



## **The StreetSmart Fiber Hand-Off Box**

---

**Tom Warren**

Sales Engineer, Clearfield

In the coming years, small cell antennas will become as common as fire hydrants. In urban and suburban neighborhoods we expect to see them sprout up in many different environments. We may see these small cell radios being attached to a strand, mounted to an existing pole, or even deployed in a “smart pole” specifically designed to house these radios in an aesthetically pleasing manner. Regardless of where these radios get mounted, one thing we know for certain—they will require some type of fiber connectivity. 5G technology requires low-latency fiber connections in order to function properly and deliver on the promise of new applications. Many new technologies like self-driving vehicles, industry automation and other IOT (Internet of things) applications require these high speed, low-latency connections.

### Who Owns the Fiber

In some cases, the fiber being used to feed the small cell site is owned by the wireless provider or mobile network operator (MNO). However, if the fiber being used to feed the small cell site is *not* owned by the MNO, a clear point of demarcation must be identified so that the owner of the fiber can easily interface with the MNO when needed. In such cases, it will be advantageous to have separate compartments within the demarc point for the fiber provider and the MNO. This requirement is a driving force behind the Clearfield ***StreetSmart Fiber Hand-Off Box for Wireline to Wireless Applications (W2W)***.

### Protecting Fiber Assets

Within the product, a hinged door provides physical separation and security for the incoming fibers. The end user, or contractor who will be installing drop cables from the demarc box to the wireless radios is prevented from damaging the incoming fibers that feed the ***StreetSmart Fiber Hand-Off Box***. Wireless equipment installers only have access to the angled adapter ports that they plug into—not the backhaul fibers, a key feature in the design of the product. As with all carrier-class outside plant connections, protecting these important fiber terminations from contamination and moisture is very important. The Telcordia [GR-771](#) compliant enclosure protects both the incoming fibers and drop cables from maintenance issues.



### The Need for a Small Footprint – Fiber Density

5G and other small cell deployments require fiber to be installed deep in the network. Sizing fiber deployments just makes good economic sense. The last thing a fiber provider wants to do is to go back in five years to put more fiber in the ground once even newer technologies emerge (6G?). Therefore, it just makes sense to place additional fibers during these initial 5G new builds. To feed most small cells with fiber, we tap into a main fiber trunk line and drop a certain number of fibers to the small cell site. The ability to drop 12, 24 or even 48 fibers at a single site is now a requirement in the new world of 5G. The new ***StreetSmart Fiber Hand-Off Box*** from Clearfield provides up to 48 fibers of LC connectivity (Telcordia [GR-326](#) compliant) in a very compact footprint. With the Clearfield FiberDeep® guarantee,

these ports provide extremely low insertion loss which is critical in these high-performance networks. The box can be provided pre-stubbed with a tail to be spliced to the main trunk line or provided with Telcordia [GR-1435](#) compliant multiple fiber push-on (MPO) connectors for plug-and-play capability.

### Mounting Options

The ability to place this new **StreetSmart Fiber Hand-Off Box** in many tight locations is another key design feature. In many cases, these boxes will be deployed *inside* of a smart pole or pedestal, mounted inside a protective shroud or cabinet, or even attached to a building or structure. From a functional standpoint, these boxes need to be very small, yet house many fiber optic terminations. Since many of these small cells are being installed in residential neighborhoods, the need to keep the radios and fiber termination equipment compact and low profile is a priority. No one wants to see large radios and metal boxes hanging on poles near their homes. So, not only do the radios need to be smaller and more attractive, but the fiber termination boxes also need to be inconspicuous.

The next generation of fiber demarc for small cells has arrived. Clearfield's **StreetSmart Fiber Hand-Off Box** for W2W applications checks all the required boxes:

- ✓ Extreme fiber density (up to 48 fiber LC patch field)
- ✓ Compact size: 13" x 8" x 3"
- ✓ MPO tail capability for complete plug-and-play
- ✓ Blunt tail option for direct splicing to trunk cable
- ✓ GR-771 Compliant
- ✓ Separation of provider and end user/contractor portions of box
- ✓ FiberDeep .2 dB insertion loss on LC terminations.

Perhaps in years to come, when small cell antennas become as commonplace as fire hydrants, we can look back and know that we did everything possible to make them as discreet as possible.