FTTH NETWORK DESIGN SAMPLE

Conventional Cable Application VS Microduct Application

This sample is designed for optical use in South Korea.

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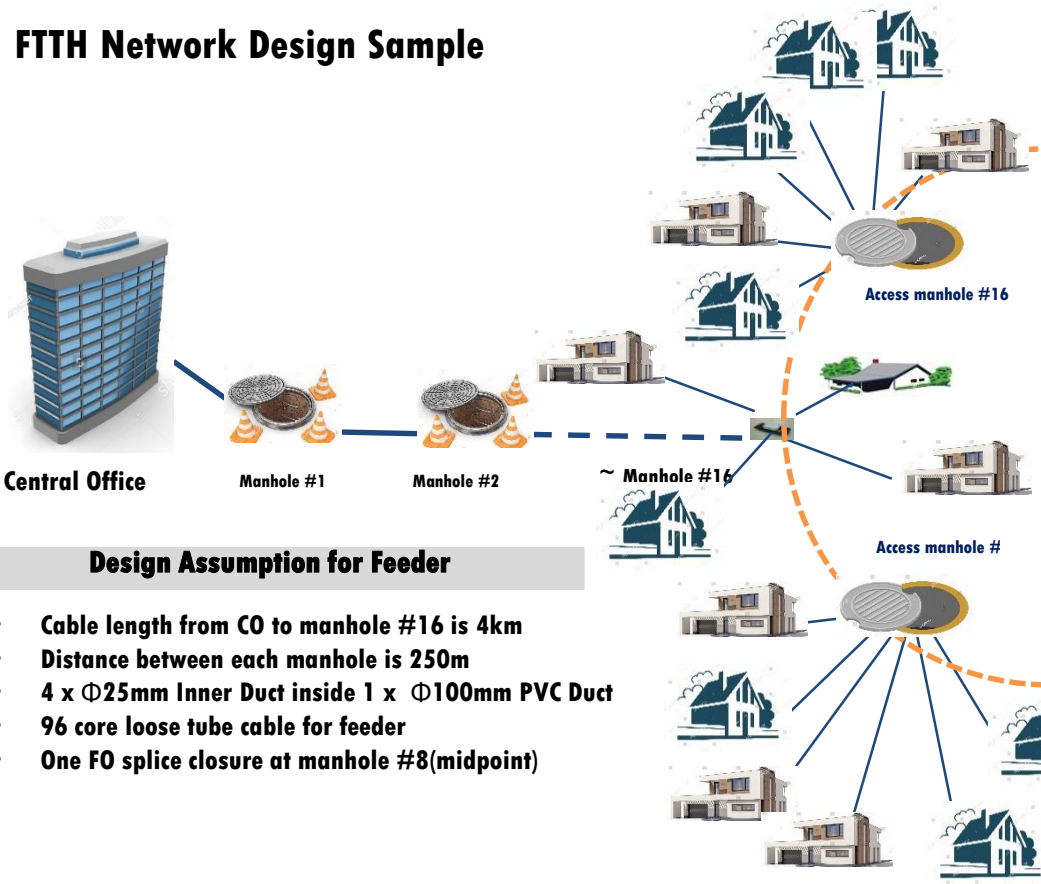
Conventional Application

1.1 FTTH Network Design Sample



Access Network
(100 subscribers)

Design Assumption for Feeder

- Cable length from CO to manhole #16 is 4km
- Distance between each manhole is 250m
- 4 x Φ25mm Inner Duct inside 1 x Φ100mm PVC Duct
- 96 core loose tube cable for feeder
- One FO splice closure at manhole #8(midpoint)

Design Assumption for Access

- Ring topology with manhole distance of 100m
- 6 subscribers at each 16 Access manholes
- 4 subscribers at Feeder manhole #16
- 4 x Φ25mm Inner Duct inside 1 x Φ100mm PVC Duct
- 24 core loose tube cable for distribution
- 1 x Φ50mm from Access manhole to each subscriber
- 2 core loose tube cable for drop
- 100m from manhole to each subscriber
- Splitter accommodated inside closure
- Spiral sleeve for cable protection inside manhole

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1.2. Installation Work Breakdown

•Manhole installation	Total 32 units (16 in feeder and 16 in distribution network each)
•1 x PVC Φ100mm laying	Total 5,700m (4,000m in feeder and 1,700m in distribution network each)
•4 x Inner Duct Φ25mm laying	Total 5,700m (4,000m in feeder and 1,700m in distribution network each)
•96 core FO cable pulling	4,000m
•96 core fiber splice	96 x 1 location
•24 core fiber splice	24 x 17 location
•24 core FO cable pulling	Total 1,700m (17 spans with 100m each)
•1 x PVC Φ50mm laying	Total 10,000m (100 spans with 100m each)
•2 core FO cable pulling	Total 10,000m (100 spans with 100m each)
•FO closure installation	17 locations
•Water block plug in manhole	Total 64 units (32 manholes with 2 units each)
•Wall mount rack	Total 100 units (1 per subscriber)
•Pigtail	Total 296 units (96 inside CO and 2 per subscriber)
•Jumper cord	Total 100 units (1 per subscriber)
•OFD rack	1 unit inside CO
•Splice termination	Total 296 units (96 inside CO and 2 per subscriber)
•Spiral sleeve installation	Total 36 units (1 per manhole with 3m length)

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No.	Work	Description	Unit	Quantity	Material cost(USD)	Labor cost(USD)	Sum(USD)
1	Manhole installation		pcs	32	37,575.01	3,353.94	40,928.94
2	Manhole cover installation		pcs	32	16,457.14	2,232.17	18,689.31
3	PVC duct laying	100mm	100m	57	35,828.57	34,639.55	70,468.12
4	Inner duct laying	4 x Inner Duct	100m	57	14,547.59	23,399.04	37,946.64
5	FO cable pulling	96 core	100m	57	10,186.67	13,207.47	23,394.13
6	Fiber splice	Up to 72 core	core	96		839.13	839.13
7	Fiber splice	13-24 core	core	408		9,510.29	9,510.29
8	FO cable pulling	24 core	100m	17	1,245.05	5,613.17	6,858.22
9	PVC duct laying	50mm	100m	100	34,126.95	42,282.00	76,408.95
10	FO cable pulling	2 core	100m	100	2,523.81	33,018.67	35,542.48
11	FO closure installation		pcs	17	3,561.90	2,779.68	6,341.58
12	Water block plug installation		pcs	64	518.10	5,309.56	5,827.66
13	Optical termination outlet	OTO	pcs	100	4,285.71	4,274.57	8,560.29
14	Pigtail		pcs	296	422.86		422.86
15	Jumper cord		pcs	100	476.19		476.19
16	OFD		pcs	1	476.19	18.64	494.83
17	Splice termination	12 core	core	200		8,741.33	8,741.33
18	Splice termination	72 core	core	96		2,068.57	2,068.57
19	Spiral sleeve installation		pcs	36	308.57	329.38	637.95
20	Splitter	1:8	pcs	16	1,219.05		1,219.05
	Total						355,376.52

Microduct Application

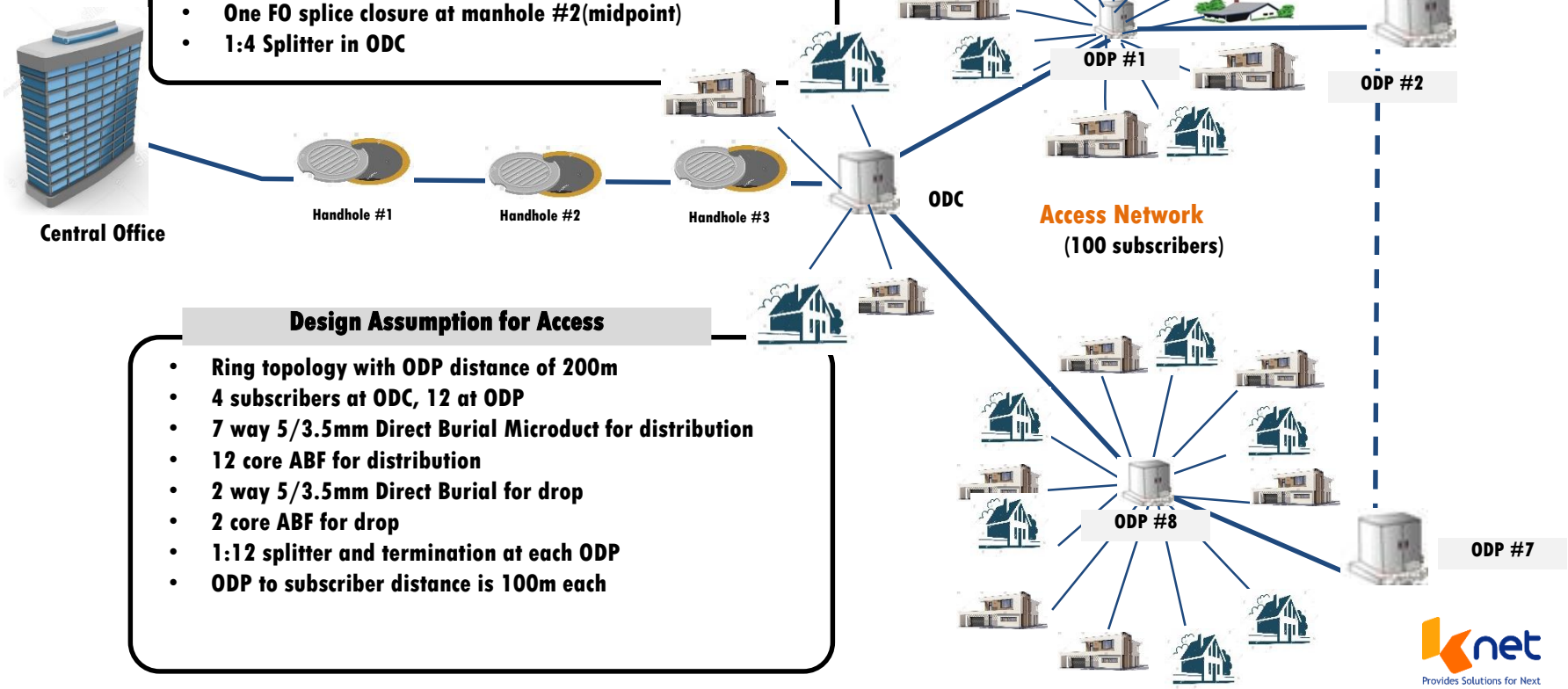
2.1 FTTH Network Design Sample

Legend

ODC: Optical Distribution Cabinet
ODP: Optical Distribution Panel
ABC: Air Blown Cable
ABF: Air Blown Fiber

Design Assumption for Feeder

- Cable length from CO to ODC is 4km
- Distance between each Handhole is 1km
- 7 way 12/10mm Direct Burial Microduct
- 96 core ABC for feeder
- One FO splice closure at manhole #2(midpoint)
- 1:4 Splitter in ODC



Design Assumption for Access

- Ring topology with ODP distance of 200m
- 4 subscribers at ODC, 12 at ODP
- 7 way 5/3.5mm Direct Burial Microduct for distribution
- 12 core ABF for distribution
- 2 way 5/3.5mm Direct Burial for drop
- 2 core ABF for drop
- 1:12 splitter and termination at each ODP
- ODP to subscriber distance is 100m each

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2.2. Installation Work Breakdown

- Handhole/ cover installation3 units each
- DB 7 way 12/10 MD laying 4,000m
- 96 core ABC blowing4,000m
- 96 core fiber splice96 x 1 location
- ODC installation288 core x 1 location
- ODP installation24 core x 8 locations
- DB 7 way 5/3.5 MD laying 1,800m
- 12 core ABF blowing4,000m
- DB 2 way 5/3.5 MD laying 10,000m
- 2 core ABF blowing10,000m
- FO closure installation1 location
- Splitter installation Total 9 units / 1 x 1:4 and 8 x 1:12
- Termination at 12 core ODP 9 units
- Wall mount rack Total 100 units / 1 per subscriber
- Pigtail Total 414 units / 96 inside CO, 2 per subscriber, 100 per ODP, 18 at ODC
- Jumper cord Total 100 units / 1 per subscriber
- OFD rack1 unit inside CO
- Splice termination Total 296 units / 96 inside CO and 2 per subscriber
- Fiber splice in ODP and ODC 18 core
- Branch closure installation Total 10 units / 6x 5/3.5mm and 4 x 12/10

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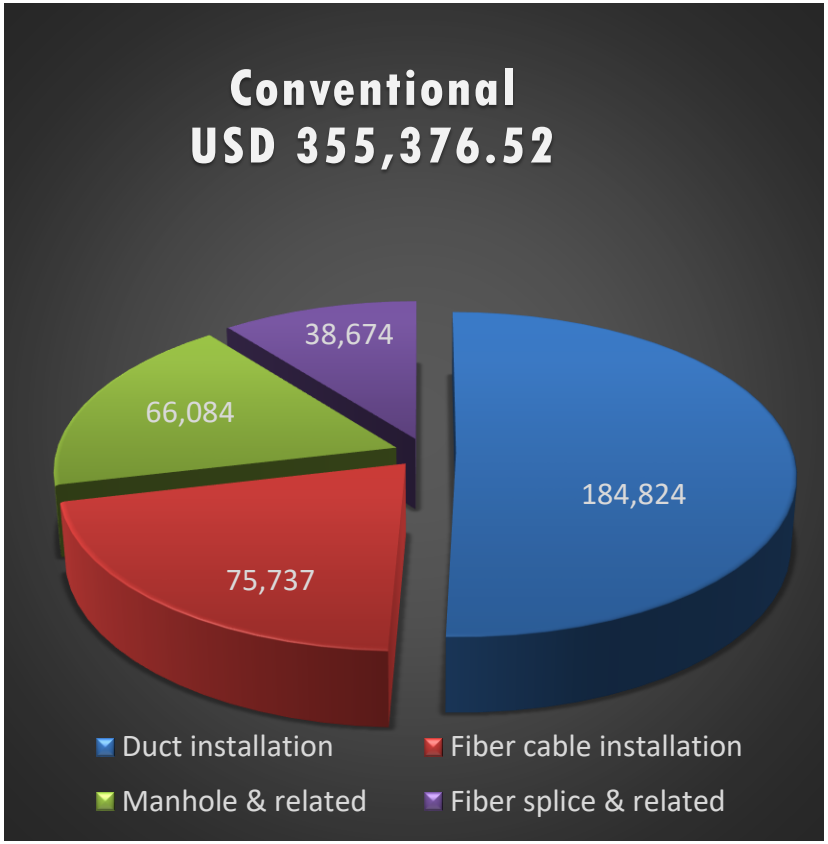
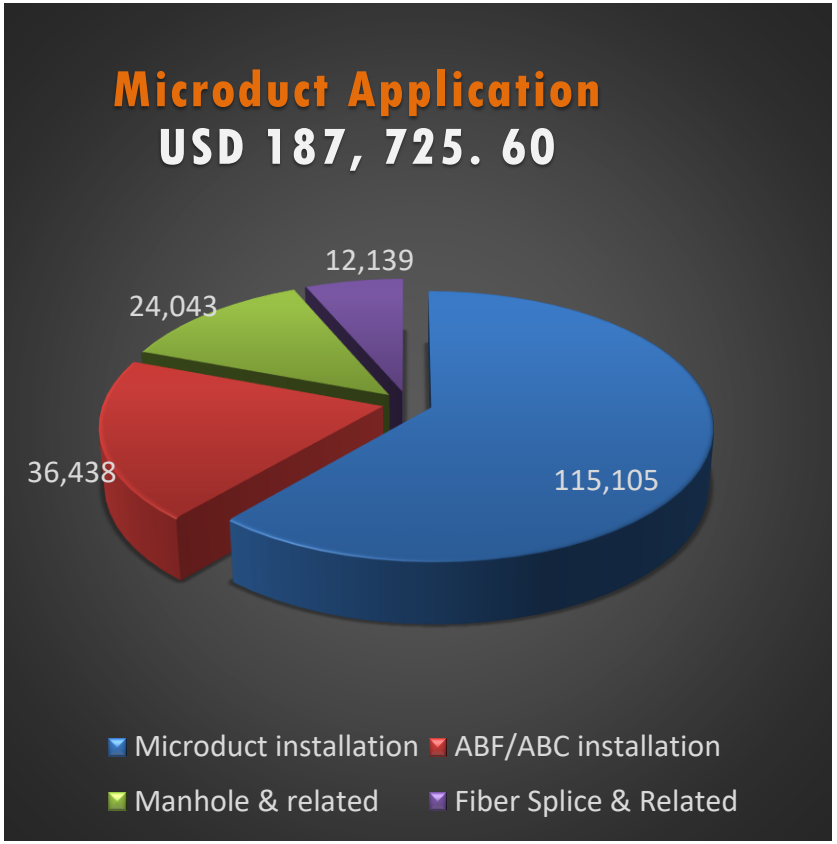
Microduct Application

No	Work	Description	Unit	Quantity	Material cost(USD)	Labor cost(USD)	Sum(USD)
1	Handhole installation		Pcs	3	2,516.02	264.33	2,780.35
2	Handhole cover installation		pcs	3	1,514.29	83.71	1,597.99
3	Microduct laying	DB 7 way 12/10mm	100m	40	26,609.52	16,829.37	43,438.90
4	Microduct laying	DB 7 way 5/3.5mm	100m	9	4,830.86	7,573.22	12,404.07
5	Microduct laying	DB 2 way 5/3.5mm	100m	100	15,571.43	42,073.43	57,644.86
6	ABC blowing	96 core	100m	40	10,212.15	13,207.47	23,419.62
7	ABF blowing	12 core	100m	40	2,385.26	1,897.68	4,282.93
8	ABF blowing	2 core	100m	100	3,991.71	4,744.19	8,735.90
9	Fiber splice	96 core	core	96		839.13	839.13
10	Fiber splice	12 core	core	18		576.93	576.93
11	FO closure installation		pcs	1	209.52	163.51	373.03
12	OTP installation	OTP	pcs	100	4,285.71	4,274.57	8,560.29
13	Pigtail		pcs	414	591.43	-	591.43
14	Jumper cord		pcs	100	476.19	-	476.19
15	OFD installation		Pcs	1	476.19	18.64	494.83
16	Splice termination	12 core	core	208		9,090.99	9,090.99
17	Splice termination	96 core	core	96		2,068.57	2,068.57
18	Microduct connection	5/3.5mm	pcs	6	314.29	317.75	632.04
19	Microduct connection	12/10mm	pcs	4	247.62	211.84	459.46
20	Splitter	1:4	pcs	1	57.14		57.14
21	Splitter	1:12	pcs	8	914.29		914.29
22	ODC installation		pcs	1	2,666.67	58.10	2,724.76
23	ODP installation		pcs	8	4,571.43	464.77	5,036.20
24	Tube connector		pcs	210	240.00		240.00
25	End cap		pcs	300	285.71		285.71
	Total						187,725.60

Comparison of installation Cost

Save 50% (Except Civil work)





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