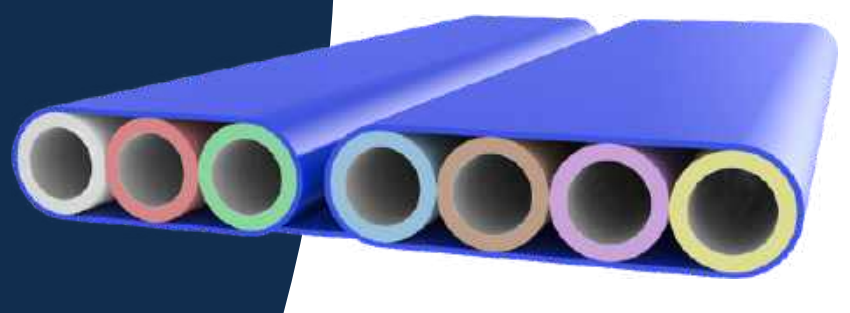
#3

THE KNET MICRODUCT SERIES

FLAT DUCT

Overcoming city infrastructure challenges with smarter microduct design



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Swipe →

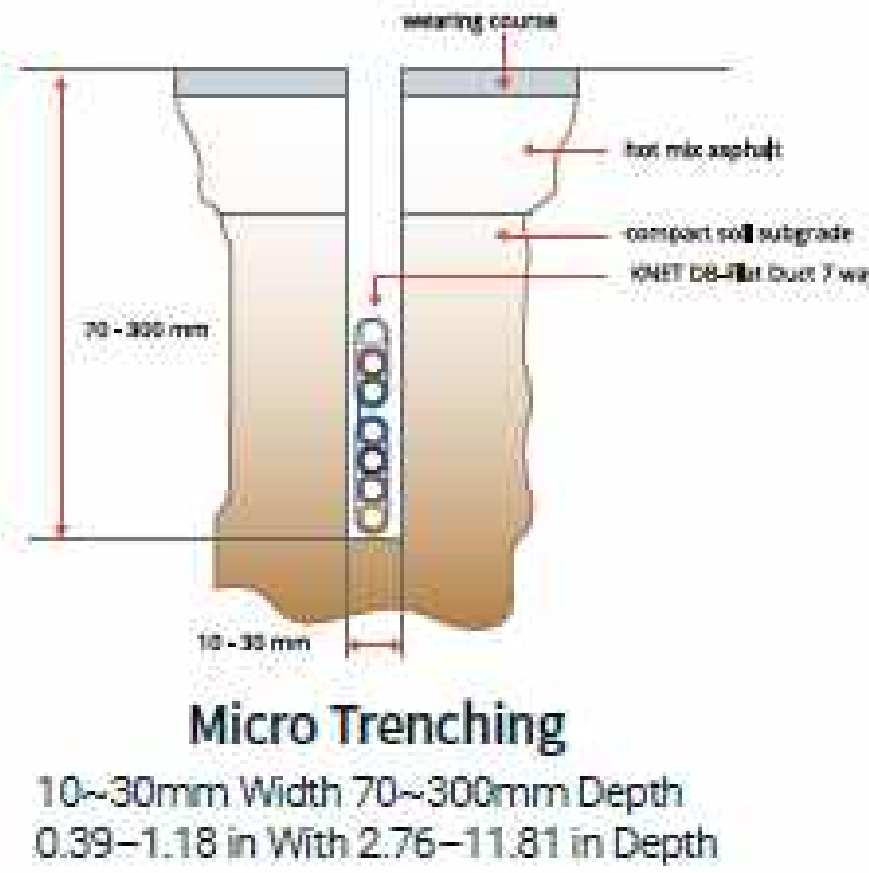
Flat Ducts for Urban Fiber Deployment

In this third installment of our Microduct Series, we turn our attention to one of the most space-efficient and forward-thinking solutions in fiber deployment: Flat Ducts.
As urban centers race to upgrade their broadband infrastructure, traditional installation methods face serious challenges such as limited conduit space, traffic disruptions, noise ordinances, and aging underground systems.

KNET’s Flat Duct solution is engineered to fit where others can’t, delivering efficient, clean, and cost-effective deployments in the most demanding environments.

Busy City in Indonesia

What Makes Flat Ducts Different?



- Ultra-Slim Profile

Designed for minimal trench width, Flat Ducts slide seamlessly into shallow channels—perfect for city streets where every inch of depth matters.

- Microtrenching-Optimized

Flat Ducts excel in microtrenching applications by reducing civil work, installation time, and surface disruption. The result? Faster rollouts and improved public satisfaction.

- High Durability, Low Bulk

Our ducts feature a tough outer shell that resists compression, moisture, and ground movement—yet remains flexible enough for complex routing.

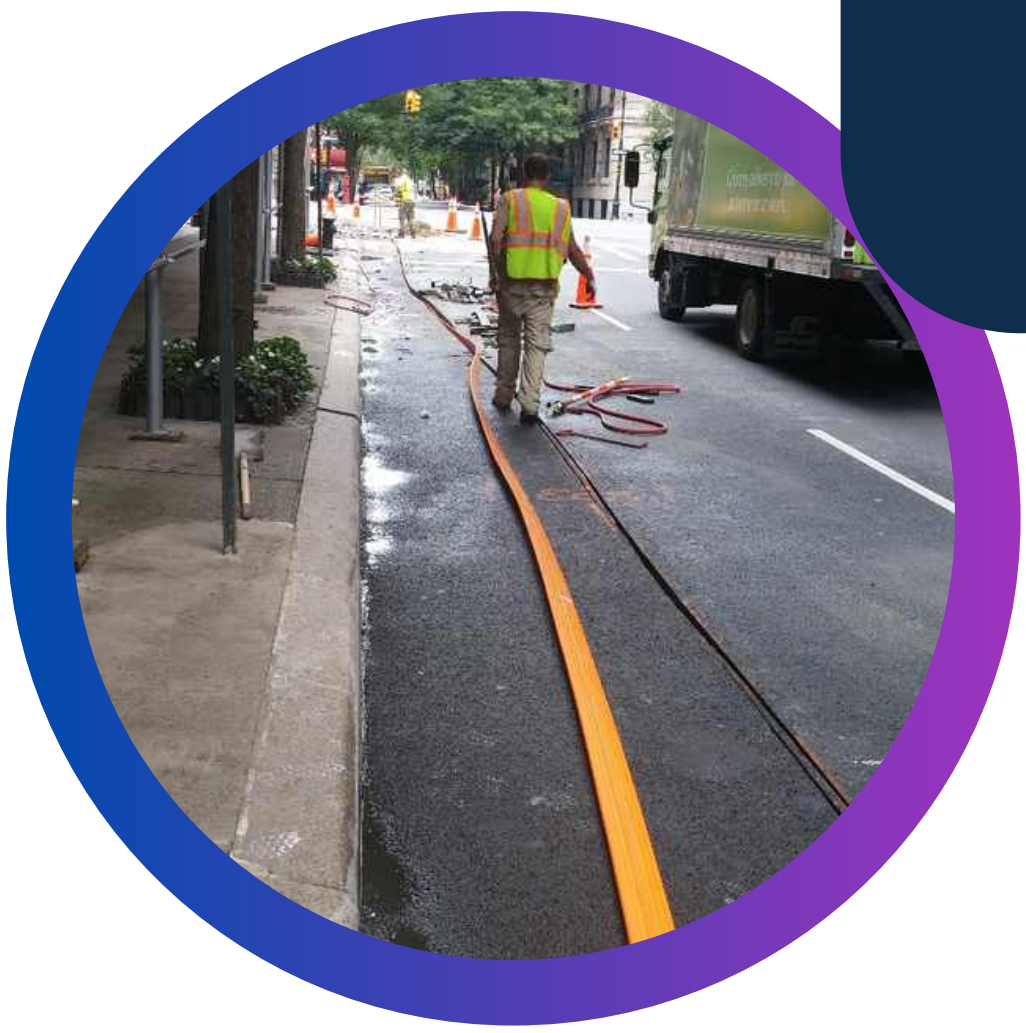
- Multi-Path Capacity

One Flat Duct can carry multiple microducts, enabling providers to scale their networks over time without additional trenching or permits.

- Cleaner Urban Aesthetics

With less cutting and patching, the visual footprint is minimal—an essential factor for municipalities and downtown business districts.

For narrow-width microtrenching, Flat Duct is the most optimized solution. The product itself can be placed vertically to fit on micro-trenching. Its compact size allows for more efficient shipping and handling using smaller reels. Since Flat Duct has the same thickness of TWD (Thick- Walled Duct), customers can enjoy the same benefits of TWD.



New York CIty, USA

Installation: Flat Duct is also suitable for open cut, mini trenching, plowing, HDD, and direct installation—beyond just microtrenching.

Knet Enhanced Silicone Liner : A permanent solid lubricant is applied inside the microduct tube. Knet’s upgraded silicone liner increases installation speed and reduce installation time for fiber cables.

installation

Microduct

Placing Microduct

Microduct on curve

Cable Installed

Case Study: Microtrenching in South Korea

South Korea, a global leader in fiber adoption, is actively transitioning from overhead fiber installations to underground networks for enhanced safety and aesthetics.

Seoul, one of the world's busiest cities, has become a testing ground for microtrenching. Despite the city's heavy traffic and dense crowds, the trial microtrenching installations have caused minimal disruption.

This initiative is a collaborative effort between the Ministry of Science and ICT, Gwanak-gu County Office, the Institute of Civil Engineering and Building Technology, and the Korea Telecommunications Operators Association. Together, they are spearheading a mini-trenching pilot project designed to efficiently bury telecommunication cables.

Knet's advanced Microduct solutions played a pivotal role in the project's success, paving the way for broader adoption in other locations.

Annex

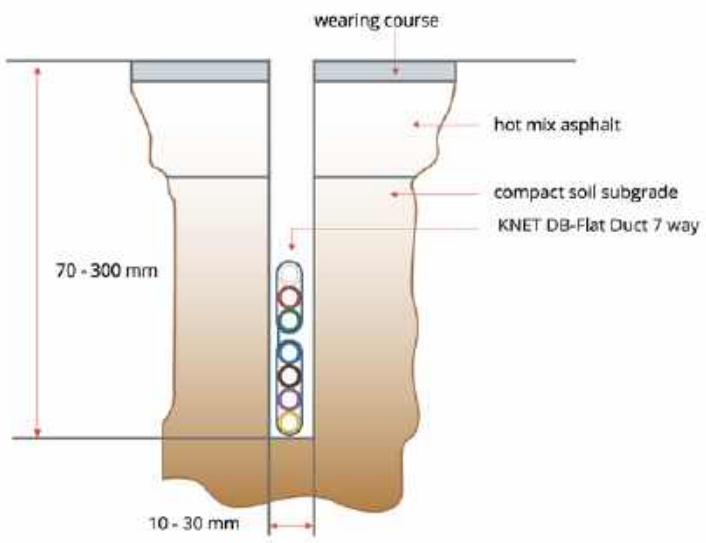
Studies on Micro/Mini Trenching

- **More distance trenching per day**

  Conventional : 30~50m/day with GBP75~125/m,
  Micro-trench : 150~200m/day with GBP10~15/m
  * Source UK(from DCMS Document)

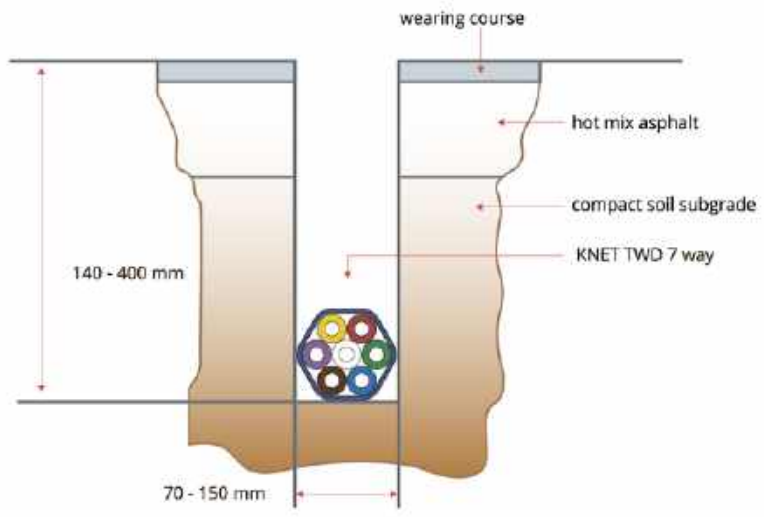
- **30 times faster, 20% cost of conventional trenching**
  * Source : Stirling Lloyd Technical advice note, 2011

- **70% time cut, 30% cost cut**
  * Source : Alcatel-Lucent Whitepaper, 2011



Micro Trenching

10~30mm Width 70~300mm Depth
0.39–1.18 in With 2.76–11.81 in Depth



Mini Trenching

70~150mm Width 140~400mm Depth
2.76–5.91 in Width 5.51–15.75 in Depth

In addition to Flat Ducts, Thick-Walled Ducts and other KNET Direct Buried Ducts—including individual single tubes—are also suitable for mini or microtrenching, depending on duct dimensions.”