ICNSP – 2051.02

ICN Standard Practice – As-Built Drawing Standards and Specifications

1. Introduction

This document addresses the requirements for splicing, testing, documenting and enclosing fiber optic cable for use as part of the Iowa Communications Network (ICN) system.

1.1. Purpose:

To detail define the duties and responsibilities for the splicing and testing of fiber optic cable.

1.2. Revision History:

Version: .02
Release Date: 1/14/2014
Summary of Change: New Release
Author: Kent Freise
Subject Matter Expert: Kent Freise, Paul Stuber

1.3. Effective Date:

01/02/10. This document is to be adhered to until an approved revision or revocation is adopted.

1.4. Reason For Reissue:

Standard Practice reformatted into ICNSP format

1.5. Areas Affected:

ICN-SD/NOC, ICN Outside Plant, OSP Field Technicians, ICN Engineering

1.6. Acronyms/Definitions

ICNSP - Iowa Communications Network Standard Practice
LS- Link Splice
nm- nanometers
NOC - ICN Network Operations Center
OSP – Outside Plant
OTDR - Optical Time Domain Reflectometer

2. Process Management

2.1. Process Metrics:

Drawings are completed according to standards.

2.2. Process Owners:

ICN Outside Plant Group

2.3. Training Requirements:

All Service Desk Work Group personnel, and their immediate supervisors, are required to read, review, and understand each ICNSP where their work group is listed as an "Affected Area".

A direct supervisor and/or the ICNSP Subject Matter Expert can assist with training or retraining if deemed necessary. These ICN SPs are on the R: drive at the following location:

R:\ICN-STANDARDS\2_Operations

2.4. Approval:

David Marley - ICN Operations Manager

2.5 Managed Service Provider Review:

MSP Manager for ICN Operations

3 As-Built Drawing Standards Introduction:

3.1 Delivery Method

Two sets of legible, reproducible as-built drawings on 11 X 17 inch, white paper, in a hard cover binder shall be provided for each link.

If available, it would be desirable to also have a digital copy (emailed or mailed on DVD or CD) in a format compatible with the ICN's computer aided design (DWG or DWF) system. The ICN's current CAD system is an AutoCAD 2013. When available, it would be desirable to have any GPS data (shapefiles....aka .SHP) that have been collected related to the project.

3.2 Symbols and conventions

The as-built drawings are to use symbols and conventions specified in this document. If not specifically stated, the symbols and conventions to be used are those considered required by good engineering drawing practices. A Legend and Symbol sheet is included in Appendix A.

The vendor is to provide to the ICN, any symbol, icon, model, block, and so on that is used on, or as part of, the as-built drawings provided for any part of the ICN. These symbols, icons, models, blocks, and so on, are to be provided as defined in section 3.1.

3.3 Consistency

A key requirement is for the symbols, conventions, practices, scale, and so on, to be consistent from one drawing to the next.

3.4 Governing/Authorization Agency Permits

Where there is a governing agency permit associated with one or more as-built drawings, there shall be correlation between the method of showing project from and to points on the permit and the as-built drawings. For example, where an Iowa Department of Transportation (IDOT) permit uses highway stationing (HWY STA.), the as-built drawings, which includes these particular permit points will, as a minimum, show HWY STA. numbers at the start and end of the particular drawing.

3.5 Link As-Built Drawings

The ICN consists of a series of spans, segments, and links. The specific start and end point of each span, segment, and link has been or will be defined by the ICN or its' authorized representative. Each link is identified by a unique set of characters. A set of as-built drawings is to be provided for each link.

Each as-built drawing shall use the unique link identifier as part of the tile, e.g., Link 1234, and will be included in the drawing number, e.g., DWG 1234-08 of 20.

3.5.1 Drawing Revisions

As part of the title and status blocks, each drawing shall list the reason(s) that an individual drawing was changed.

3.5.2 The first sheet of a set of link drawings shall be numbered DWG 0. It is a title page and shall contain:

3.5.2.1   Link name/title.

3.5.2.2   A revision table for each of the link drawings listing the current revision of each drawing.

3.5.2.3   Cable specifications.

3.5.3 To from information, including start and end point identification such as mile post numbers, highway station numbers, and or other readily recognizable identifiers.

3.5.4 A table listing each splice associated with the link, and, the drawing number containing that splice.

3.5.5 A revision record for DWG 0.

3.6 Scale

While drawings scale is specified as either "1"=100' or 1"=200'", to achieve consistency. The typical landscape drawing has 14 to 15 inches of running line, covering about 0.25 to .5 miles. Where appropriate, a single 17 X 11 sheet may contain 2 drawings. Same scale is required for the direction perpendicular to the running line. It shall be consistent and, reasonable distance differences shall be obvious.

Individual drawings may deviate from the above scale requirements for the sake of clarity.

3.7 Link Drawing Order/Sequence

Each set of link drawings shall read from left to right. That is, when the major direction of the link is east/west, the left side or edge of a drawing will show the match line for a more westerly/lower numbered drawing. When the major direction of the link is north/south, the left side or edge of a drawing will show the match line for a more southerly/lower numbered drawing.

3.8 Highway Plan Drawings

If available, highway plan drawings from IDOT may be used as part of an as-built drawing for additional information.

4 Specific Requirements

4.1 Highway Location Signs/Markers

When available, drawings shall show highway mile post numbers and highway stationing numbers.

4.2 Street, Road, Highway Identification

4.2.1   The highway marker number, e.g., county E-16, I-80, and so on, will be shown on all county, state, or federal highways that are on a drawing.

4.2.2   Most counties in Iowa have or are in the process of acquiring Extended 9 1 1 capability. Individual addresses are a requirement for this capability. Therefore, most, if not all, Iowa counties have assigned names to all county roads which are to be included on the drawings.

4.2.3   Multiple Identifiers: Where there is more than one identifying name and or number for a street, road or highway, all identifiers shall be shown on the drawing, e.g., V-24, OLD HOME ROAD, and so on.

4.3 County, Township, Range, Section(S)

As a minimum, the first and last drawing of a set of link as-built drawings shall show the county, township name and identifier, range identifier and section number(s) peculiar to that particular drawing. When the county, township, or range changes in a link drawing sequence, the previous and the new county, township, range, or section shall be shown. The city, county, state boundary symbol shown on the LEGEND AND SYMBOL sheet is to be used.

The preference is to have the county, township, range, and section specified on each drawing.

4.4 Fiber Cable Specifications

The fiber cable specification shall be shown on each page. See example drawings and the LEGEND and SYMBOL sheet.

4.5 Link Continuity

The first and last page of each set of link drawings shall show the connections/splices to the connecting link(s). The connecting links shall be shown with their respective link identification.

4.6 Revision Log

Each drawing shall include a revision table that is used once a drawing has been distributed and or released, whether it be a pre release, bid issue, as-built, and so on. The reason for the change shall be included in the table.

4.7 Splice Identification

4.7.1   Link Splices: Splices interconnecting one or more links will be defined by the ICN by the characters LS (link splice) and two or more identification characters, e.g., LS-A.

4.7.2   Backbone Splices: Splices placed at the end of reels are referred to as backbone splices and numbered in sequence for a given link, e.g., B1210-1, B1210-2, and so on.

4.7.3   Maintenance Splices: Splices that are required because of a maintenance or repair to the cable are referred to a maintenance splices and shall be identified as Maintenance Splice, MS"LINK #"-"x", with "x" identifying the time sequence that the splice was made, e.g., MS1210-1 is the first maintenance splice made on Link 1210.

4.7.4   The cable installer will assign MS identification codes to all unaccepted links. On all links that have been accepted by the ICN, the cable installer will identify the time sequence that the splice was made and request a splice identification code from the ICN.

Appendix A.
Legend and Symbol sheet.

See related PDF file Appendix A to As Built Drawing Standards.