

# **Imperial Valley Telecommunications Authority**

## **Technical specifications for the ON SITE installation of Fiber Optic Cable**

### **1.0 Introduction**

The Network Administrator for the Imperial Valley Telecommunications Authority (IVTA) requires the installation of single mode fiber optic cable to support data communication services for the IVTA Network. The fiber optic cable needs to be installed between the building Main Distribution Facility (MDF) and the nearest and most suitable access point to the IVTA network backbone.

The following specifications for the selection and installation of fiber-optic cable and associated hardware are intended to ensure a reliable and consistent fiber optic media infrastructure for the IVTA Network. **The selected path, cable, conduit assignment, fiber organizer, and fiber termination need to be reviewed and approved by the Network Administrator prior to installation.**

### **2.0 Fiber Cable Specifications**

Fiber installed on IVTA Network sites must meet or exceed the following specifications.

#### **2.1 Single mode Fiber**

Installed cable shall be single mode, and graded index glass fiber. All materials in the cable are to be dielectric.

##### **2.1.1 Performance**

Installed fiber must meet or exceed the following performance specifications.

Fiber cable types	Wavelength (nm)	Max. Attn. (dB/Km)
Single mode, Outside plant	1,310	0.35
	1,550	0.23

##### **2.1.2 Cable Construction**

Outside plant cable shall be used for all applications where cable is to be run in underground conduits. Outside plant cable shall meet at least the following specifications:

- Lose tube design.
- EIA/TIA –598-B color coding for fiber optic cable.
- Dry core
- Fiber strand count is site dependent

##### **2.1.3 Recommended Suppliers**

Any supplier that provides fiber optic cable that meets or exceeds the above performance specification will be considered.

### **3.0 Installation Standards**

#### **3.1 Underground Cable**

Use 4 inch schedule 40 PVC conduit with 3 inner ducts. All fiber cable is to be protected with inner duct. After installation, inner ducts are to be permanently labeled as containing fiber optic cable. Instruction for labeling will be provided by the Network Administrator. All cable and inner duct are to be fully supported throughout its entire run.

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## **3.1.1 Labeling**

Each cable and inner duct is to be permanently labeled at each end with a unique cable number. In addition, labels shall be affixed to the cable/inner duct at every transition of a vault, hand hole, riser closet, or major pull box. Labels will be in the form of "IVTA-Location one-Location two- sequence number". For example, cable number 123 from IDF01 to IDF02 would be labeled as "IVTA-IDF01-IDF02-123.

## **4.0 Termination Standards**

Termination/splicing of the fiber will be at the discretion of the Network Administrator.

### **4.1 Fiber Organizers**

Fiber cables are to be terminated in one of two types of enclosures. The Network Administrator may specify either wall-mounted or rack-mountable stand-alone units for installation.

### **4.2 Miscellaneous**

At each end of the cable, sufficient slack shall be left to facilitate reasonable future relocation of the fiber and for splicing into the IVTA backbone. Slack for the inside end shall be 30 feet. Slack for the outside end shall be 75 feet. Fiber in the outside end should be stored in accordance with outside plant regulations.

## **5.0 Testing**

### **5.1 Before Installation**

Each individual fiber in a cable shall be tested with an OTDR for length and transmission anomalies while on the reel before installation.

### **5.2 After Installation**

**5.2.1.** All fiber strands shall be tested end-to-end for bi-directional attenuation, 1310 nm/1550 nm for single mode fibers.

**5.2.2.** Tests must ensure that the measured link loss for each strand does not exceed the "worst case" allowable loss defined as the sum of the connector loss (based on the number of mated connector pairs at the EIA/TIA-568 B maximum allowable loss of 0.75 dB per mated pair) and the optical loss (based on the performance standard above, 2.1.1).

Upon completion of the project, the contractor will provide a diagram "as-built" showing the conduit routing paths and fiber designations on paper and electronic media.