

# **Technical Requirements**

## **Dark Fiber Lease AND Pole Attachments**

**Design, Implementation, Operation, Maintenance and Response**









# EXHIBIT A Fiber Specifications, Demarcation, Maintenance, Acceptance & Acceptance Testing, Response Time

## Section 1 Fiber Specifications

**1.0 Fiber Types.** Generally, Authority will use single mode fiber. The Fiber is packaged in an Optical Ground Wire (OPGW) or All-Dielectric Self-Supporting Fiber (ADSS).

**1.1 Fiber Performance Specifications.** Authority may substitute alternative fibers if and only if such alternative fibers have performance specifications which are at least equal to the specifications set forth below:

- (a) Optical Cable with Single Mode Fiber
  - i. Attenuation at 1310 nm = 0.5 dB/mi max
  - ii. Attenuation at 1550 nm = 0.4 dB/mi max

### **1.2 Other Fiber-related Standards**

- (a) All fiber(s) will be fusion spliced.
- (b) Any optical interface, such as pigtail connectors and adapters will be SC.
- (c) All fibers will consist of all single mode fiber. Any riser rated cable must be a cable that is flame-retardant UV-stabilized, fully water-blocked for use in any application, and suitable for installation in duct, aerial, and risers. All fiber(s) will meet the UL-1666 OFNR specifications and will consist of loose buffer tube construction.
- (d) Fiber(s) will be constructed in accordance with sound commercial practices and these Technical Requirements. The National Electric Safety Code will be followed in every case except where local regulations are more stringent, in which case local regulations will govern.
- (e) Fiber labeling scheme in a manhole environment where the parties meet will be determined in the design package.

## Section 2 Demarcation Points

**2.0 General.** Demarcation Points define the respective ownership and maintenance responsibilities and obligations of the parties. Demarcation Points will be specified in each executed design package. Generally, Demarcation Points will be located in the Authority's easements or Rights of Way.

Authority will provide Facilities such as manhole, splice case, or fiber optic distribution unit (FODU) that will terminate the fiber and be the Demarcation Point between Authority's ownership and maintenance responsibilities and Lessee's ownership and maintenance responsibilities. Authority shall be responsible for maintenance of all Authority fibers on the Authority side of the Demarcation Point, as well as any Authority Facilities within Demarcation Points. Lessee shall be responsible for maintenance of all fibers on the Lessee's side of the Demarcation Point, as well as any Lessee Facilities within Demarcation Points.

The parties will work cooperatively under an approved Method of Procedure (MOP) (see Section 3.9 and Attachment A-2) or construction plan to cross-connect and test the Fibers at and through the Demarcation Points for the purposes of Acceptance testing.

Lessee may physically monitor any or all testing associated with preparation of an Acceptance Package (the documentation of results or information provided for review and acceptance) upon three (3) business days' notice prior to commencement by Authority.

**2.1 Access.** Lessee may be granted Authority-Escorted Access to Demarcation Points to service Lessee infrastructure through the Scheduled Maintenance Notification process outlined in section 3.10.

### **Section 3 Maintenance and Repair General**

**3.0 Responsibilities.** Authority shall be responsible for maintenance of all Authority Fibers on the Authority side of the Demarcation Point, as well as any Authority Facilities within Demarcation Points. Lessee shall be responsible for maintenance of all Fibers on the Lessee's side of the Demarcation Point, as well as any Lessee Facilities within Demarcation Points.

IN NO EVENT WILL LESSEE PERSONNEL, TECHNICIANS OR CONTRACTORS HANDLE OR OTHERWISE COME INTO CONTACT WITH AUTHORITY-OWNED FIBER CABLE OR ANY CONDUCTORS UNLESS AUTHORIZED BY AUTHORITY.

**3.1 Contacts and Escalation Information.** The parties will, at the beginning of each year, provide one another with an updated contact and escalation list to aid in trouble reporting and resolution, if changes have occurred since the previous year. The current list is attached as Exhibit A-1 and may be revised by either party from time to time by written notice as provided for in the Fiber Lease Agreement. Inaccurate contact and escalation information may prevent or delay Authority from performing notification or other obligations.







attempt to conduct its Scheduled M

such events, Scheduled Maintenance will be re-scheduled to another available time, according to a MOP.

**3.16 Response and Repair Intervals.** Upon receipt of notification of discovery during Scheduled Maintenance windows as described in section 3.12 of this Exhibit, Authority will dispatch properly equipped and trained personnel to a Service Affecting Condition to assess the affected Fiber within four (4) hours and repair within twenty four (24) hours post assessment (“Completion Interval”) or Service Interruption Credits will apply. Upon receipt of notification of Discovery outside of Standard Authority Scheduled Maintenance windows, Authority will dispatch properly equipped and trained personnel to a Service Affecting Condition to assess the affected Fiber within six (6) hours repair within twenty four (24) hours post assessment (“Completion Interval”) or Service Interruption Credits will apply. Any exceptions to these standard Service Affecting Condition response and repair intervals or any priority treatment of Fiber must be mutually agreed to and incorporated in an executed Product Order.

**3.17 Trouble Notification by Lessee.** Network outages that are Discovered by Lessee will be reported immediately to the Authority NOC or as otherwise indicated in Exhibit A-1 or the executed Product Order. After response to the Service Affecting Condition, Authority will promptly notify Lessee regarding the nature of the trouble.

**3.18 Trouble Notification by Authority.** Authority’s network management system does not monitor dark fiber. However, a degradation of performance on Authority internal network services that might indicate a fiber cut will result in a trouble notification to the Authority NOC. If Authority discovers a network problem causing a Service Affecting Condition, Authority will promptly attempt to notify Lessee according to Exhibit A-1 regarding the nature of the trouble and whether the Fiber caused the trouble.

**3.19 Temporary reW\* nBT/F14C120052>31(a)-21(t)12(t)12(e)-21(m)-21(p)34(t)12( )50(t)12(o)-31**

**3.21 Trouble Ticketing Process and Procedures.** A mutually acceptable trouble ticketing process conducted between Lessee and the Authority NOC will be developed between the parties as needed. Generally, upon discovery, the Authority NOC will acknowledge the discovery, record the time and other information, and open a trouble ticket.

**3.21 Status Notification.**

- (a) **Progress Reports.** In addition to the initial notification, Authority will use commercially reasonable efforts to provide a progress report, during normal business hours, by telephone, including a voice mail message if during off hours, or e-mail, every four (4) hours during a Service Affecting Condition. Authority will immediately notify the Lessee if unanticipated delays or events occur.
- (b) **Closing Notification.** When Service Affecting Condition repair is considered complete and all components are operationally ready, Authority will notify the Lessee to verify that all related service affecting conditions have been cleared. Notification may be by telephone, voice-mail or e-mail. Once notification is made, the open trouble ticket will be closed. When service affecting conditions have been verified and the activity is considered complete, Authority will coordinate final event closure with the Lessee. If contingency plans were implemented to protect the network during the performance of scheduled activities, Authority will direct activities necessary to return the network to its normal configuration. Authority will submit a fiber outage report to the Lessee.

**3.22 Lessee-Caused Service Outage.** If an Authority technician is dispatched to respond to a service outage after a Lessee discovery and notification, and the trouble is on the Lessee side of the Demarcation Point, Lessee will be billed for Authority's costs, plus a 30% mark-up.

**Section 4 Acceptance & Acceptance Testing**

**4.0 General.** Authority will perform the following tests on the fiber in accordance with the Fiber Specifications as described in Section 1 (Fiber Specifications) of this Exhibit. Authority





## **Attachment A-1 Contact/Escalation List Form**

**Authority NOC Contact/Escalation List**

**Authority**

**Attachment A-2: Scheduled Maintenance Procedure Form**

**I**

**Authority Method-Of-Procedure  
Fiber Optic Scheduled Maintenance Outage Notification**

**Authority MOP Number:**

**From Node:**

**To Node:**

**Date Originated:**

**Originator:**

**Phone Mobile:**

**Responsible Technician:**

**Mobile:**

**Pager: Job Location:**

**Brief Job Description:**

**Access required?**

**Where?**



**\*\*\*\*\*APPROVALS\*\*\*\*\***

**Operations Supervisor:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**\*\*\*\*\*GENERAL SPLICE DESCRIPTION\*\*\*\*\***

**Number of Fiber Splices:**

**\*\*\*\*\*PRE SPLICE ACTIVITY\*\*\*\*\***

**Description:**

**\*\*\*\*\*POST SPLICE ACTIVITY\*\*\*\*\***

**\*\*\*\*\*THIS CONCLUDES THIS MOP\*\*\*\*\***

**Originator:** \_\_\_\_\_ **Department:** \_\_\_\_\_





## **Exhibit C Additional Product Order Process**

**1.0 General.** The following outlines a process which the Parties agree to generally use, for the development of additional quotes and Product Orders. This process is not binding and neither Party shall be considered in breach of this Agreement for its failure to follow this process.

(a) Request For Quote & Quote Response Process. At any time dur.00000912 2(i)12(m)-21(e)TQme

# Fiber Attachments

## A. GENERAL

This document is to outline the requirements for a non-Authority entity (i.e. Licensee) attaching fiber to Authority transmission structures (“structures”).

The guiding principles of this document and the requirements are:

1. Ensure public, utility, and contractor safety
2. Ensure unhindered reliability of the Authority’s system
3. Ensure Authority’s unhindered emergency response
4. Ensure no cost shifts to Authority’s electric and water customers
5. Ensure opportunities are maximized for customer service

Requests and review of underground fiber lines within Authority rights-of-way are not covered in this document.

## B. DESIGN

All attachments shall be designed and placed in accordance with the most stringent code requirements, specifications and regulations of NESC, OSHA and Authority’s Transmission Line Standard Reference Manual. This requirement addresses both clearance and strength specifications.

Licensee assets, installations, networks and customer service agreements making use of Authority infrastructure have secondary priority status (to that of the Authority) to utilize electric power transmission facilities owned or operated by the Authority.

### 1) **General Requirements**

- i. Licensee is to be responsible for any permitting required (railroads, SCDOT, etc.) to complete the proposed optical cable attachment.
- ii. Each structure may only accept a maximum of one (1) tensioned underhung fiber cable per structure.
- iii. The use of guys and/or intermediate structures should be avoided, however very limited use may be accepted following review and approval by Authority. Guys and/or intermediate structures should only be proposed as a ‘last resort’ when all other options have been exhausted.
- iv. Structure Attachments
  - Concrete Poles require stainless steel bands with stainless steel hardware
  - Weathering Steel and/or Galvanized Poles require drilling (no bands)
  - Wood Poles require drilling (no bands)
- v. Licensee Access Provisions

As required, Licensee infrastructure required to extend Licensee's fiber optic network to/from Authority transmission facilities on property owned or authorized for use by the Authority through Authority's existing easements should incorporate use of:

Underground conduit/cable that is clearly marked with above-grade cable marker posts.

Aerial pole line extensions that maintain adequate clearance from existing transmission facilities.

The design is split into two distinct but related phases subsequent to the

- v. Based on the feasibility study, the Licensee may elect to proceed to a more detailed Design phase.

### 3) Design Review Phase

- i. The goal/purpose of the design phase is for the Licensee to proceed with a detailed design and prepare a design package that is suitable for construction, and that will be reviewed by Authority for adherence to applicable Codes and Standards (strength & clearance).
- ii. Licensee Shall Supply:
  - a) Detailed route
  - b) Final fiber optic specification, characteristics, etc.
  - c) Quantity and locations of any entrances/exits on/off the right-of-way
  - d) Quantity and locations of any appurtenances (splice enclosures, access points, conduit / cable service drops, etc.)
  - e) Plan and profile drawings showing fiber installation, sags and tensions, and values used for clearance verifications (MicroStation and PDF format).
  - f) Associated PLSCADD model files and criteria files
  - g) Final design package signed by a SC-licensed registered P.E. All drawings should be P.E.-stamped.
  - h) Structure strength calculations including subsurface/foundation analysis, P.E.-stamped. At a minimum items shall include but not be limited to the following:
    - i. Structure strength and subsurface analysis on a representative tangent structure. If a representative tangent (minimum 1 tangent / mile) fails (i.e. utilization >100%), additional tangents shall be evaluated, and mitigation measures identified.
    - ii. Structure strength and subsurface analysis on all dead-

iv. Based on the submittal of the above information, Authority will conduct an engineering and design review for Code Compliance to include both structural strength as well as clearance. Authority will provide a written letter stating the results. This quality assurance review does not release the Licensee or their consultant from complying with the requirements of NESC, OSHA, Authority's Transmission Line Standard Reference Manual, and any other applicable codes.

v.







- iii. Authority occasionally performs minor or major maintenance on transmission assets (i.e. minor repairs up to entire structure replacements).
  - 1. Minor maintenance. There should be no impact to Licensee assets during minor maintenance on Authority transmission assets.
  - 2. Major maintenance.
    - a) Authority will coordinate with the Licensee prior to any structure / transmission asset replacement. The purpose of this coordination will be to make the Licensee aware and have them scheduled to be on-site for asset transfer to the new structure.

During major maintenance Authority will replace the transmission structure. It will be the responsibility of the Licensee to be on-site and transfer their fiber asset (attachment) to the new structure. If Licensee cannot or is not on site to transfer attachment, Authority will transfer Licensee attachment – free of any liability – and bill the Licensee for transfer services, including the presence of a fiber consultant, as needed and to be determined by the Authority.
    - b) Any other asset modifications must be documented through updated as-built documentation by the Licensee.
- iv. It is the responsibility of the Licensee to perform any required maintenance to the Licensee’s fiber assets. Reference section D.1 for required notifications.
- v. Authority performs right-of-way maintenance based on electric service requirements. Authority will not perform any additional right-of-way maintenance associated with or because of Licensee infrastructure or assets.

## **E. FUTURE SYSTEM PLANNING**

### **1) New Construction & Rebuilds**

- i. If / when future transmission assets are planned to be added to the existing transmission right-of-way or require existing transmission assets to be rebuilt within the existing transmission R/W, it will be the responsibility of the Licensee to move, reconfigure, relocate or remove any assets that are attached to those impacted Authority transmission facilities if determined necessary to accommodate these efforts.
- ii. Authority will notify and coordinate with the Licensee during the planning phase of future transmission requirements, as applicable.
- iii. Licensee shall pay all associated costs for the transfer and movement of fiber attachments to new construction.

**2) Reroutes**

- i. If / when existing transmission assets are required to be re-routed on new transmission R/W, it will be the responsibility of the Licensee to move, reconfigure,

- iii. The Licensee will be responsible for all costs associated with any repairs or restoration to Licensee's assets.

**G. RESPONSIBILITIES AT END OF AGREEMENT**

- 1) Licensee is responsible for removing all assets owned by Licensee from transmission structures and those located on property.