DOT FIBER ARCHITECTURE GUIDE

AFL


1st St
8440

A reliable, high-speed fiber network is essential for modern traffic signal operations and the efficient management of Intelligent Transportation Systems (ITS). The foundation of a successful ITS network starts with selecting the right fiber architecture to meet the unique demands of traffic signal infrastructure.

Whether you require a centralized fiber design for larger intersections or a distributed architecture for complex traffic corridors, AFL offers a wide range of fiber solutions tailored to the needs of ITS networks. Our proven expertise in fiber connectivity ensures solutions that support the reliability and scalability your traffic operations demand.

From field-proven enclosures, like the Apex® Fiber Optic Splice Closure, to Xpress® Fiber Management (XFM®) patch panels and Poli-MOD® Patch and Splice Modules, AFL's comprehensive product portfolio addresses key challenges such as deployment speed, labor savings, cost efficiency and long-term performance. Whether your project involves traffic signals, cameras, dynamic message signs or roadside sensors, AFL has the fiber solutions to keep your ITS network running smoothly today and ready for tomorrow.

This document details several methodologies for deploying the fiber network, contingent on the level of connectivity employed and the selected architectural framework.

TRAFFIC SIGNAL OPERATIONS

Fiber optic networks power today's traffic signal systems, delivering high-speed, reliable communication between signals, controllers and sensors. By enabling real-time data transfer and system management, fiber helps improve traffic flow, enhance safety and support future technologies like connected vehicles and smart intersections—without the high costs associated with cellular networks.

AFL provides fiber connectivity solutions that make it all possible, offering products designed for the unique demands of traffic signal infrastructure—ensuring reliable performance today and scalability for tomorrow.

1. Traffic Control Center (TCC)
2. Feeder/Distribution Cable
3. Aggregation Cabinet/Mini-Hub
4. Distribution Segment
5. Signal Cabinet


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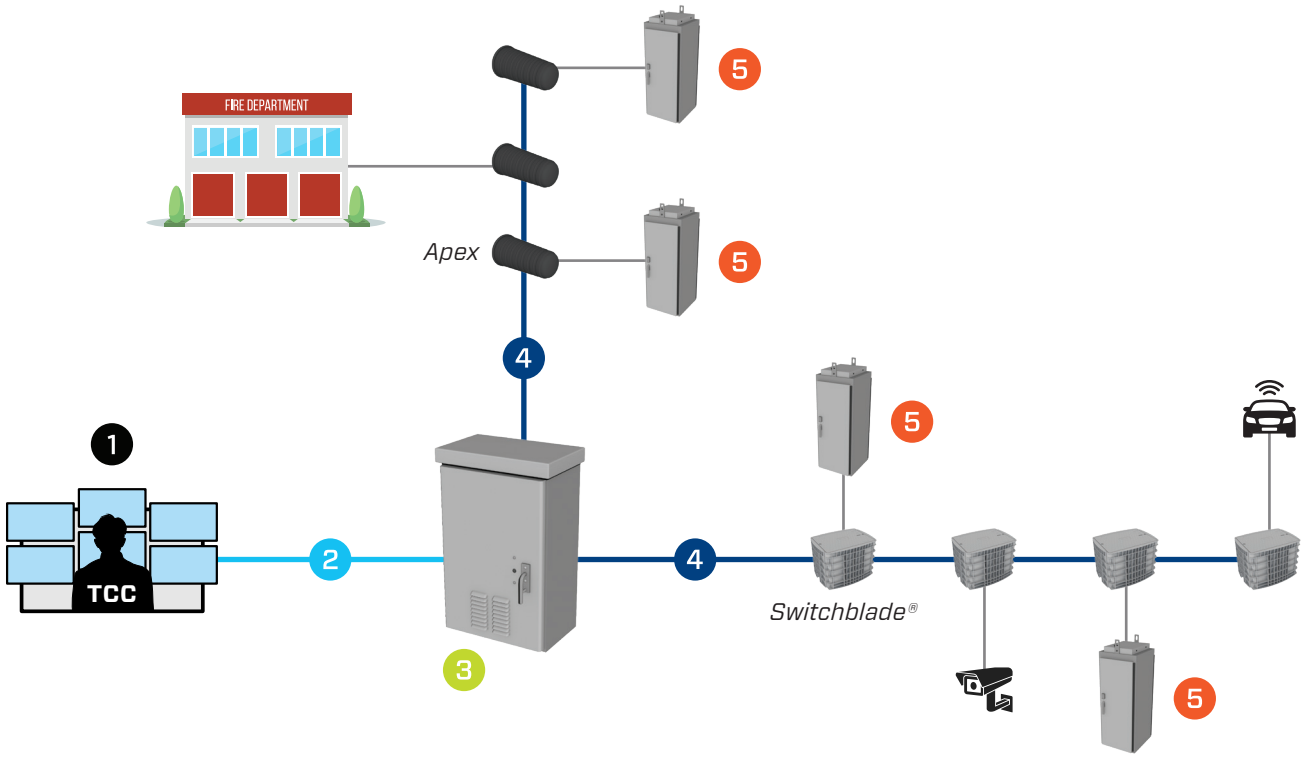
SOUTH


FIRE DEPARTMENT
Apex
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TCC
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Switchblade®
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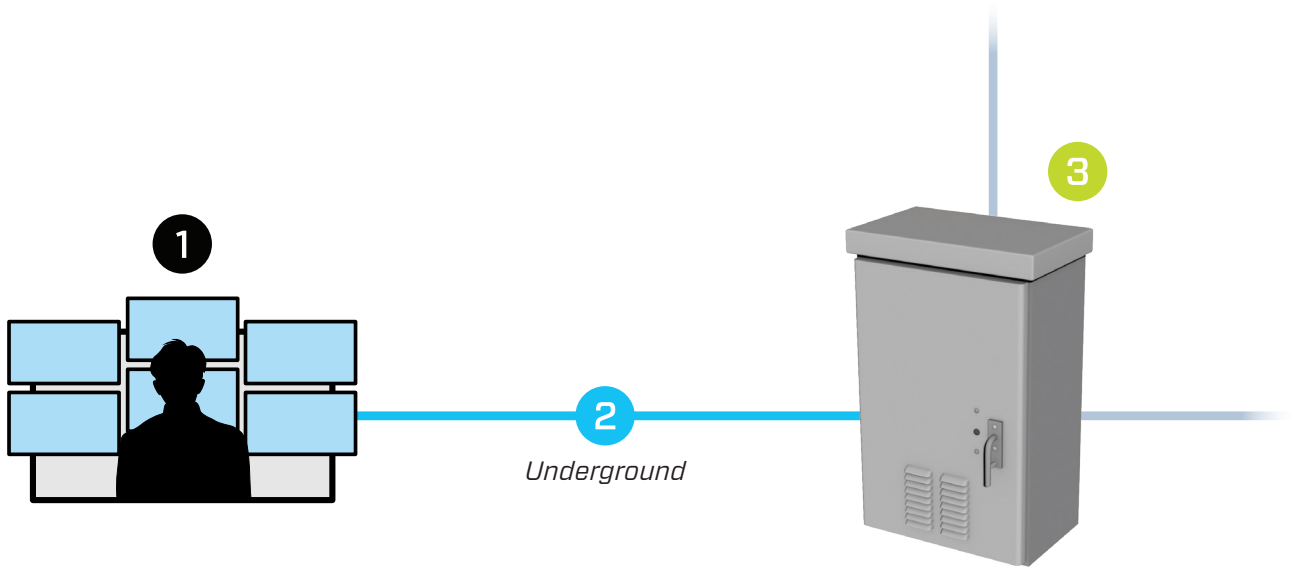
TRAFFIC CONTROL CENTER 1, DISTRIBUTION CABLE 2 AND AGGREGATION CABINET 3

Whatever the selected architecture or capacity requirements, AFL's fiber optic solutions streamline design and deployment with a focus on flexibility and space efficiency. The distribution cable serves as the backbone of the network, and our innovative designs are engineered to perform in limited duct space, harsh environments, and under physical stress and complex cable entry conditions.



1 TRAFFIC CONTROL CENTER (TCC)

AFL has several options when it comes to fiber connectivity in the TCC. From our XFM patch panels and Wall Mount Enclosures (WME) to our Poli-MOD Patch and Splice Modules, we have the products to give your TCC the reliability and flexibility it needs.

RACK	
XFM	XFM Patch Panel, 1–4RU
WALL	
Wall Mount Enclosures	Wall mount enclosures in various sizes and configurations
POLI-MOD (CASSETTES)	
Poli-MOD Patch and Splice Module	Adapter Plate and Pigtails, 6–24 Connector Ports, varying connector types available
JUMPERS	
Simplex & Duplex Cable Assemblies	Connectors include SC, FC, ST and LC. 3.0 mm, 2.0 mm, 1.6 mm and 900 µm simplex and duplex cables in riser and plenum are available

2 DISTRIBUTION CABLE

Regardless of the Right-of-Way, AFL has the fiber count and cable application your network demands. When space is at a premium, our MicroCore® offering has a wide array of options that allow you to make the most of the space available to your network. For traditional loose tube cable, our LE-Series is available with fiber counts ranging from 12–144 fibers.

When the environment requires aerial installation, our All-Dielectric Self-Supporting (ADSS®) cable is a great option, requiring a single installation pass and little to no maintenance. For high-density fiber applications, our Wrapping Tube Cable (WTC) is a great choice.

MICRODUCT	
LMHD-Series	Reduced Diameter MicroCore (12–432 fibers, 600 lb. load-rating)
LOOSE TUBE	
LE-Series Gel-Free SJ	AFL Loose Tube Cable Gel-Free (12–144 fibers)
ADSS	
Standard	Double Jacket ADSS (12–432 fibers)
Flex-Span®	Single Jacket ADSS (12–288 fibers)
RIBBON CABLE	
WTC	Ribbon Cable (48–1728 fibers)
WTC Armored	Ribbon Armored Cable (48–1728 fibers)

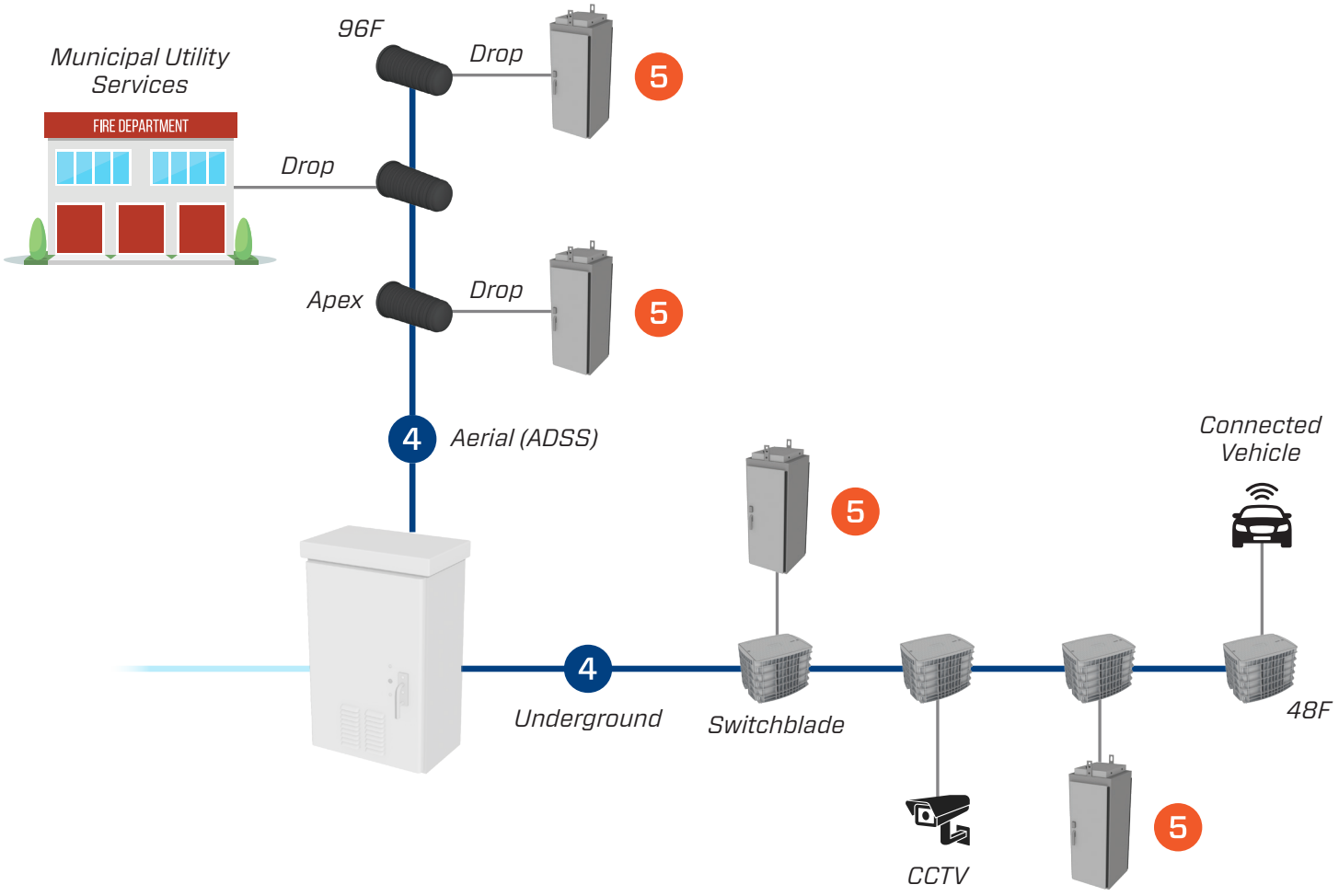
3 AGGREGATION CABINET/MINI-HUB

When it comes to fiber connectivity within aggregation or mini-hub cabinets, AFL offers a range of reliable solutions. Our XFM Patch Panels and Poli-MOD Patch and Splice Modules are designed for quick, efficient installation—helping you save time in the field without sacrificing performance or flexibility.

RACK	
XFM	XFM Patch Panel, 1–4RU
POLI-MOD (CASSETTES)	
Poli-MOD Patch and Splice Module	Adapter Plate and Pigtails, 6–24 Connector Ports, varying connector types available
JUMPERS	
Simplex & Duplex Cable Assemblies	Connectors include SC, FC, ST and LC. 3.0 mm, 2.0 mm, 1.6 mm and 900 µm simplex and duplex cables in riser and plenum are available

DISTRIBUTION SEGMENT 4 AND SIGNAL CABINET 5

AFL's fiber optic solutions streamline design and deployment with density and flexibility. Our innovative cables, designed for various environments, address specific application challenges including limited duct space, harsh environmental conditions, physical stress and challenges related to cable entry concerns.



4 DISTRIBUTION SEGMENT

With a range of fiber counts and cable options, AFL has what your network needs. When space is limited, our MicroCore line provides a variety of solutions to maximize space efficiency. For standard loose tube cables, our LE-Series cable is available in fiber counts from 12 to 144 fibers.

For aerial installations, our ADSS cable offers a reliable solution that requires only a single installation pass and minimal maintenance. And for high-density fiber applications, WTC is the ideal option.

MICRODUCT	
LMHD-Series	Reduced Diameter MicroCore (12–432 fibers, 600 lb. load-rating)
LOOSE TUBE	
LE Series Gel-Free SJ	AFL Loose Tube Cable Gel-Free (12–144 fibers)
ADSS	
Standard	Double Jacket ADSS (12–432 fibers)
Flex-Span®	Single Jacket ADSS (12–288 fibers)
RIBBON CABLE	
WTC	Ribbon Cable (48–1728 fibers)
WTC Armored	Ribbon Armored Cable (48–1728 fibers)

The Tier 22 Switchblade Fiber Containment Vault is a cutting-edge solution designed for efficient fiber optic cable storage and deployment. Built with innovation in mind, this vault is easy to deploy, and it features a unique folding design that dramatically reduces shipping costs and the storage space footprint.

AFL's Apex closure line is designed to improve usability, decrease installation time and increase density of fiber splices, in both above- or below-grade applications.

VAULT	
Switchblade FCV-2	Fiber Containment Vault Kit Base, T22 Lid 24" W x 36" L x 24" D (32" extended base)
Switchblade FCV-1	Fiber Containment Vault Kit Base, T22 Lid 17"W x 30"L x 18"D (24" extended base)
SPLICE CLOSURES	
Apex X-1, X-2S, X-2	Sealed Dome Closures, up to 6 Splice Trays, Direct Bury, Vault, Aerial Pole/Wall
Apex Tray	Splice Tray with Removable Splice Chips

5 SIGNAL CABINET

For fiber connectivity in your Signal Cabinet, AFL provides a complete range of solutions. These include XFM rack-mount patch panels for CALTRANS-style cabinets, as well as DIN rail-mountable WMEs and Poli-MOD Patch and Splice Modules for use in NEMA-style cabinets.

RACK	
XFM	XFM Patch Panel, 1–4RU
WALL	
Wall Mount Enclosures	Wall mount enclosures in various sizes and configurations
POLI-MOD (CASSETTES)	
Poli-MOD Patch and Splice Module	Adapter Plate and Pigtails, 6–24 Connector Ports, varying connector types available
JUMPERS	
Simplex & Duplex Cable Assemblies	Connectors include SC, FC, ST and LC. 3.0 mm, 2.0 mm, 1.6 mm and 900 µm simplex and duplex cables in riser and plenum are available

INTELLIGENT TRANSPORTATION SYSTEMS

AFL fiber optic cabling and associated products are the essential link connecting key components in an ITS network. Enabling high-speed, reliable communication between traffic signals, cameras, dynamic message signs and central control systems, fiber ensures seamless data transfer for real-time traffic management, surveillance and connected vehicle technology. This keeps transportation systems safe, efficient and future-ready.

1. Traffic Management Center (TMC)
2. Feeder/Distribution Cable
3. Hub
4. Fiber Containment Vault
5. Splice Closure


EXIT 36
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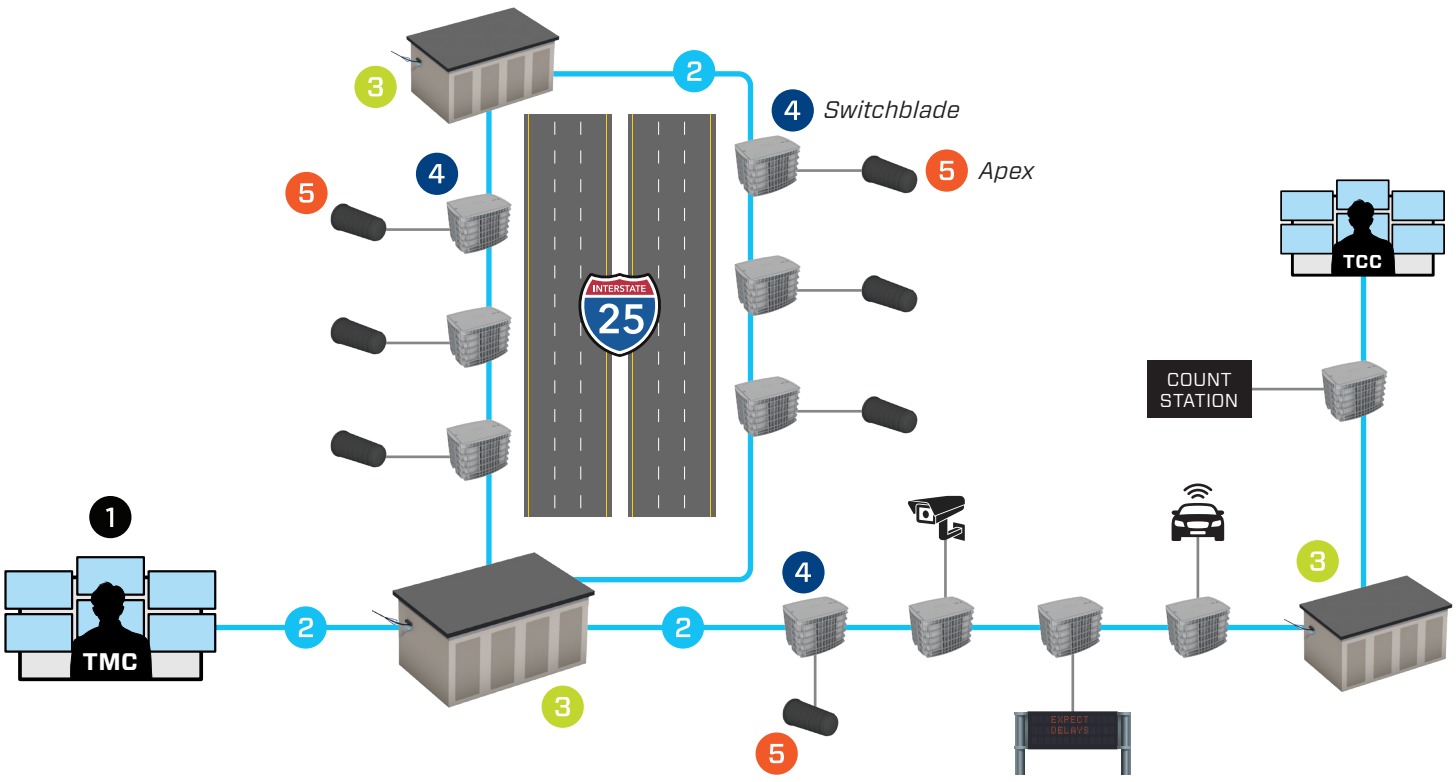
Atlantic Blvd
3/4 MILE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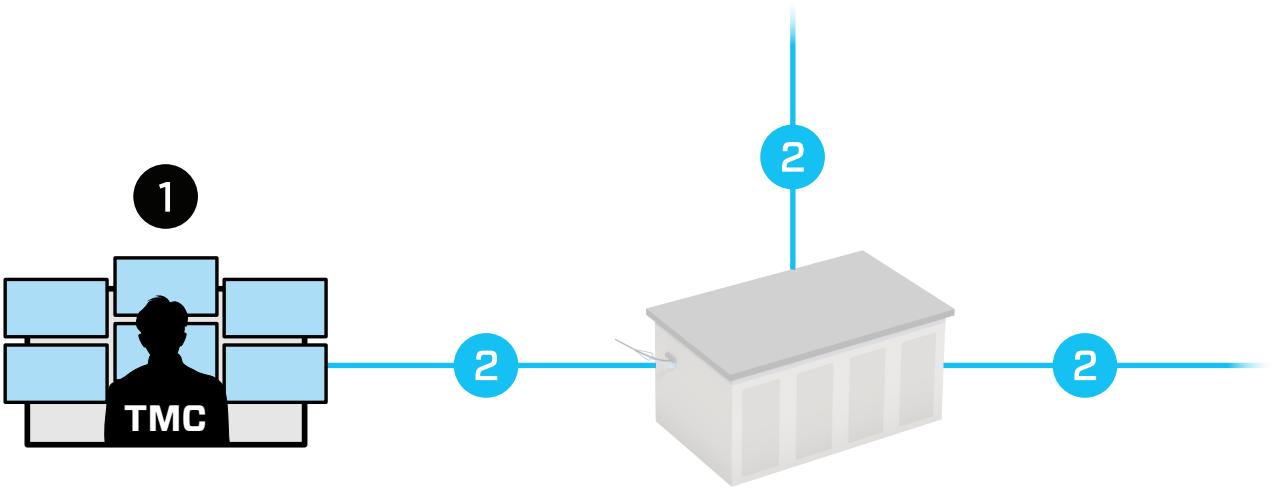
2
3
4 Switchblade
5 Apex
INTERSTATE
25
TMC
TCC
COUNT STATION
EXPECT DELAYS

TRAFFIC MANAGEMENT CENTER ❶ AND DISTRIBUTION CABLE ❷

AFL's fiber optic solutions enhance ITS design and deployment by providing both high density and flexibility. Our distribution cables form the essential backbone of the network. Designed to perform in a variety of environments, these innovative cables address specific challenges such as limited duct space, harsh environmental conditions, mechanical stresses and cable entry complexities.



1 TRAFFIC MANAGEMENT CENTER (TMC)

AFL has several options when it comes to fiber connectivity in the TMC. From our XFM patch panels and Wall Mount Enclosures to our Poli-MOD Patch and Splice Modules, we have the products to give your TMC the reliability and flexibility it needs.

RACK	
XFM	XFM Patch Panel, 1–4RU
WALL	
Wall Mount Enclosures	Wall mount enclosures in various sizes and configurations
POLI-MOD (CASSETTES)	
Poli-MOD Patch and Splice Module	Adapter Plate and Pigtails, 6–24 Connector Ports, varying connector types available
JUMPERS	
Simplex & Duplex Cable Assemblies	Connectors include SC, FC, ST and LC. 3.0 mm, 2.0 mm, 1.6 mm and 900 µm simplex and duplex cables in riser and plenum are available

2 DISTRIBUTION CABLE

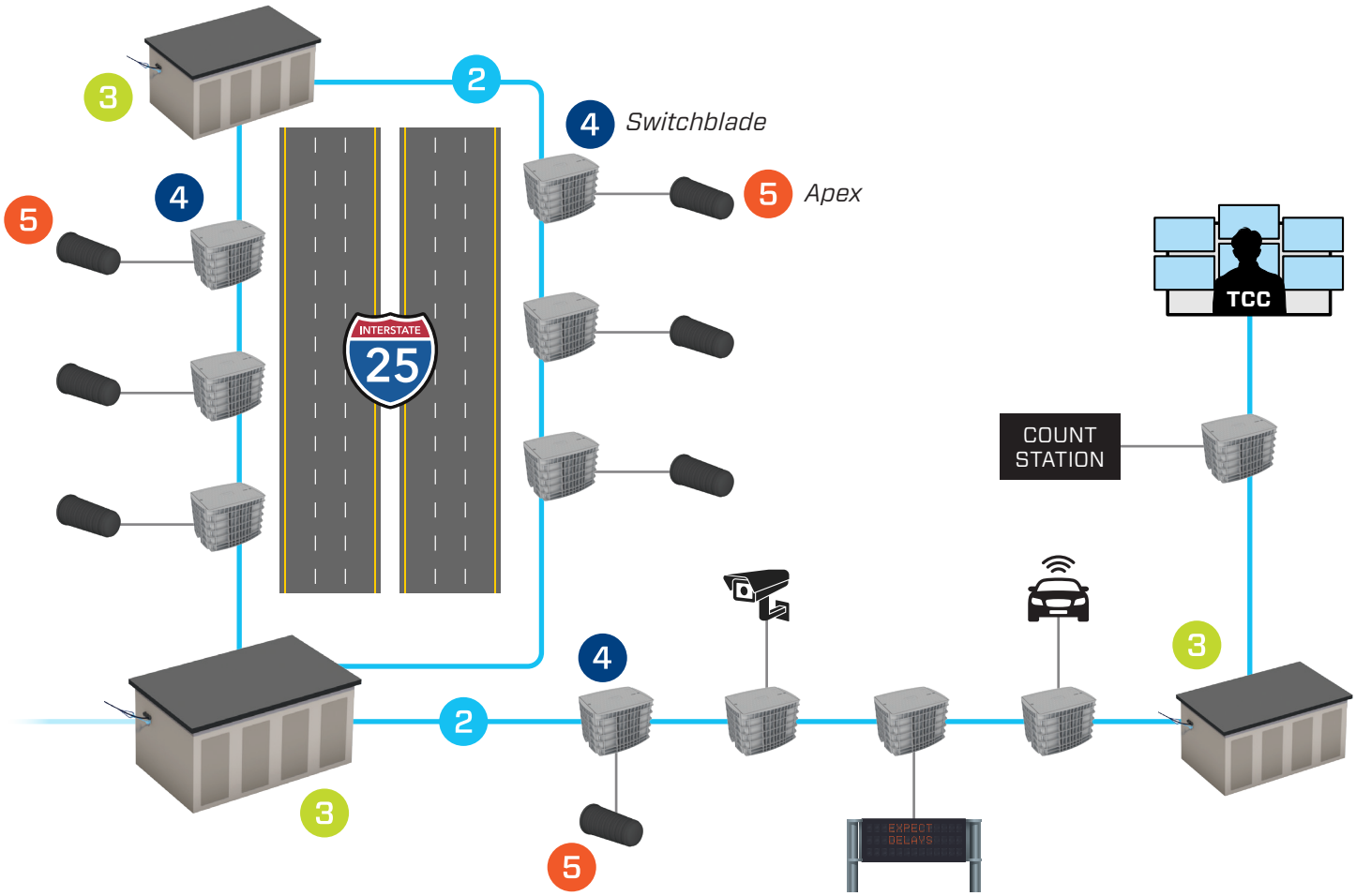
Regardless of the Right-of-Way, AFL has the fiber count and cable application that your network demands. When space is at a premium, our MicroCore offering has a wide array of options that allow you to make the most of the space available to your network, including a unique blown solution supporting high-speed, long-distance jetting for time-saving installation.

When the environment requires aerial installation, our ADSS cable is a great option, requiring a single installation pass and little to no maintenance. For high-density fiber applications, AFL's WTC is a great choice. For traditional loose tube cable, our LE-Series cable is available with fiber counts ranging from 12–144 fibers.

MICRODUCT	
LM-Series	Reduced Diameter MicroCore (12–432 fibers)
LM200-Series	Reduced Diameter MicroCore (24–432 fibers)
LMHD-Series	Reduced Diameter MicroCore (12–432 fibers, 600 lb. load-rating)
LOOSE TUBE	
LE-Series Gel-Free SJ	AFL Loose Tube Cable Gel-Free (12–144 fibers)
ADSS	
Standard	Double Jacket ADSS (12–432 fibers)
Flex-Span	Single Jacket ADSS (12–288 fibers)
RIBBON CABLE	
WTC	Ribbon Cable (48–1728 fibers)
WTC Armored	Ribbon Armored Cable (48–1728 fibers)

HUB 3, FIBER CONTAINMENT VAULT 4 AND SPLICE CLOSURE 5

AFL's fiber optic solutions enhance ITS design and deployment by delivering high density and flexibility across critical infrastructure components. Our connectivity solutions—designed for use within hubs—work in tandem with robust splice closures and fiber containment vaults to protect and manage vital connections across diverse environments. Engineered to address challenges such as limited space, harsh conditions, physical stress, and complex cable routing, these solutions ensure reliable performance and long-term network integrity.



3 HUB

AFL offers several options when it comes to fiber connectivity in your Hub for ITS. From our XFM patch panels and Wall Mount Enclosures to our Poli-MOD Patch and Splice Modules, we provide the products you need to ensure reliable, organized and scalable fiber connectivity in your traffic network. Whether you're managing splices, patching fibers or expanding your infrastructure, AFL has the solutions to keep your ITS network performing at its best.

RACK	
XFM	XFM Patch Panel, 1–4RU
POLI-MOD (CASSETTES)	
Wall Mount Enclosures	Wall Mount interconnect enclosures in various sizes and configurations
POLI-MOD (CASSETTES)	
Poli-MOD Patch and Splice Module	Adapter Plate and Pigtails, 6–24 Connector Ports, varying connector types available
JUMPERS	
Simplex & Duplex Cable Assemblies	Connectors include SC, FC, ST and LC. 3.0 mm, 2.0 mm, 1.6 mm and 900 µm simplex and duplex cables in riser and plenum are available

4 FIBER CONTAINMENT VAULT

The fiber containment vault is a critical part of the ITS fiber network infrastructure, ensuring the durability, maintainability, and expandability of fiber optic connections in the field. AFL's Tier 22 Switchblade is a cutting-edge solution designed for efficient fiber optic cable storage and deployment.

VAULT	
Switchblade FCV-2	Fiber Containment Vault Kit Base, T22 Lid 24" W x 36" L x 24" D (32" extended base)
Switchblade FCV-1	Fiber Containment Vault Kit Base, T22 Lid 17"W x 30"L x 18"D (24" extended base)

5 SPLICE CLOSURE

AFL's Apex Splice Closures are packed with features that simplify installation, improve organization and enhance long-term network reliability. Engineered for both above- and below-grade environments, Apex provides dependable protection for your optical fiber splices while saving time in the field.

SPLICE CLOSURES	
Apex X-1, X-2S, X-2	Sealed Dome Closures, up to 6 Splice Trays, Direct Bury, Vault, Aerial Pole/Wall
Apex Tray	Splice Tray with Removable Splice Chips

AFL

AFL offers a comprehensive portfolio of fiber optic solutions designed to meet the evolving demands of today's Traffic Signal Operations and Intelligent Transportation Systems (ITS). From high-density distribution cables and streamlined deployment systems to rugged splice closures and secure fiber containment vaults, AFL delivers proven technology and deep technical expertise to ensure network performance, scalability, and long-term reliability.

Contact Us Today!

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