

# ***Imperial Valley Telecommunications Authority***

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

### **1.0 Introduction**

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, fiber optic cable, vaults, conduit, and conduit assignment, 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.

- Single mode fiber, all dielectric
- For 1310 Wavelength, maximum attenuation not to exceed 0.35 db/Km
- For 1550 Wavelength, maximum attenuation not to exceed 0.23 db/Km
- Outside plant cable
- Loose tube design
- EIA/TIA –598-B color coding for fiber optic cable
- Dry core
- Strands count – depending of project

### **3.0 Hardware specifications.**

- All vaults to be placed are to be specifically designed for telecommunications applications
- The dimension of each vault shall be determined during the design phase
- Use schedule 40 PVC – 4 inch diameter
- For fiber optic protection, use 1 inch flexible inner-duct
- A minimum of 3 inner-ducts(smooth type) shall be placed in each 4-inch conduit.
- All conduits shall be equipped with seal plugs in all vaults.
- Warning tape shall be a minimum 3 inch wide, orange in color and shall have a non-degradable imprint as follows: "Caution Fiber optic cable buried below"
- Pull rope shall be installed in all inner-ducts.
- All conduits should be properly identified
- All vaults should be identified as "IVTA fiber optic cable"

### **4.0 Installation Standards**

- Long radius bends over 30 feet shall be used whenever possible to make changes in direction
- If it is found to be necessary to place a 90 degree bend in the conduit run, a factory made sweep of no less than 42 inch in radius shall be used
- The length and destination of all conduits shall be identified in each vault. Use heavy plastic tags for that purpose.
- On straight runs, the distance between vaults should not exceed 1,500 ft.
- All fiber is to be protected with inner-duct
- At each end of the fiber optic cable, a 50 ft slack shall be left to facilitate splicing.

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## **5.0 Testing**

- Before installation each individual fiber in a cable shall be tested with an OTDR for length and transmission anomalies while on the reel.
- After installation all fiber strands shall be tested end-to-end for bi-directional attenuation, 1310 nm/1550 nm for single mode fibers.
- 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.