HFC STRAND MAPPING – 800 MILES

A Case Study

PROJECT OVERVIEW:

The project involved strand mapping of approximately 800 miles of HFC network to establish an accurate digital representation of the existing aerial and underground infrastructure. The objective was to create a reliable GIS database that would serve as the foundation for RF and Fiber network design, construction, and future network maintenance.

SCOPE OF WORK:

- Review field walkout maps and customer specifications.
- Capture aerial strand and underground trench routes in GIS.
- Map support structures such as poles and pedestals.
- Capture service addresses and RF drop locations.
- Perform Quality Control (QC) and Quality Assurance (QA).
- Deliver validated GIS data for downstream RF and Fiber design.

MAPPING PROCESS:

1. Source Review

The engineering team reviewed field walkout maps, customer specifications, aerial imagery, GIS base maps, and project documentation. Any missing or unclear information was clarified before mapping activities began.engineering team reviewed field walkout maps, customer specifications, aerial imagery, GIS base maps, and project documentation. Any missing or unclear information

2. Support Structure Mapping

All support structures were accurately captured in the GIS platform, including:

- Poles and pedestal locations
- Pole tag numbers
- Aerial strand routes
- Underground trench routes
- Riser locations between aerial and underground plant
- Span distances between poles and pedestals

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Vision Through Mapping

3. Address and Serviceability Capture

All serviceable addresses were mapped and linked to the appropriate pole or pedestal. RF drop locations and potential service counts were captured to support future network design and capacity planning.

4. GIS Data Validation

All support structures were accurately captured in the GIS platform, including:

- Complete aerial and underground connectivity
- Accurate feature placement
- Proper GIS topology
- Correct feature attributes
- Compliance with customer mapping standards

5. Quality Control

Each completed map underwent 100% on-screen Quality Control to verify:

- No missing poles, pedestals, strand, or trench routes
- Correct pole tags and identifiers
- Accurate span distances and riser locations
- Proper address placement and street names
- Correct RF drop connections
- No duplicate, disconnected, or overlapping features
- Proper edge matching between adjacent map sheets
- Compliance with customer specifications

6. Quality Assurance

A final QA review was performed using random sampling and engineering validation to ensure consistency, completeness, and compliance with customer standards before project acceptance.

7. Deliverables

The completed project included:

- GIS Strand Maps
- Updated Pole and Pedestal Database
- Strand and Trench Network Data
- Address and RF Drop Mapping
- QC and QA Reports
- Final GIS Database for RF and Fiber Design

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KEY MAPPING CONSIDERATIONS:

- Accurate capture of aerial and underground infrastructure.
- Complete support structure inventory.
- Correct street names and address placement.
- Proper edge matching across adjacent map sheets.
- Accurate GIS attributes and topology.
- Compliance with customer engineering and GIS standards.
- High-quality mapping to support downstream RF Design, Fiber Design, and As-Built updates.

OUTCOME:

The 800-mile strand mapping project was completed successfully, producing a high-quality GIS database that accurately represented the field infrastructure. The validated mapping data enabled efficient RF and Fiber network design, reduced engineering rework, improved construction accuracy, and provided reliable records for future operations, maintenance, and network expansion.