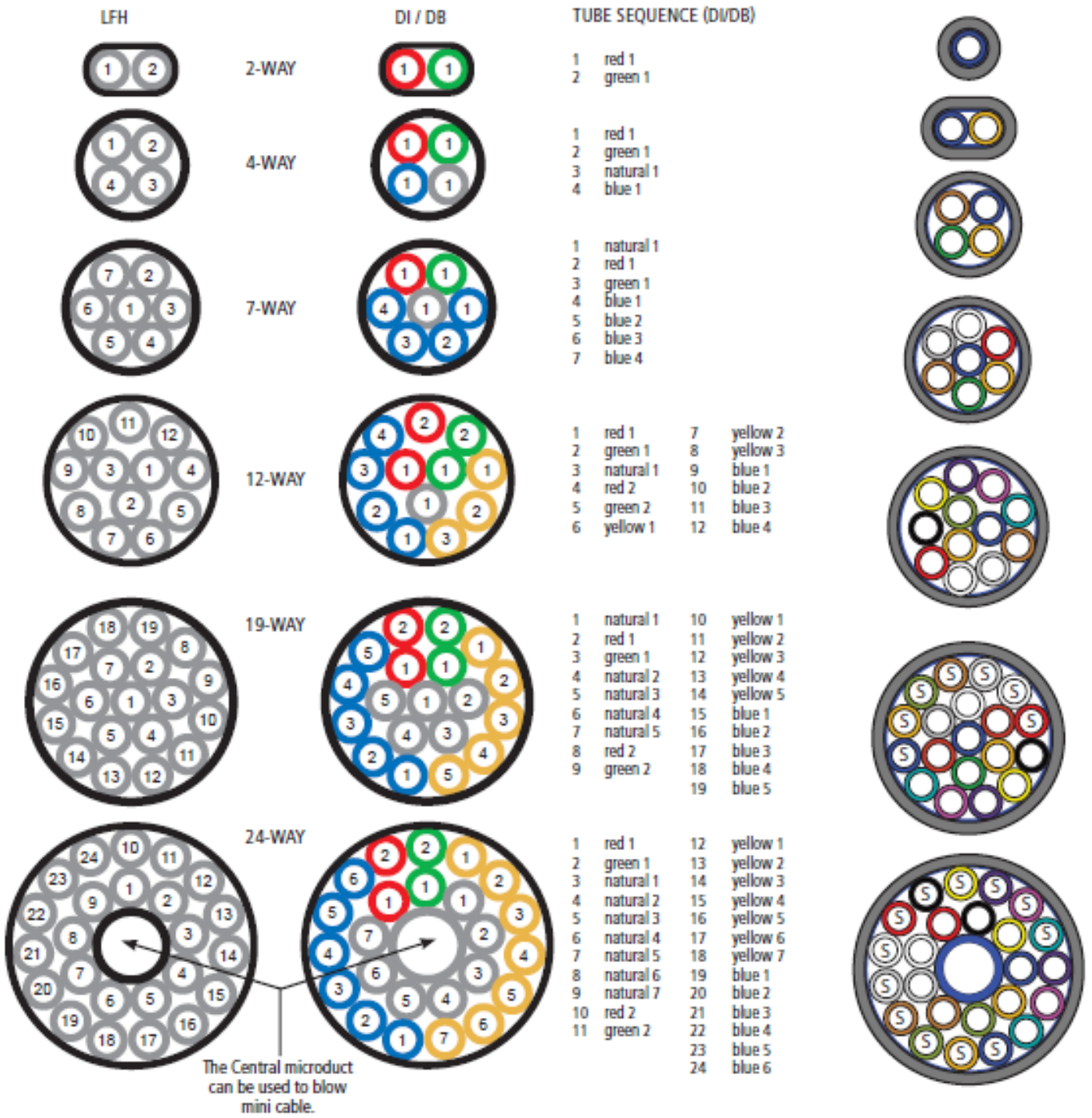
ABF Microduct Network – Non-Residential Building

- Pros
  - Good for **high**, **concealed** and **congested** false ceiling
  - No hacking
  - No noise, no pollution
  - Fast (Expedite deployment)
  - Minimize environmental impact

- Cons
  - Cost higher
  - Cable management system
  - Planning of fibre tubing to tenants

ABF Microduct with Tube Patch Panels in Existing Riser





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ABF Microduct Sizes And Micro Fibre

Microduct size mm	Microcable FU fibre count				
	2	4	6	8	12
3.0/2.1	✓	✓			
5.0/3.5	✓	✓	✓	✓	✓
8.0/6.0	✓	✓	✓	✓	✓

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ABF Microduct Installation Tools

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Factors Which Permit Greater Blow Distances

- Smaller fibre product (lower weight)
- Larger microduct
- More air pressure, eg use 13 bar instead of 10 bar.
- Straighter route
- Downwards direction, eg down a building or hill rather than up
- Improved fibre product/tube design

Considerations

- Minimium **2 microducts** per tenant/unit
- 2 microducts or **more may be needed**, depending on the type of business (e.g. security, bank. Data Centre…)
- Slack allowance of approx. **5 meters** per tenant/unit & to be coiled near the main services access entry and inside the unit.
- Labeling on the ABF Microduct Cables (eg: T03-24W (5/3.5) P2 (1 – 24)
- **Labeling** on both ends of the ABF microduct
  - At Tenant location: refer to the MDF/riser location
  - At MDF/Riser: refer to the tenant/unit address
- **Retrieval of fibre cable from the ABF microduct upon termination of service (Term & Conditions that all Operators must comply)**

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3

ABF Microduct Network Planning - Standard and Requirements for Fibre Ready Scheme

A) Existing Buildings

B) Existing Small Buildings and New Buildings

Qualified ABF installer has to produce the ABF installation certificate, which is issued by the ABF manufacturer

Legend For ABF Microduct Planning & Installation

T01-24W(5/3.5)

The Proposed 1st 24Ways Indoor ABF Microduct from MDF/Riser

# 04-01
P2(5-6)
190.0m

2 x ABF Microduct from TPP nos 2 - Port 5 & 6 are coiled 5.0m at unit address #04-01.

Stump [4]
P2(17-20)
200.0m

Proposed 4 x ABF Microduct from TPP nos 2 Ports 17 to 20 are stump and coiled above ceiling for future expansion.

T04 & T05 - 24W(5/3.5)
P4, & P5(1 - 24) - 185.0m

Riser 2

The Proposed 4th & 5th 24 ways ABF Microduct Main Link from (MDF Room) TPP nos 4 & 5 are connected and linked to Riser nos 2, The total length is 185.0m.

MDF

MDF Room

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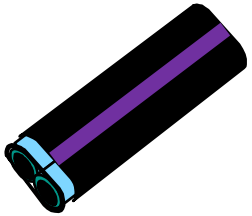
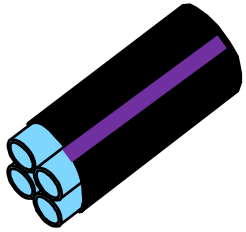
Microduct Structure

Indoor grade

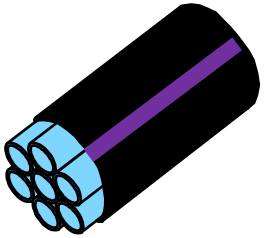
All come with low smoke, zero halogen (LSZH) outer jacket & purple colour strip)



2 way 5mm/3.5mm



4 way 5 mm/3.5mm



7 way 5 mm/3.5mm

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3A Existing Buildings – Commercial Buildings

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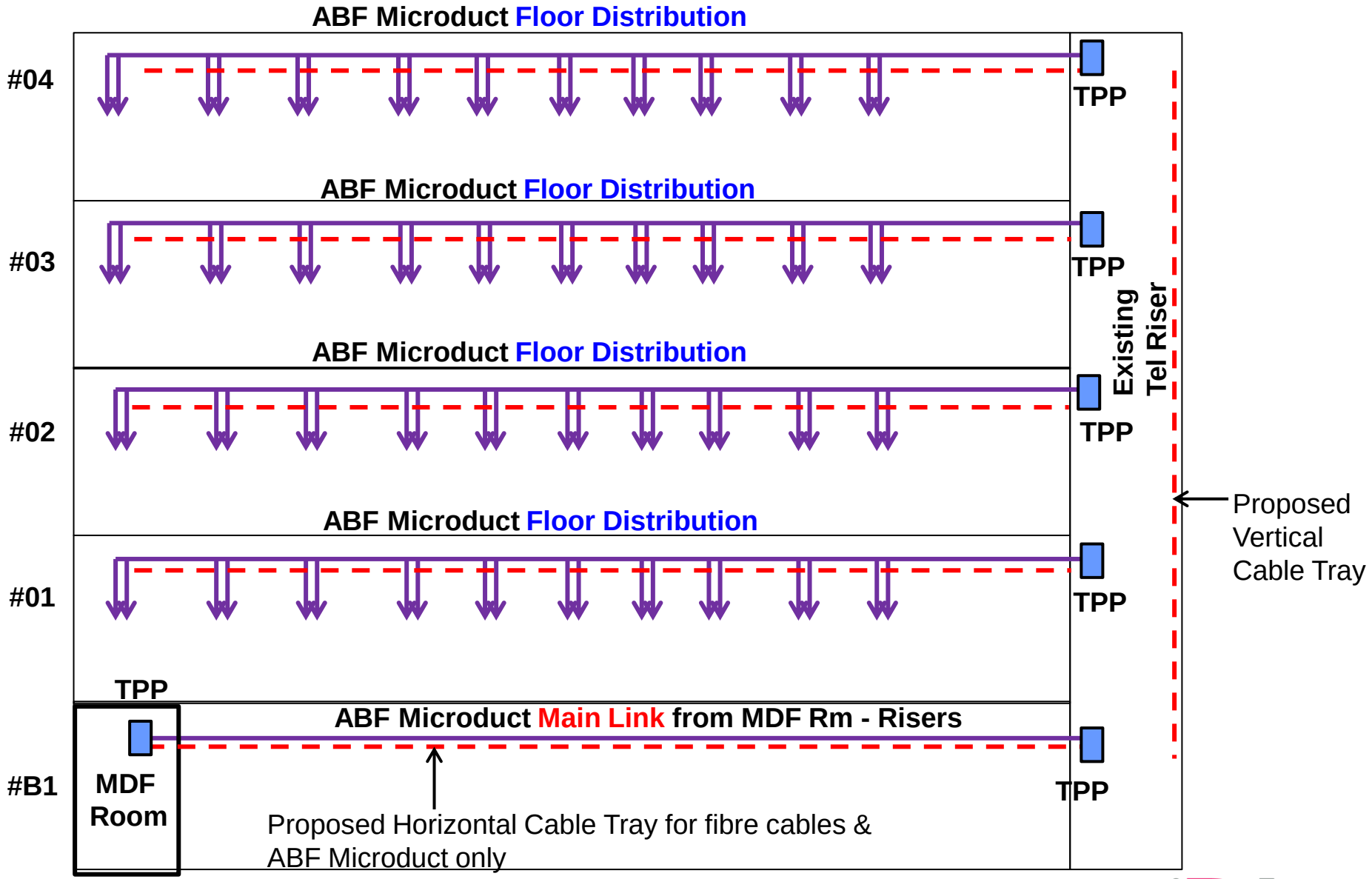
ABF Microduct Floor Distribution and Main Link Network



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ABF Microduct Installation Standard and Requirements For Existing Non-Residential Buildings

Requirements For Floor Distribution Network from Tel Riser to Floor Units.

1. 2 nos of ABF Microduct with sizes **(5/3.5)** to be provided for each unit
2. Maximum serving units up to **60 units** per Riser/Floor
3. Microduct with end cap to be **coiled 5.0m** near the main services access entry inside the customers end unit.
4. Labelling must be provided at the user end and with **cross reference** back to serving Riser
5. All Microduct must be **properly connected** to a Tube Patch Panel(TPP) at Riser
6. Position of TPP to be mounted below **2.1m** of height for easy connectivity
7. ABF Microduct Installer must ensure that the material used are **safe** to their workers and the Public in the area
8. ABF Microduct Installer must also ensure that the products used to be enable to last for **10 to 15 years** after the ABF Microduct installation
9. All (2/4/7/12/19/24)W Microduct must come with **LSZH outer jacket & purple colour stripe**
10. The ABF Microduct Floor Distribution Network's Record to be **keep and maintained by BM/Building Owner**

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ABF Microduct Installation Standard and Requirements For Existing Non-Residential Buildings

Requirements For Main Link Network from MDF Room/TER to Risers

1. Use only **24W(5/3.5)** ABF Microduct link between MDF Room/TER to Risers
2. Use only **12 cores** ABF cables per tube
3. Both ABF Microduct end at MDF Room/TER and Riser end must be properly connected to Tube Patch Panel(TPP)
4. Both TPP at MDF Room/TER and Riser end must be **cross reference** to each other
5. Position of Tube Patch Panels(TPP) to be mounted below **2.1m** of height
6. ABF Microduct Installer must ensure that the material used are **safe** to their workers and also to the Public in the area
7. ABF Microduct Installer must also be ensured that the products used to be enable to last for **10 to 15 years** after the ABF Microduct installation
8. All 24W Microduct must come with **LSZH outer jacket & purple colour stripe**
9. The ABF Microduct Main Link Network's Record to be keep and maintained by BM/Building Owner

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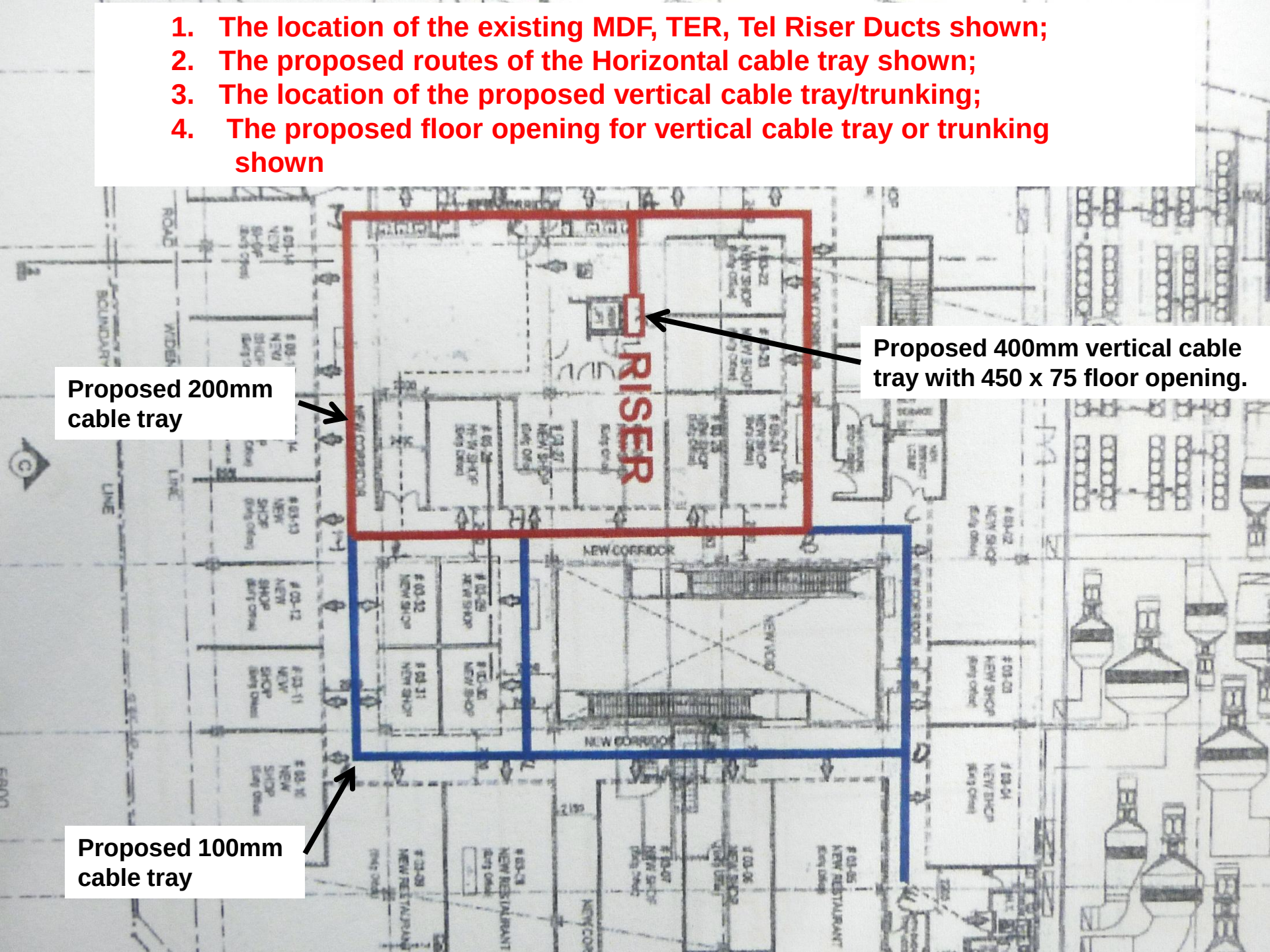
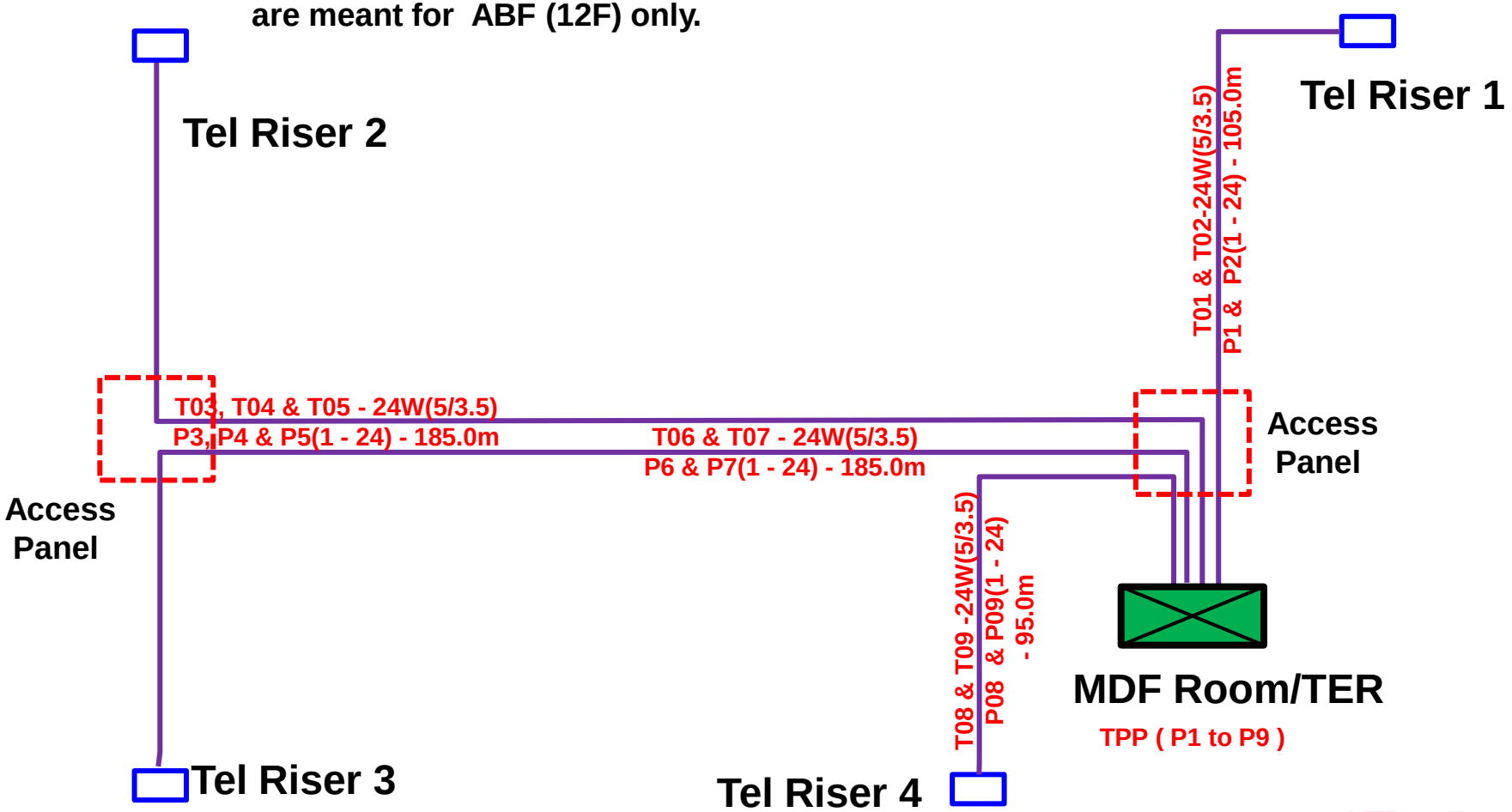
1. The location of the existing MDF, TER, Tel Riser Ducts shown;
2. The proposed routes of the Horizontal cable tray shown;
3. The location of the proposed vertical cable tray/trunking;
4. The proposed floor opening for vertical cable tray or trunking shown



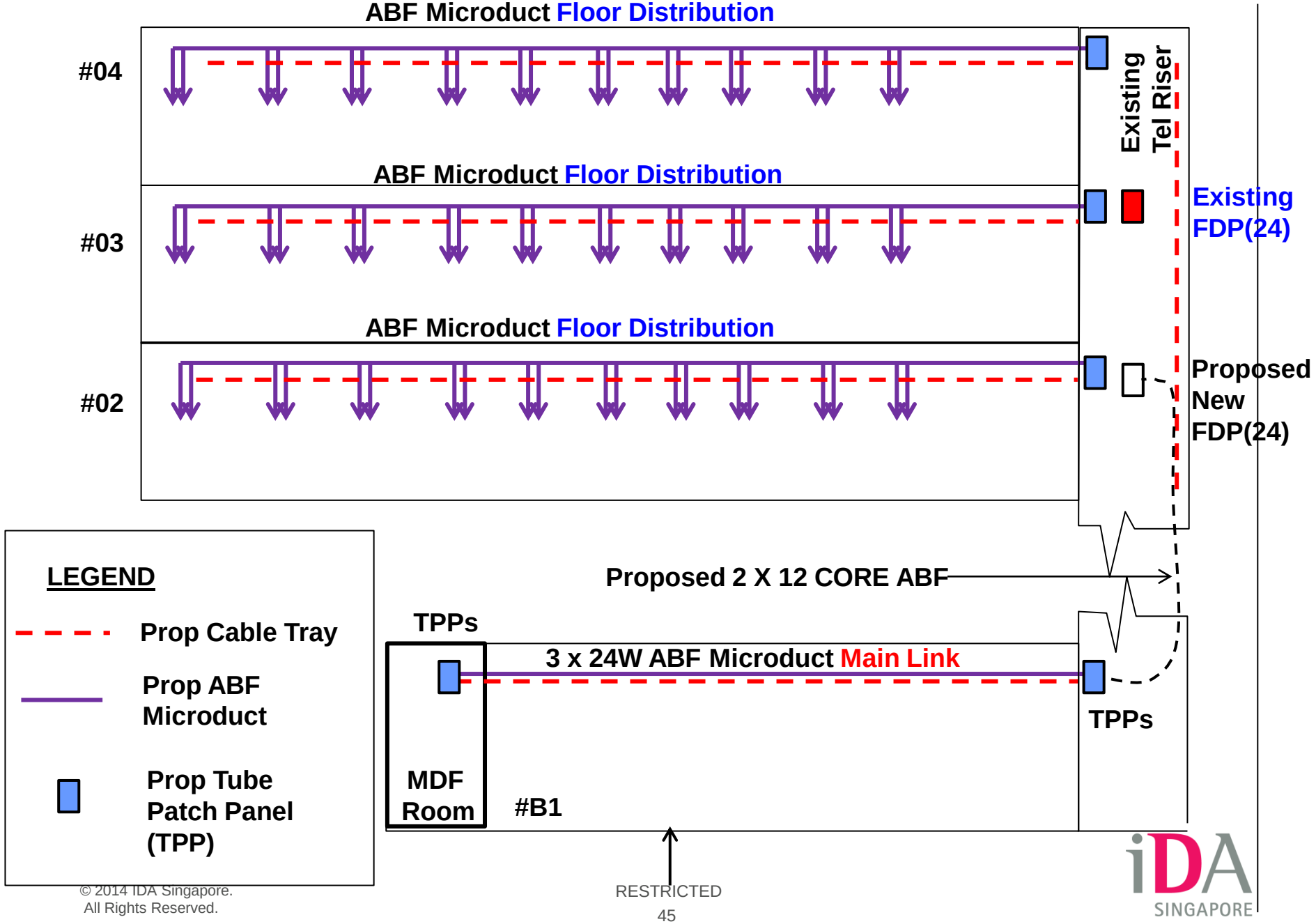
The proposed ABF Microduct Main Link 24W(5/3.5) Routes Plan From MDF Room/TER to Tel Risers

Note:

1. **ABF Microducts 24W(5/3.5) Main Link from MDF Room/TER to Risers are meant for ABF (12F) only.**



ABF Microduct Floor Distribution and Main Link Network



ABF Microduct Main Link Network 24W(5/3.5) TPP's Record
(To be updated and maintained by BM for the allocation of tube to Operators)

Building Name :

Building Address :

Flr Level	MDF/TER to	Tel Riser	TPP		Duct(5/3.5) Distance	Duct Status	Use ABF (12F) only	Operator	Remarks
			Panel Nos	Port nos					
#B1	MDF	R1	P1	1	105.0m	A	12F	SingTel	3-Jun-14
#B1	MDF	R1	P1	2	105.0m	A	12F	SingTel	3-Jun-14
#B1	MDF	R1	P1	3	105.0m	A	12F	SingTel	3-Jun-14
#B1	MDF	R1	P1	4	105.0m	A	12F	StarHub	15-Jun-14
#B1	MDF	R1	P1	5	105.0m	A	12F	StarHub	15-Jun-14
#B1	MDF	R1	P1	6	105.0m	A	12F	StarHub	15-Jun-14
#B1	MDF	R1	P1	7	105.0m	A	12F	M1	19-Jun-14
#B1	MDF	R1	P1	8	105.0m	A	12F	M1	19-Jun-14
#B1	MDF	R1	P1	9	105.0m	A	12F	M1	19-Jun-14
#B1	MDF	R1	P1	10	105.0m				
#B1	MDF	R1	P1	11	105.0m				
#B1	MDF	R1	P1	12	105.0m				
#B1	MDF	R1	P1	13	105.0m				
#B1	MDF	R1	P1	14	105.0m				
#B1	MDF	R1	P1	15	105.0m				
#B1	MDF	R1	P1	16	105.0m				
#B1	MDF	R1	P1	17	105.0m				
#B1	MDF	R1	P1	18	105.0m				
#B1	MDF	R1	P1	19	105.0m				
#B1	MDF	R1	P1	20	105.0m				
#B1	MDF	R1	P1	21	105.0m				
#B1	MDF	R1	P1	22	105.0m				
#B1	MDF	R1	P1	23	105.0m				
#B1	MDF	R1	P1	24	105.0m				

ABF Microduct Installer :

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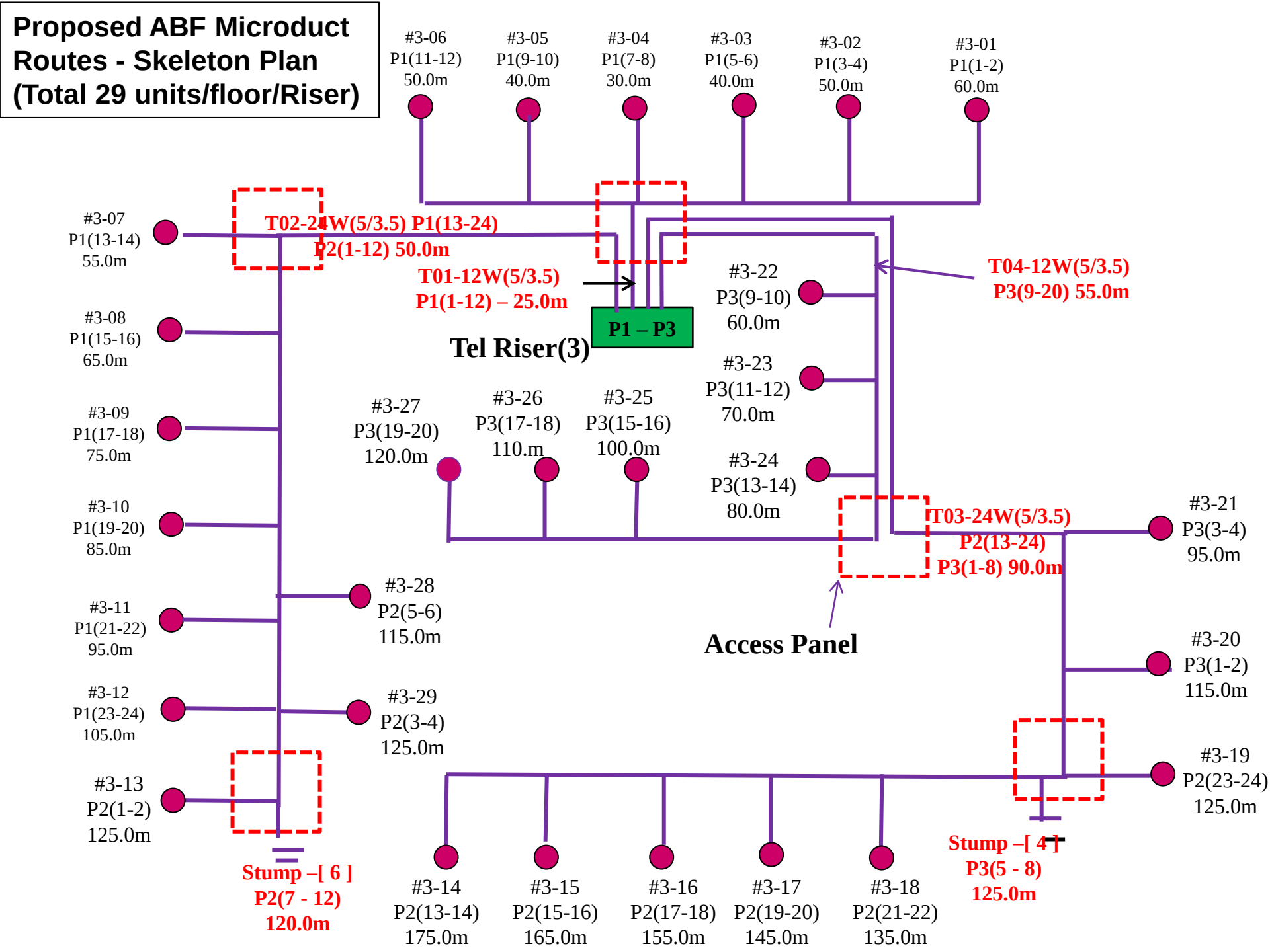
Proposed ABF Microduct Routes - Skeleton Plan (Total 29 units/floor/Riser)
#3-06 P1(11-12) 50.0m
#3-05 P1(9-10) 40.0m
#3-04 P1(7-8) 30.0m
#3-03 P1(5-6) 40.0m
#3-02 P1(3-4) 50.0m
#3-01 P1(1-2) 60.0m
#3-07 P1(13-14) 55.0m
T02-24W(5/3.5) P1(13-24) P2(1-12) 50.0m
T01-12W(5/3.5) P1(1-12) – 25.0m
P1 – P3
Tel Riser(3)
T04-12W(5/3.5) P3(9-20) 55.0m
#3-22 P3(9-10) 60.0m
#3-08 P1(15-16) 65.0m
#3-23 P3(11-12) 70.0m
#3-09 P1(17-18) 75.0m
#3-27 P3(19-20) 120.0m
#3-26 P3(17-18) 110.m
#3-25 P3(15-16) 100.0m
#3-24 P3(13-14) 80.0m
#3-10 P1(19-20) 85.0m
T03-24W(5/3.5) P2(13-24) P3(1-8) 90.0m
#3-21 P3(3-4) 95.0m
#3-28 P2(5-6) 115.0m
Access Panel
#3-11 P1(21-22) 95.0m
#3-20 P3(1-2) 115.0m
#3-12 P1(23-24) 105.0m
#3-29 P2(3-4) 125.0m
#3-19 P2(23-24) 125.0m
#3-13 P2(1-2) 125.0m
Stump –[4] P3(5 - 8) 125.0m
Stump –[6] P2(7 - 12) 120.0m
#3-14 P2(13-14) 175.0m
#3-15 P2(15-16) 165.0m
#3-16 P2(17-18) 155.0m
#3-17 P2(19-20) 145.0m
#3-18 P2(21-22) 135.0m

ABF Microduct Floor Distribution Network 2/7/12/19/24W(5/3.5) TPP's Record (to be updated & maintained by BM for the allocation of ABF Tube to Operators)

Building Name :

Building Address :

Flr Level	MDF/TER/Riser	TPP		Duct Distance	Duct Status	Serving Unit	Operator	Remarks
		Panel Nos	Port nos					
#03	R3	P1	1	90.0m	A	#04-01	SingTel	5-Jun-14
#03	R3	P1	2	90.0m		#04-01		
#03	R3	P1	3	100.0m		#04-02		
#03	R3	P1	4	100.0m		#04-02		
#03	R3	P1	5	110.0m		#04-03		
#03	R3	P1	6	110.0m		#04-03		
#03	R3	P1	7	120.0m		#04-04		
#03	R3	P1	8	120.0m		#04-04		
#03	R3	P1	9	130.0m		#04-05		
#03	R3	P1	10	130.0m		#04-05		
#03	R3	P1	11	140.0m		#04-06		
#03	R3	P1	12	140.0m		#04-06		
#03	R3	P1	13	100.0m	A	#05-01	StarHub	3-Jun-14
#03	R3	P1	14	100.0m		#05-01		
#03	R3	P1	15	110.0m		#05-02		
#03	R3	P1	16	110.0m		#05-02		
#03	R3	P1	17	120.0m		#05-03		
#03	R3	P1	18	120.0m		#05-03		
#03	R3	P1	19	130.0m		#05-04		
#03	R3	P1	20	130.0m		#05-04		
#03	R3	P1	21	140.0m		#05-05		
#03	R3	P1	22	140.0m		#05-05		
#03	R3	P1	23	150.0m	A	#05-06	M1	29-May-14
#03	R3	P1	24	150.0m		#05-06		

ABF Microduct Installer :

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3B

Existing Small Buildings and New Buildings

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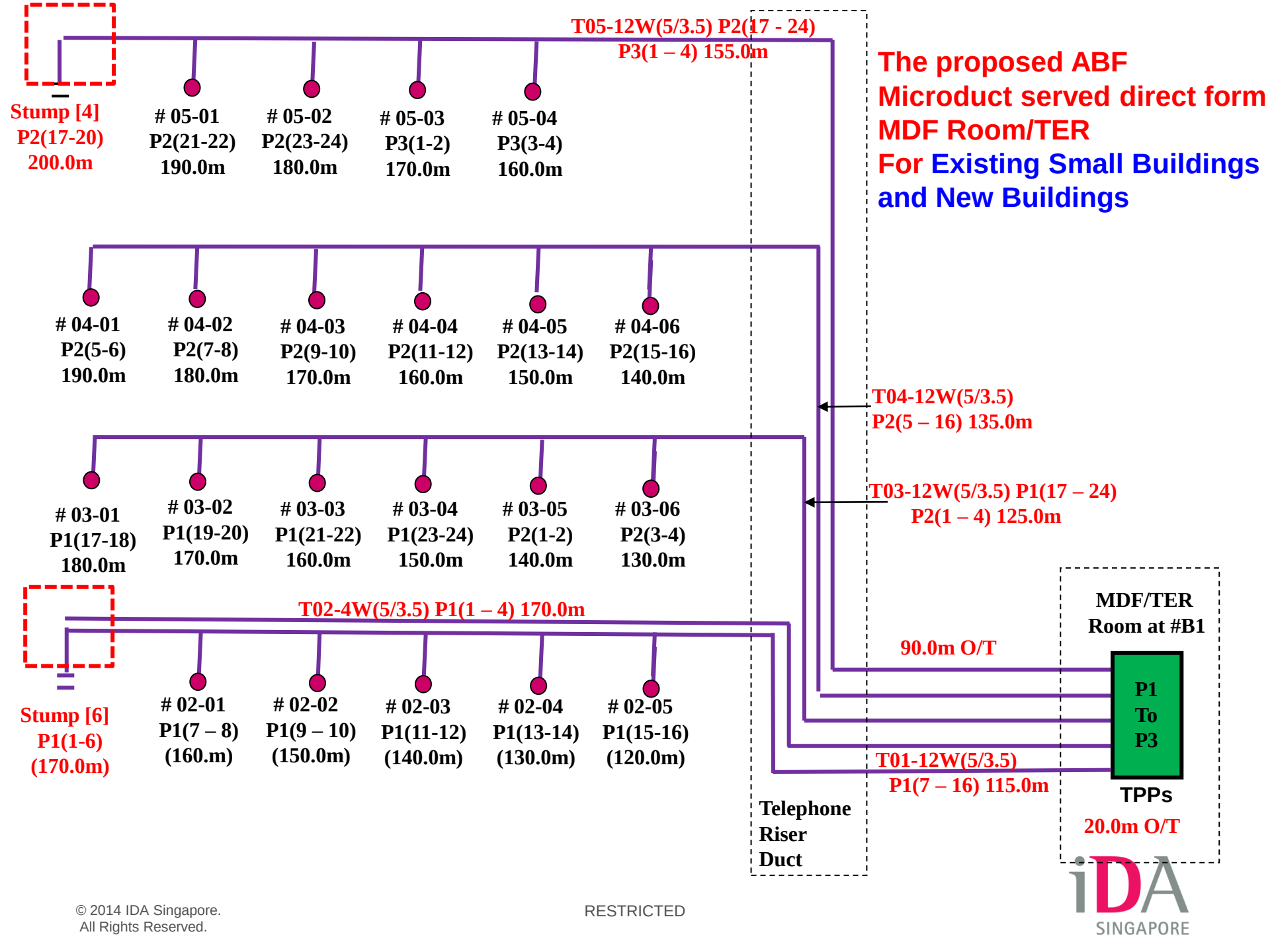

Requirements For FRS

Existing Small Buildings (Non-Residential)

1. 2 nos of ABF Microduct with sizes **(5/3.5)** to be provided for each unit
2. Maximum serving units up to about **120 units** per Building
3. Microduct with end cap to be **coiled 5.0m** near the main services access entry inside the customers end unit.
4. Labelling the ABF Microduct cables at **both end** or at every **25m interval**.
5. Labelling must be provided at the user end and with **cross reference** back to serving TPPs at MDF Room/TER.
6. All Microduct must be **properly connected** to a Tube Patch Panel(TPP) with 19 Inch rack at MDF Room/TER
7. ABF Microduct Installer must ensure that the material used are **safe** to their workers and the Public in the area
8. ABF Microduct Installer must ensure that the products used to be able to last for **10 to 15 years** after the ABF Microduct installation
9. All (2/4/7/12/19/24)W Microduct must come with **LSZH outer jacket & purple colour stripe**
10. The ABF Microduct TPP's Record to be **keep and maintained by BM /Building Owner**
11. Use 2/4/6/8/12 cores ABF cable per ABF microduct and **all Operator's FDPs** to be mounted at MDF Room/TER only

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Requirements For FRS

New Buildings (Non-Residential)

1. All Telephone facilities must be comply with **COPIF 2013** and to be approved by **TFCC**
2. **The requirement** of the FRS is in additional to the above
3. 2 nos of ABF Microduct with sizes **(5/3.5)** to be provided for each unit
4. Microduct with end cap to be **coiled 5.0m** near the main services access entry inside the customers end unit.
5. Labelling the ABF Microduct cables at **both end** or at every **25m interval**.
6. Labelling must be provided at the user end and with **cross reference** back to serving TPPs at MDF Room/TER.
7. All Microduct must be **properly connected** to a Tube Patch Panel(TPP) with 19 Inch Rack at MDF Room/TER.
8. ABF Microduct Installer must ensure that the material used are **safe** to their workers and the Public in the area
9. ABF Microduct Installer must ensure that the products used to be able to last for **10 to 15 years** after the ABF microduct installation
10. All (2/4/7/12/19/24)W Microduct must come with **LSZH outer jacket & purple colour stripe.**
11. The ABF Microduct TPP's Record to be **keep and maintained by BM/Building Owner.**
12. Use 2/4/6/8/12 cores ABF cable per ABF microduct and **all Operator's FDPs** to be mounted at MDF Room/TER only

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ABF Microduct Building Distribution Network 2/4/7/12/19/24W(5/3.5) TPP's Record (to be updated & maintained by BM for the allocation of ABF Tube to Operators)

Building Name :

Building Address :

Flr Level	MDF/TER/Riser	TPP		Duct Distance	Duct Status	Serving Unit	Operator	Remarks
		Panel Nos	Port nos					
#B1	MDF	P1	1	170.0m		Stump		
#B1	MDF	P1	2	170.0m		Stump		
#B1	MDF	P1	3	170.0m		Stump		
#B1	MDF	P1	4	170.0m		Stump		
#B1	MDF	P1	5	170.0m		Stump		
#B1	MDF	P1	6	170.0m		Stump		
#B1	MDF	P1	7	160.0m		#02-01		
#B1	MDF	P1	8	160.0m		#02-01		
#B1	MDF	P1	9	150.0m	A	#02-02	StarHub	10-Jun-14
#B1	MDF	P1	10	150.0m		#02-02		
#B1	MDF	P1	11	140.0m		#02-03		
#B1	MDF	P1	12	140.0m		#02-03		
#B1	MDF	P1	13	130.0m	A	#02-04	SingTel	3-Jun-14
#B1	MDF	P1	14	130.0m		#02-04		
#B1	MDF	P1	15	120.0m		#02-05		
#B1	MDF	P1	16	120.0m		#02-05		
#B1	MDF	P1	17	180.0m		#03-01		
#B1	MDF	P1	18	180.0m		#03-01		
#B1	MDF	P1	19	170.0m		#03-02		
#B1	MDF	P1	20	170.0m		#03-02		
#B1	MDF	P1	21	160.0m		#03-03		
#B1	MDF	P1	22	160.0m		#03-03		
#B1	MDF	P1	23	150.0m	A	#03-04	M1	29-May-14
#B1	MDF	P1	24	150.0m		#03-04		

ABF Microduct Installer :

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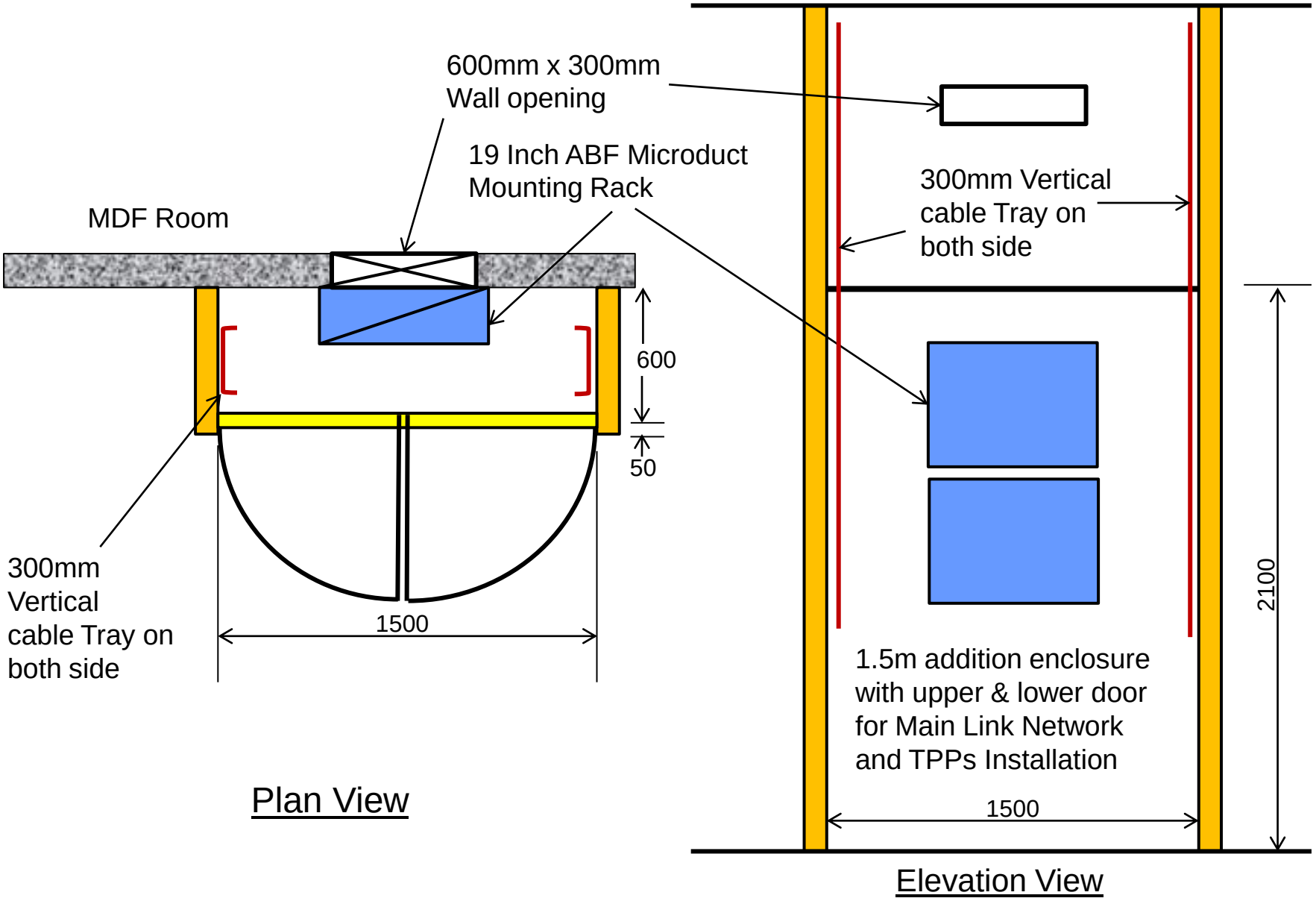
Additional Enclosure (Riser & MDF Room) - Full Height
For ABF Microduct & TPPs Installation



Subject to approval from the relevant party (e.g. Building Owner, BCA)

Identify Stump ABF Tube For Re-distribution or Maintenance

1. The stumped ABF cable tubes at the far end are meant for future re-partition of units only, and the redistribution of the stumped ABF Tubes to be **done by BM.**

2. Contractor to request for **floor plan** with ABF Cable tray route & the ABF Microduct **Skeleton Plan** from BM

3. From the above, the following can be checked via the **cable labelling** from the skeleton plan:
   a) Location of the stump Tube and distance from TPP; and
   b) Stump spare locating in which ABF Microduct cables

4. Use a proper **cutter** to remove the ABF cable jacket carefully, and identify the spare ABF ducts, re-confirm it with the ABF ‘s TPP record before cutting it for branching into the new units

5. Upon completion of the re-distribution, contractors to inform the BM so that both the ABF’s TPP record and IDA Portal can be **updated** by them

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How to Provide Service to Customers By using ABF Microduct Network

1. Operator to Up-date their **DPs Computer System** by down load the data provided from IDA Portal.

2. Operator to check & decide to use traditional matters or ABF Microduct Network before issuing out the Service Order

3. The Customer/TelCo Operator to show BM the **Service Order for the allocation of ABF Tube.**

4. BM to check ABF's TPP records **to assign** the allocated ABF tube to Operator for providing the service.

5. Operator to test on the **Assign/allocated** ABF tube at MDF room/TER or Riser duct end, before blowing ABF to serve the customer

6. Upon completion of ABF installation, BM to update their ABF's TPP record

4 Building Plans Submission Requirements

Building Plans Submission Requirements

1. The building location plan

2. Floor plan with the following shown
   a) The location of the existing MDF, TER, Tel Riser Ducts with photos
   b) The proposed Horizontal cable tray routes
   c) The proposed vertical cable tray/trunking location
   d) The proposed floor opening for vertical cable tray or trunking
   e) The proposed 600mm x 600mm Access Panels
   f) The proposed additional enclosure for TPPs and FDPs installation

3. The proposed ABF Microduct **specification** and the **manufacturer**

4. Any amendment or changed in proposal must be approved by IDA

5. The costing sheets of the above and the **proposed installation schedules**

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As-Built Building Plans and Record Submission

1. Floor plan with the following shown to be uploaded into **IDA Portal**;
   a) The as-built Horizontal cable tray routes
   b) The as-built vertical cable tray/trunking location with photos
   c) The as-built floor opening for vertical cable tray or trunking with photos
   d) The as-built Access Panels with photos.
   e) The as-built skeleton ABF Microduct cables layout plans.
   f) The as-built additional enclosure for TPPs and FDP Boxes with photos

2. The as-built ABF Microduct Floor Distribution and Main Link Networks **skeleton Plan** for each Tel Risers and MDF Room/TER respectively with **the ABF microduct Cables information, nos of Access Panels and the serving address** shown to be uploaded into **IDA's Portal**.

3. The as-built Floor Distribution Network's TPPs Record for all Risers to be updated and maintained by BM

4. The as-built Main Link Network's TPPs Record from MDF Room/TER to be updated and maintained by BM

5. The Final costing sheets with Invoice of the above

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Costing Sheet For Submission – 1/2

Summary (#B1 to 10th sty)						
S/N	Description	Unit	Units Rates	Length /Nos	Total Cost	Remarks
1	Supply and install horizontal/vertical 100mm cable tray with all accessories.	m				
	Supply and install horizontal/vertical 200mm cable tray with all accessories.	m				
	Supply and install horizontal/vertical 300mm cable tray with all accessories.	m				
	Supply and install horizontal/vertical 450mm cable tray with all accessories.	m				
2	Supply and install vertical 100mm x 50mm Metal Trunking with all accessories	m				
	Supply and install vertical 100mm x 75mm Metal Trunking with all accessories	m				
	Supply and install vertical 100mm x 100mm Metal Trunking with all accessories	m				
	Supply and install vertical 150mm x 50mm Metal Trunking with all accessories	m				
	Supply and install vertical 150mm x 75mm Metal Trunking with all accessories	m				
	Supply and install vertical 150mm x 100mm Metal Trunking with all accessories	m				
	Supply and install vertical 200mm x 50mm Metal Trunking with all accessories	m				
	Supply and install vertical 200mm x 75mm Metal Trunking with all accessories	m				
	Supply and install vertical 200mm x 100mm Metal Trunking with all accessories	m				
3	Supply and install LSZH ABF Microduct 2W (5/3.5) with all accessories.	m				
	Supply and install LSZH ABF Microduct 4W (5/3.5) with all accessories.	m				
	Supply and install LSZH ABF Microduct 7W (5/3.5) with all accessories.	m				
	Supply and install LSZH ABF Microduct 12W (5/3.5) with all accessories.	m				
	Supply and install LSZH ABF Microduct 19W (5/3.5) with all accessories.	m				
	Supply and install LSZH ABF Microduct 24W (5/3.5) with all accessories.	m				
4	Supply and install 19" Tube Patch Panel Rack (305mm)	nos				
	Supply and install 19" Tube Patch Panel Rack (610mm)	nos				
5	24 Ports Tube Patch Panel (1U) with all accessories	nos				
6	Supply and install 600 x 600 Access Panels	nos				
7	a) Boring of 50/60 mm holes through RC wall/floor slab (100 to 200)mm thick.	nos				
	b) Boring of 50/60 mm holes through RC wall/floor slab (200 to 300)mm thick.	nos				
8	Construct/Build (1200 x 550) Additional Enclosure.	nos				
	Construct/Build (1500 x 650) Additional Enclosure.	nos				
9	Others (PE, Planning & Design Cost ….)					
	G-Total Cost =					

Costing Sheet For Submission – 2/2

Sub-Total (#B1 to #01)						
S/N	Description	Unit	Units Rates	Length /Nos	Total Cost	Remarks
	Level (#B1)					
1	Supply and install horizontal/vertical 200mm cable tray with all accessories.	m	$ 75.00	100	$ 7,500.00	
	Supply and install horizontal/vertical 300mm cable tray with all accessories.	m	$ 85.00	35	$ 2,975.00	
2	Supply and install LSZH ABF Microduct 2W (5/3.5) with all accessories.	m	$ 2.50	150	$ 375.00	
	Supply and install LSZH ABF Microduct 19W (5/3.5) with all accessories.	m	$ 8.50	200	$ 1,700.00	
	Supply and install LSZH ABF Microduct 24W (5/3.5) with all accessories.	m	$ 9.50	150	$ 1,425.00	
3	Supply and install 19" Tube Patch Panel Rack (305mm)	nos	$ 70.00	4	$ 280.00	
4	24 Ports Tube Patch Panel (1U) with all accessories	nos	$ 20.00	8	$ 160.00	
5	Supply and install 600 x 600 Access Panels	nos	$ 75.00	3	$ 225.00	
6	Construction/Build (1200 x 550) Additional Enclosure.	nos	$ 1,000.00	2	$ 2,000.00	
	Level (#01)					
1	Supply and install horizontal/vertical 200mm cable tray with all accessories.	m	$ 75.00	150	$ 11,250.00	
	Supply and install horizontal/vertical 300mm cable tray with all accessories.	m	$ 85.00	50	$ 4,250.00	
2	Supply and install LSZH ABF Microduct 2W (5/3.5) with all accessories.	m	$ 2.50	150	$ 375.00	
	Supply and install LSZH ABF Microduct 24W (5/3.5) with all accessories.	m	$ 9.50	250	$ 2,375.00	
3	Supply and install 19" Tube Patch Panel Rack (305mm)	nos	$ 70.00	4	$ 280.00	
4	24 Ports Tube Patch Panel (1U) with all accessories	nos	$ 20.00	12	$ 240.00	
5	Supply and install 600 x 600 Access Panels	nos	$ 75.00	8	$ 600.00	
6	Construction/Build (1200 x 550) Additional Enclosure.	nos	$ 1,000.00	2	$ 2,000.00	
	Sub-Total Cost =				**$ 38,010.00**	

Sample of Tender Specifications

STANDARD SPECIFICATIONS FOR CABLE TRAY, METAL TRUNKING AND ABF MICRODUCT CABLES INSTALLATION

TECHNICAL SPECIFICATIONS

1. GENERAL

1.1 ABBREVIATIONS, DEFINITIONS AND INTERPRETATIONS

1.1.1 In the Specifications, the following words and expressions shall have the meanings hereby assigned to them except where the context otherwise requires:

as required	:	shall mean as required or as shown or as indicated in the Drawings and/or Specifications
as shown	:	shall mean as required or as shown or as indicated in the Drawings and/or Specifications
as indicated	:	shall mean as required or as shown or as indicated in the Drawings and/or Specifications
as stated	:	shall mean as required or as shown or as indicated in the Drawings and/or Specifications

1.1.2 The following abbreviations are used in these Specifications:

ABF	-	Air Blown Fibre
BIM	-	Building Information Modelling
BM	-	Building Management
BO	-	Building Owner
CAD	-	Computer-Aided Design
COPIF	-	Code of Practice for Info-communication Facilities in Buildings

5

Q & A

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Thank you!