



Utility Data Collection to Deliver Broadband to Rural Municipalities - Renfrew/Arnprior Case Study

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Presentation Overview

- Accelerated High-Speed Internet Program (AHSIP) Background
- Considerations for Data Collection
- Data Collection Techniques
- IKE GPS Solution
- Arnprior/Renfrew Case Study
- Summary
- Questions

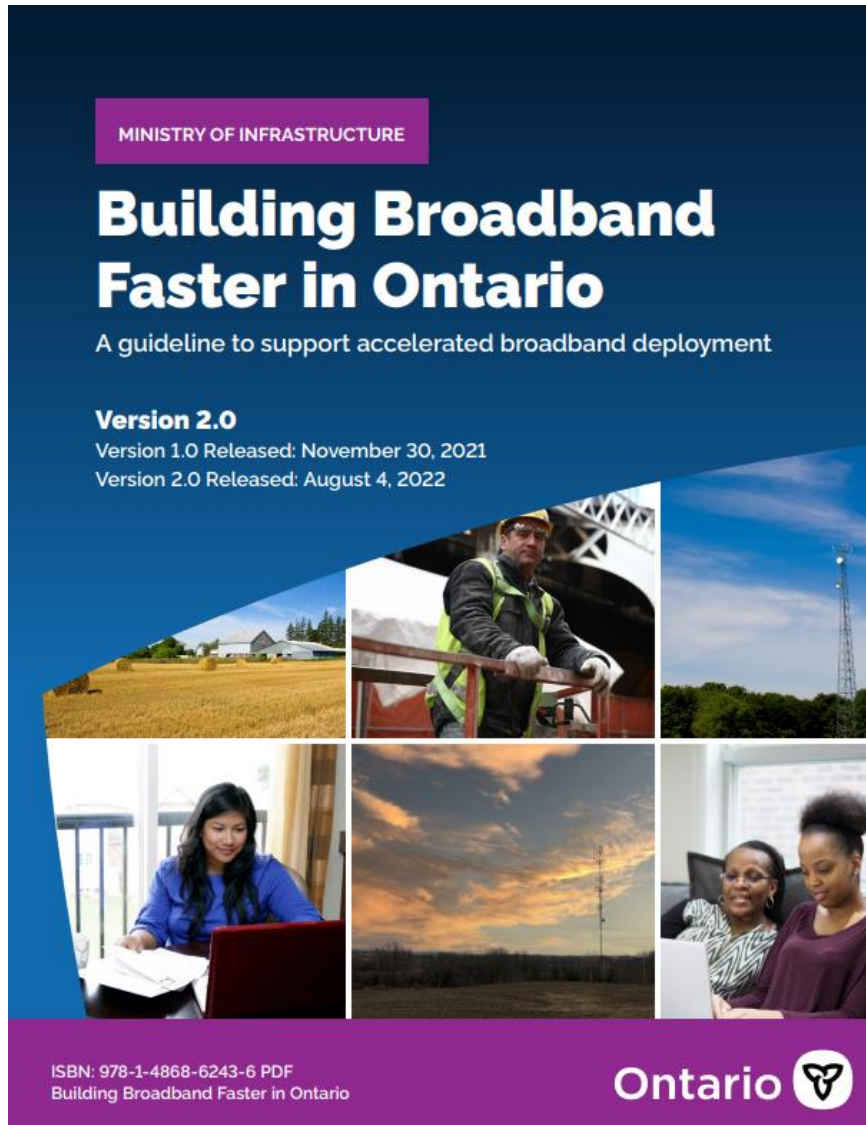
AHSIP Overview

**Bringing high-speed
internet access to
every community in
Ontario**



The Government of Ontario has committed almost \$4B to provide access in every region of Ontario to reliable, high-speed internet by the end of 2025.

AHSIP Overview



- Program is assisted by the Building Broadband Faster Act, 2021 (amended April 14, 2022)
 - <https://www.ontario.ca/laws/statute/21b02/v1>
- Bill 257 – Supporting Broadband and Infrastructure Expansion Act 2021
 - <https://www.ola.org/en/legislative-business/bills/parliament-42/session-1/bill-257>
- BBFA Guideline 2.0 Aug 4 2022
 - <https://files.ontario.ca/moi-building-broadband-faster-in-ontario-guideline-v2-en-2022-08-17.pdf>

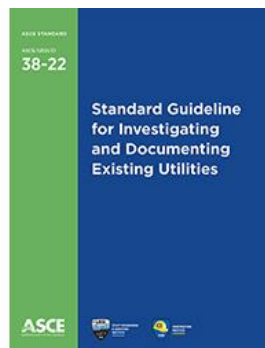
Data Collection - Applicable Standards



Identify Corridor

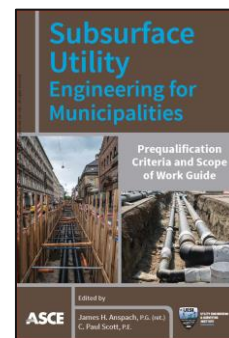
- Subsurface Utility Engineering Investigation
- Pole Inventories,

ASCE 38



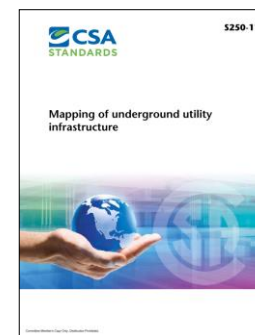
Complete Design

- Capital Project
- Utility Conflict Matrix
- Utility Relocation
- Identify Make Readies



Relocate Utilities

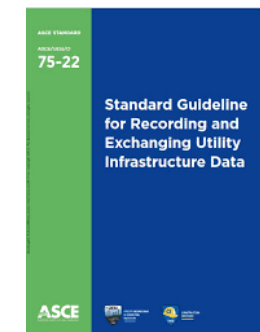
- Make Ready
- Early works
- During construction



Utility Close Out

- Invoicing/Payment
- Claim Resolution
- As Built Drawings,

CSA S250 / new ASCE



Key Requirements for Data Collection

Key Questions:

1. Building methods which determine what do I need to find. U/G, Aerial?
2. What are the Permit and Engineering Requirements?
3. What Quality Level do you need/want for the data?
4. How much detail do you need for Poles?
5. What techniques are available?



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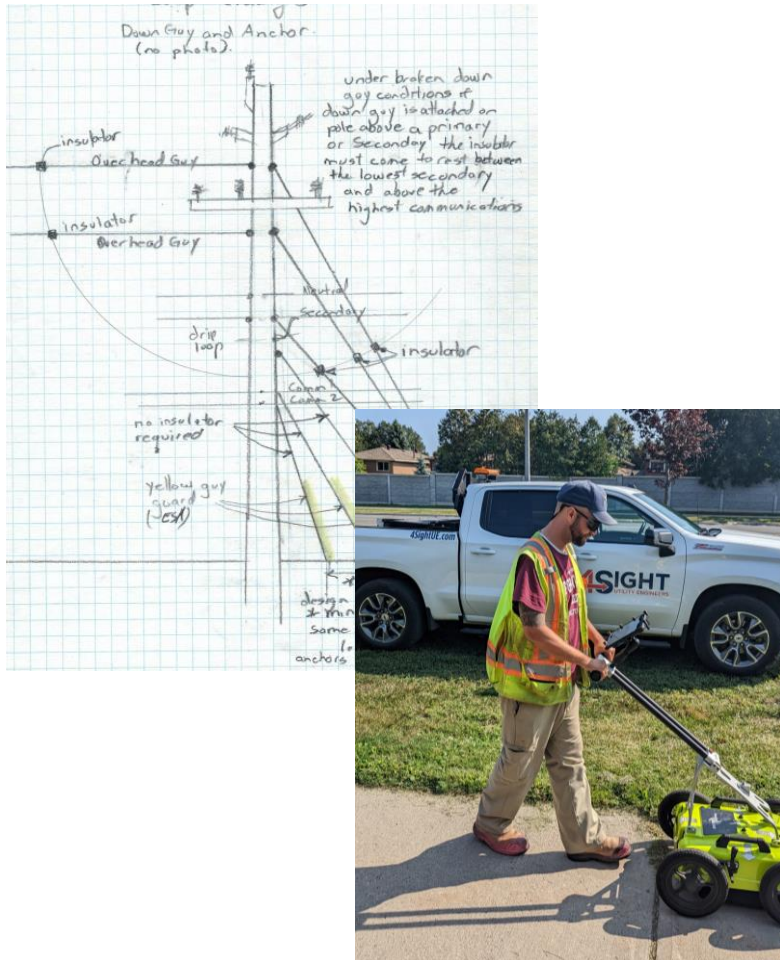
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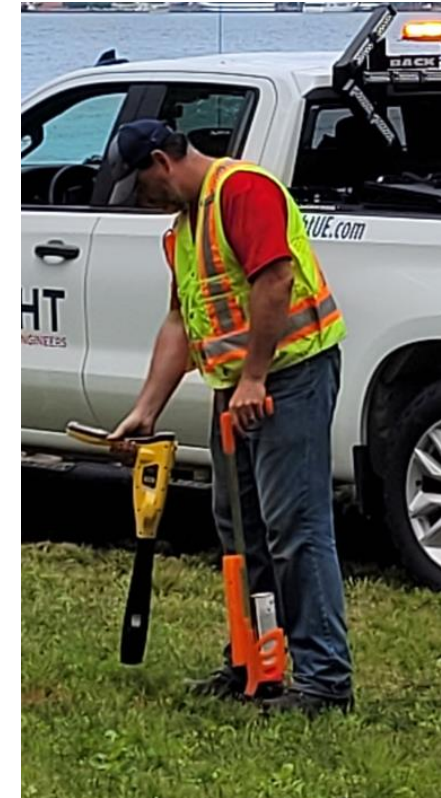
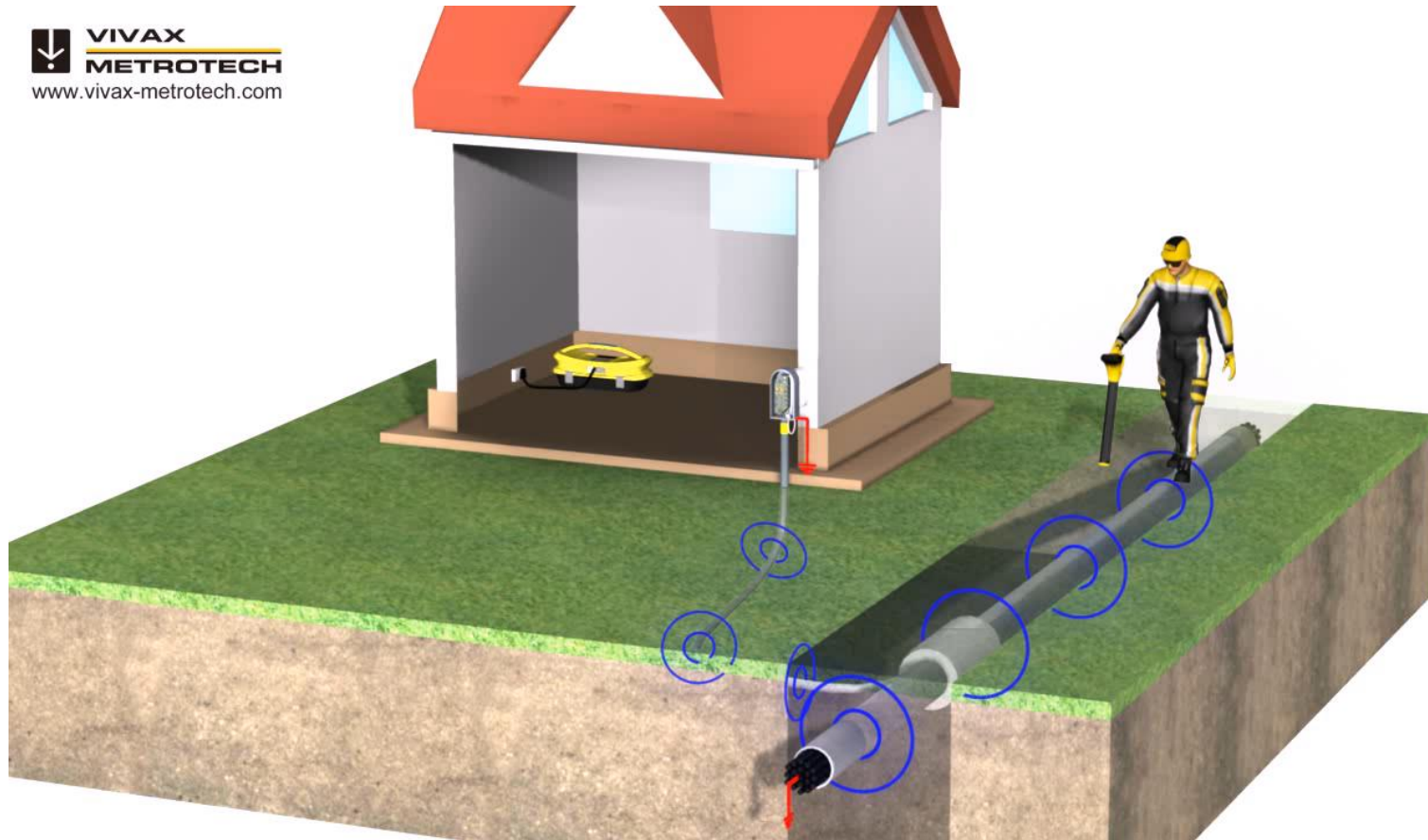
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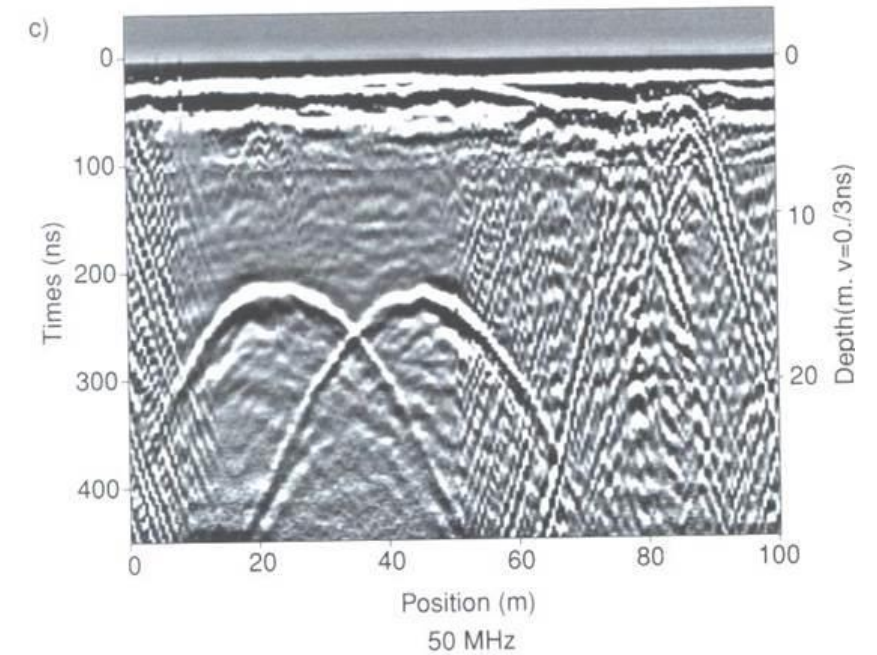
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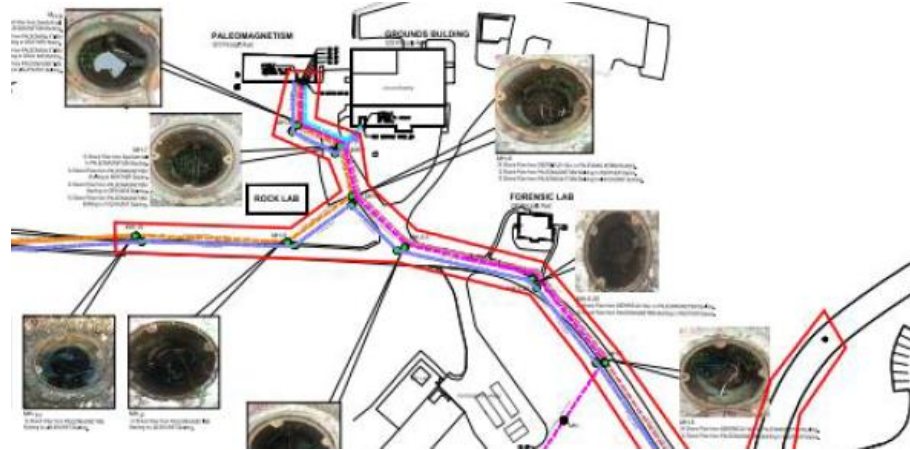
Techniques – Pipe and Cable Locators



Techniques – Ground Penetrating Radar



Techniques – CCTV / Sondes



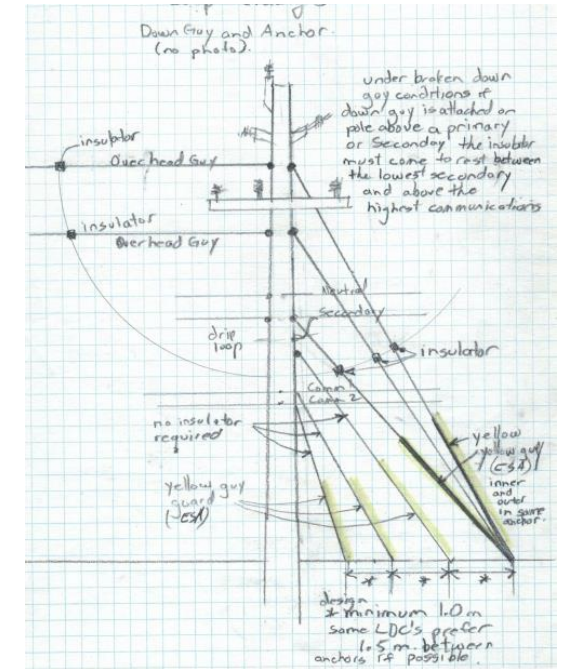
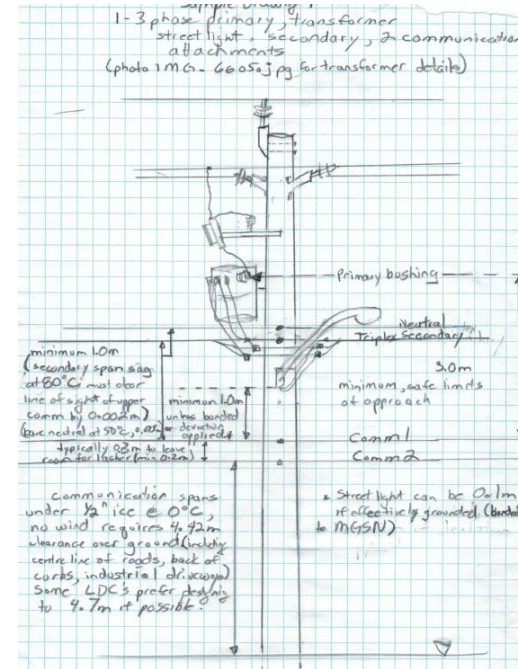
Techniques – LIDAR



Techniques – Vacuum Excavation



Techniques – Measurements and Photos



Techniques – LiDAR



Techniques – IKE GPS



Arnprior Renfrew – Case Study

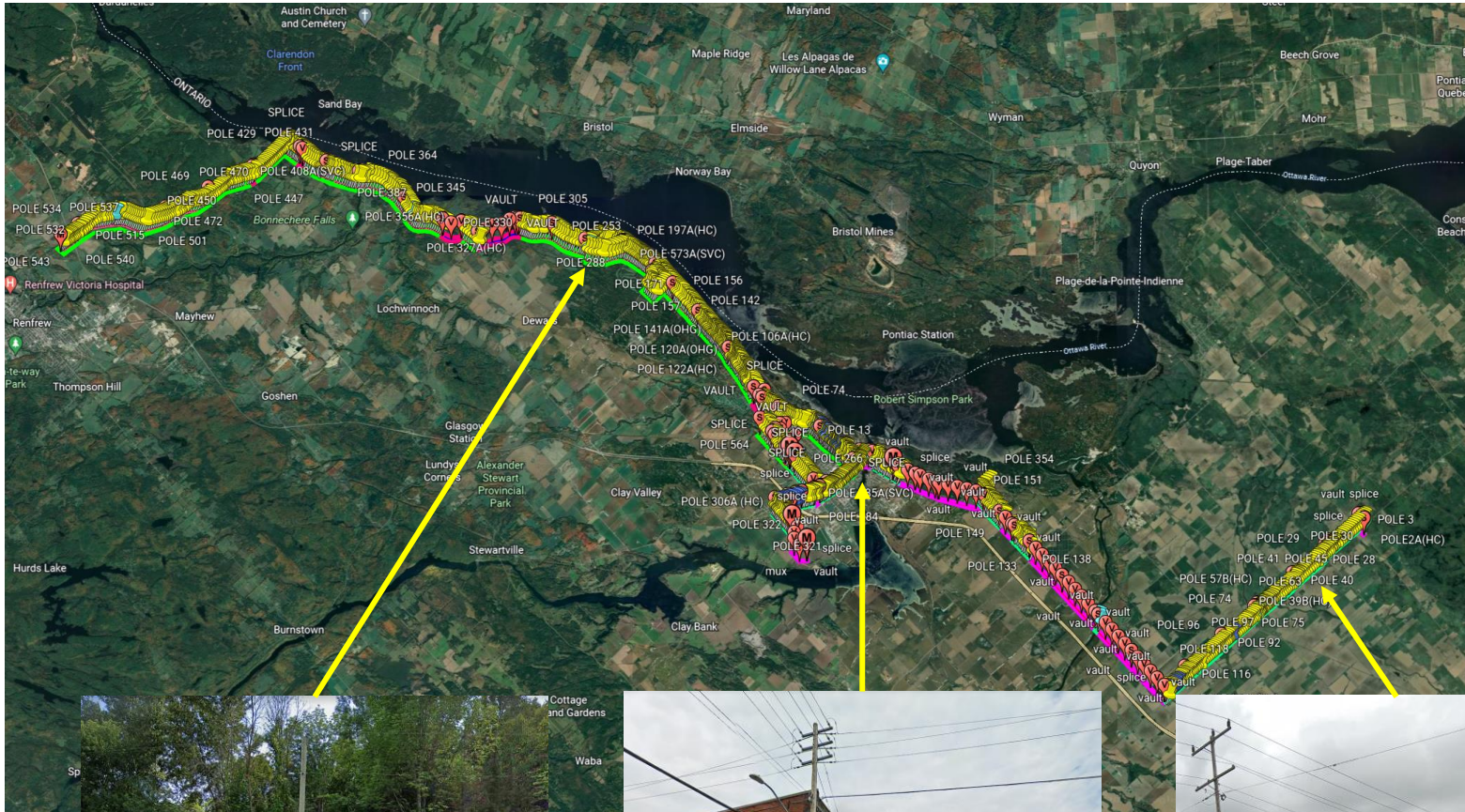


Arnprior Renfrew – Case Study

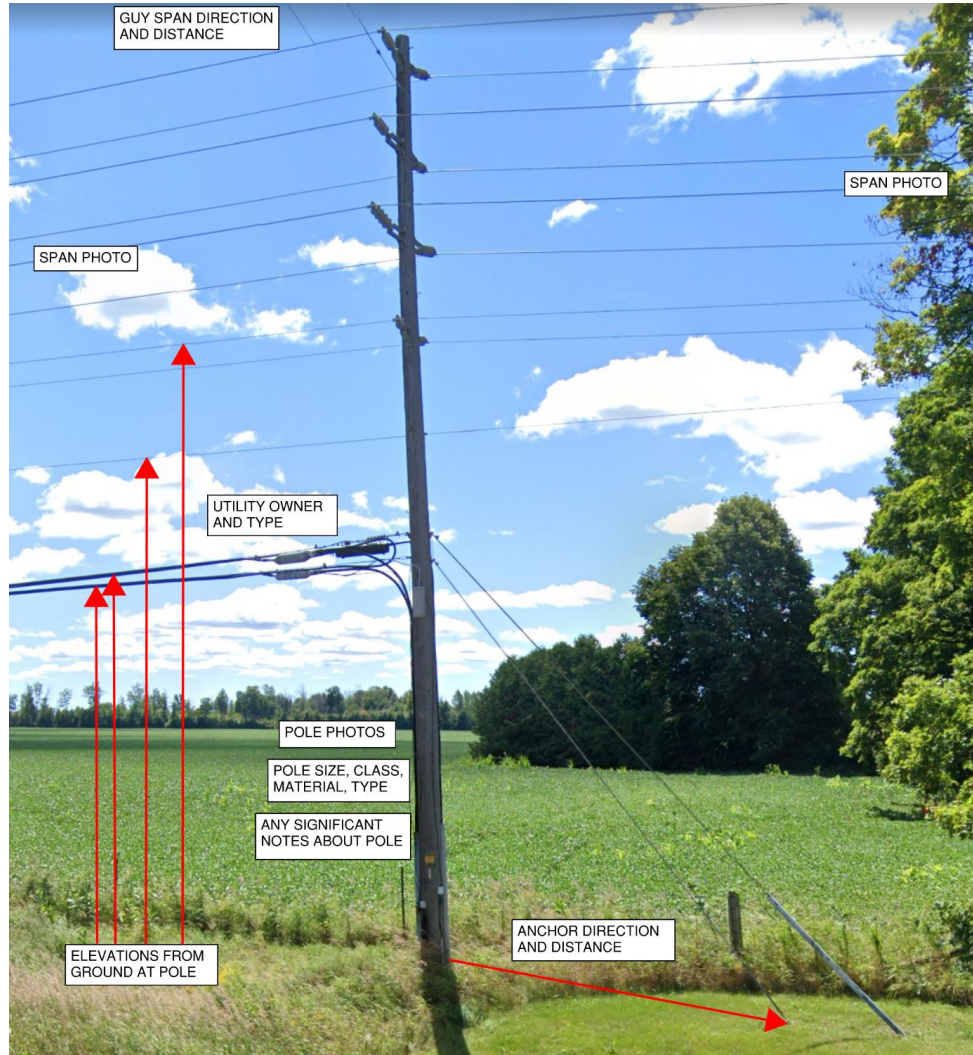
1. Project Overview
2. Why Did they Choose the IKE?
3. Managing the Project
4. Data Collection Methodology
 1. Data Collector
 2. Data Input Field
 3. Field Process
5. Sample GIS Data
6. Post Processing of Data
7. Lessons Learned
 1. Weather Issues
 2. Tripod / GPS Accuracy
 3. Getting all poles required for Calculations
 4. File Size
 5. Obstructions

Project Overview

- Approx. 1400 Poles
- Farm fields / Residential / Forested / City Center
- Varying traffic and road conditions

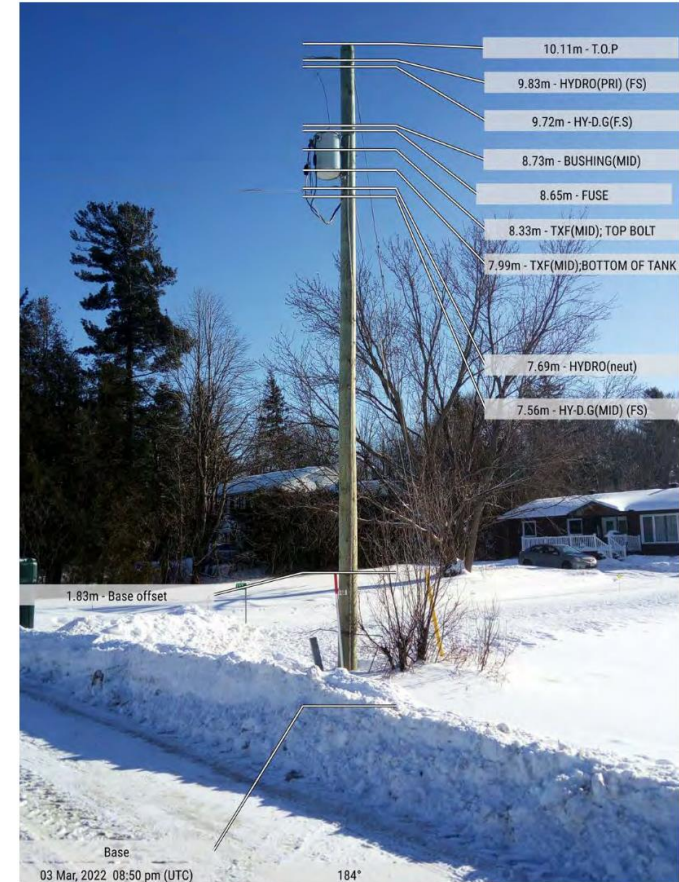


Project Overview



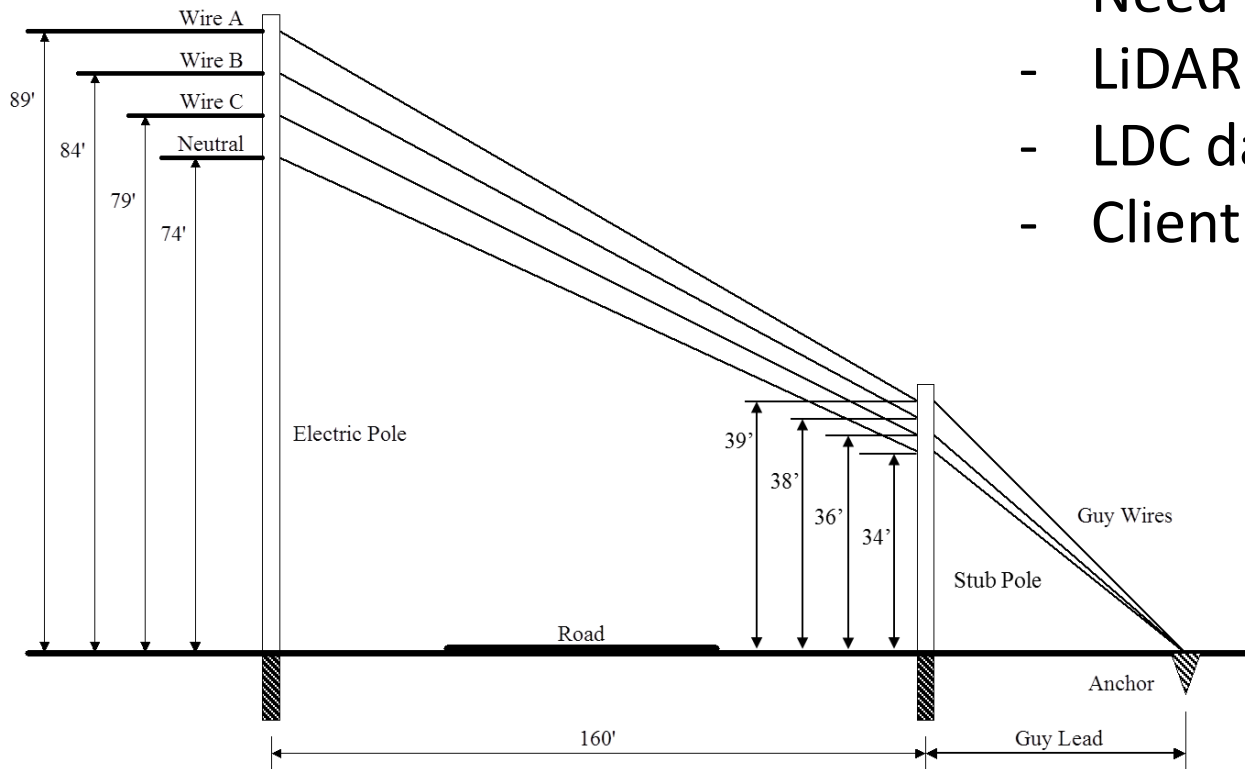
To Collect:

- Pole Location & Number
- Pole type / class / material
- Utility types and owners
- Pole features
- Relative elevations
- Significant notes
- Photos



Why Ike?

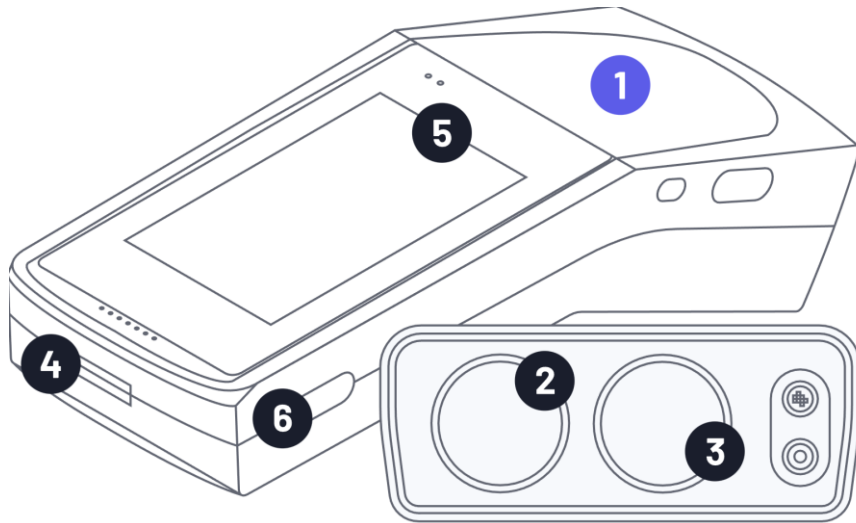
- Need more data than photos provide
- LiDAR considered
- LDC data requirements for pole calculations
- Client dictated IKE be used



Data Collection Methodology – Data Collector



- GPS
- Laser rangefinder
- Calibrated image capability
- Ike Office App
- Adjustable tripod



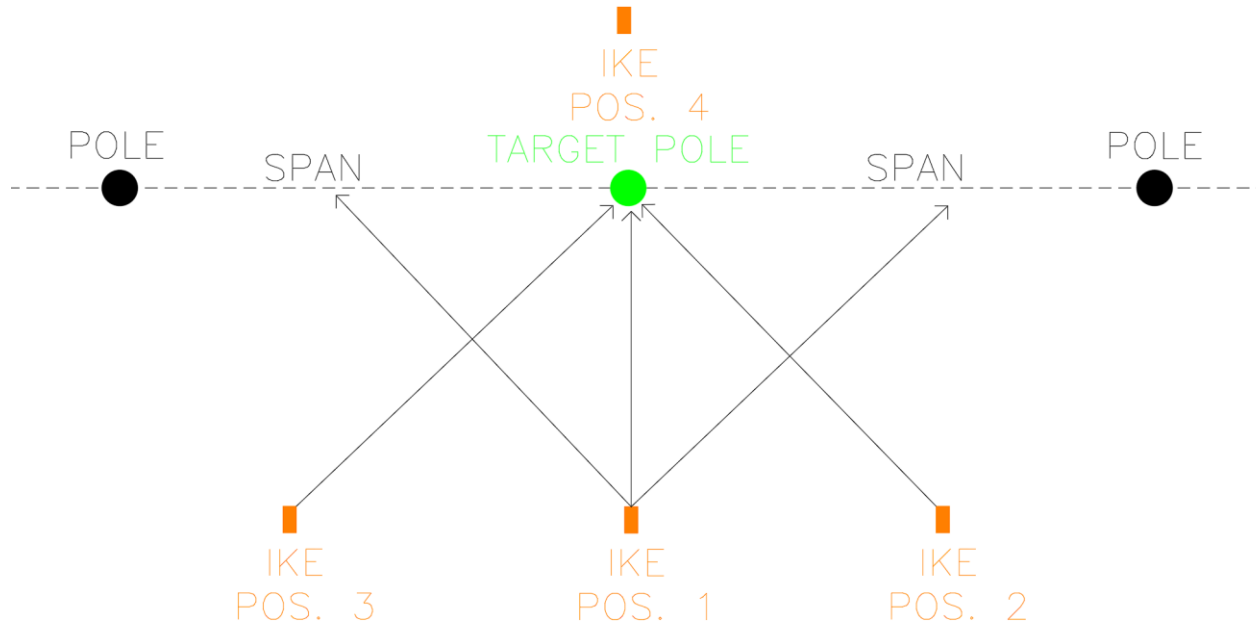
Data Collection Methodology – Data Input Field

The screenshot displays a mobile application interface for data collection. At the top, there is a status bar with icons for settings, a plus sign, a camera, and the time 12:15. Below this is a dark header bar with a back arrow. The main content area consists of several input fields, each with a left icon, a text label, and a right icon (either a plus sign or a vertical ellipsis). The fields are: 'Location' with coordinates '33.41223, -84.81844'; 'Transmission Pole' with a checked checkbox, the text 'No', and a toggle switch; 'Note' with a plus icon; 'PLA Result' with a plus icon; 'IKEphoto' with a camera icon and a plus icon; 'Equipment' with a plus icon; and 'Anchor' with a plus icon. At the bottom, there is a navigation bar with three icons: a triangle, a circle, and a square.

Source: (<https://ikegps.com/ike-office/ike-field-tools/>)

- Step-by-step list
- Integrated photos in required fields
- Distances calculated via rangefinder

Data Collection Methodology – Field Process



- Three angles of pole, photos of any tags or markings on pole, and one photo of each span
- Stake with known height used to mark offset from base of pole in cases of snow buildup



Sample GIS data

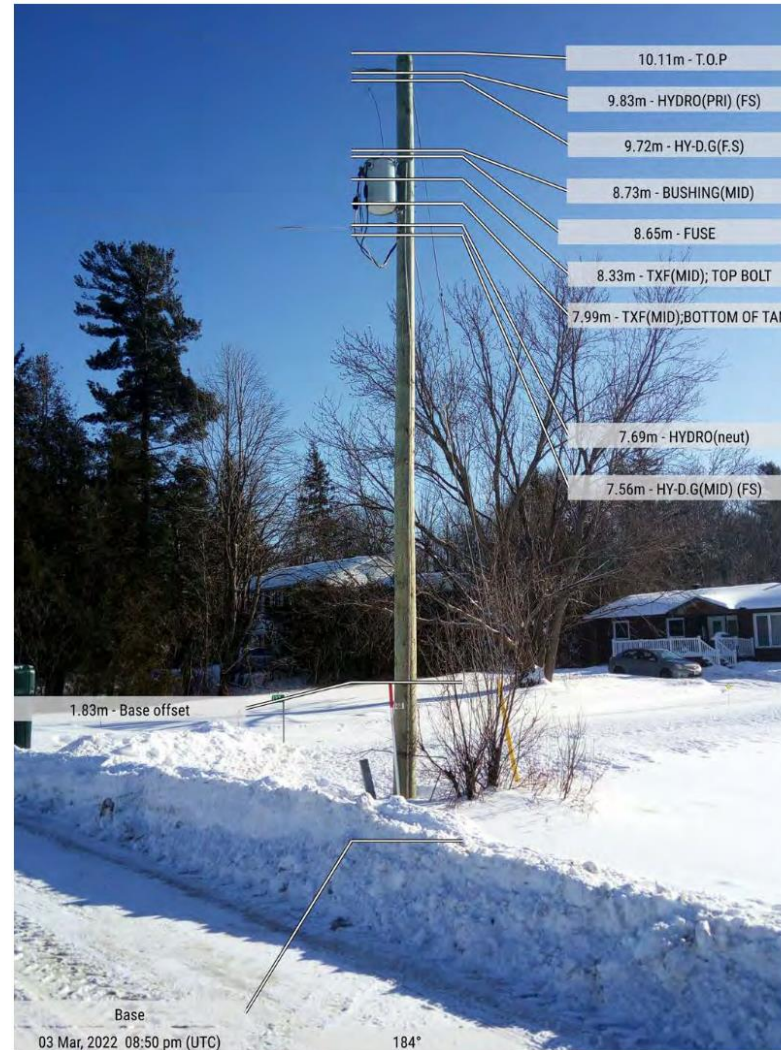
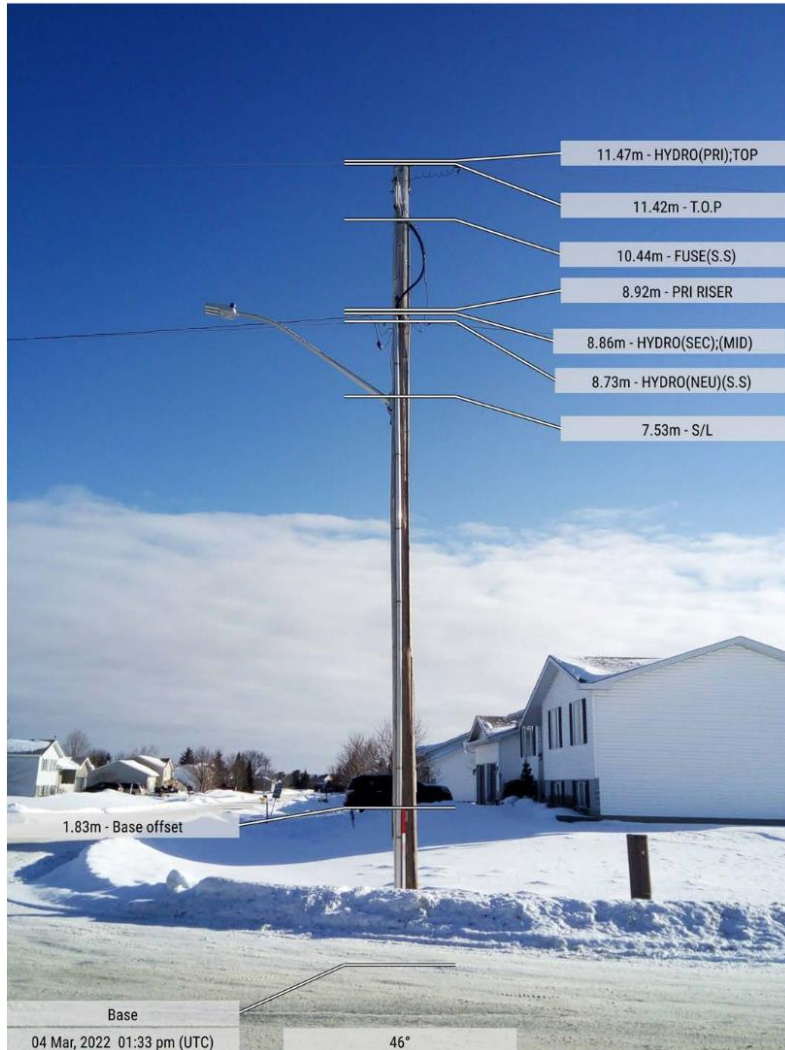
- IKE Office
- Project Overview
- Individual Pole Data with photos

The screenshot displays the IKE Office GIS application interface. The top header includes the 'IKE Office' logo, user information 'Cyient > Canada Rogers', and a search bar 'Search jobs and collections'. Below the header, the 'Brooklin' project is selected, showing a list of poles and their last modified dates. The map view shows a street intersection with several poles marked by red dots. A sidebar on the right displays three photos of utility poles. The bottom left corner shows a detailed data entry form for a selected pole.

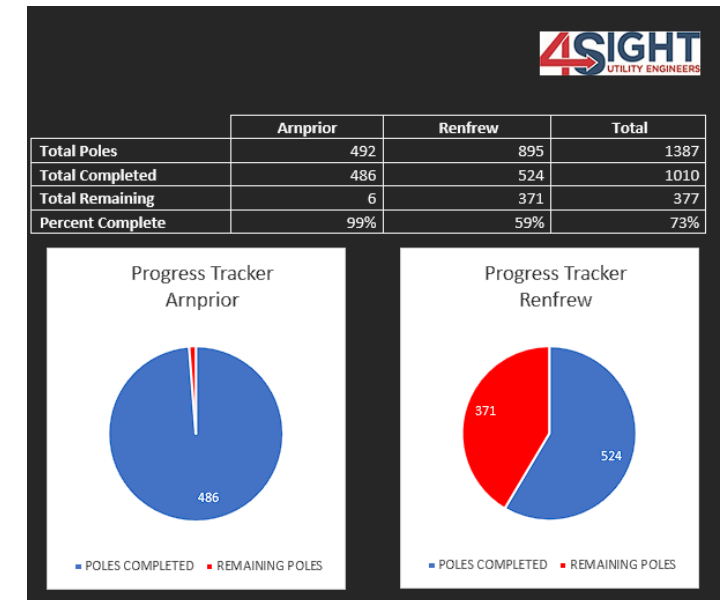
Brooklin	
Last Modified	
8	Brooklin
	16 Feb, 2022 02:10 pm
	P3/10118
	16 Feb, 2022 02:10 pm
	P2/10117
	16 Feb, 2022 02:10 pm
	P1/10116
	16 Feb, 2022 02:10 pm
	P7/10122
	16 Feb, 2022 02:08 pm
	No title
	16 Feb, 2022 02:08 pm
	P5/10120
	16 Feb, 2022 02:08 pm
	P6/10121
	16 Feb, 2022 02:08 pm
	P4/10119
	16 Feb, 2022 02:07 pm
3	test
	16 Feb, 2022 01:12 pm

Pole Size	
Pole Class	
Pole circumference	90cm
Pole Location	Latitude 45.3669107 Longitude -76.2280618 Altitude 71.81
True Size Pole Photos	4
Height	
Communication strand (ownership)	
Anchor/Guys	1

Post – Processing of Data






- Completed by client at their request
- Could be done by any party
- Progress tracking





Lessons Learned?

Lessons Learned - Weather

Thu 02/24 Mainly sunny	Fri 02/25 Snow	Sat 02/26 Mainly sunny
		
-10°	-10°	-4°
-14	-15	-10
-16°	-20°	-7°
20 %	80 %	30 %
9 N	12 NE	18 SW
14	18	27
8 h	1 h	7 h
-	~5 cm	<1 cm

- Freezing rain / snow buildup on screen
- Touchscreen unusable when wet / frozen
- Blurry photos
- Laser inaccuracy

Lessons Learned – Tripod / GPS accuracy

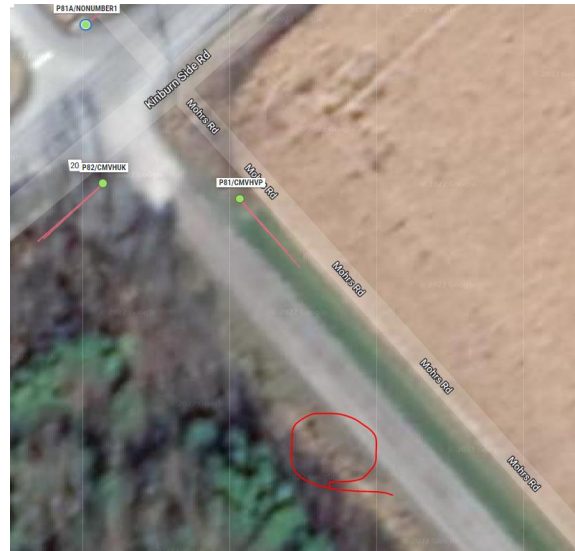


- Need sturdy GPS placement
- Horizontal GPS accuracy could be improved
- Z-component relativity (Need to measure from same location to determine elevation differences)

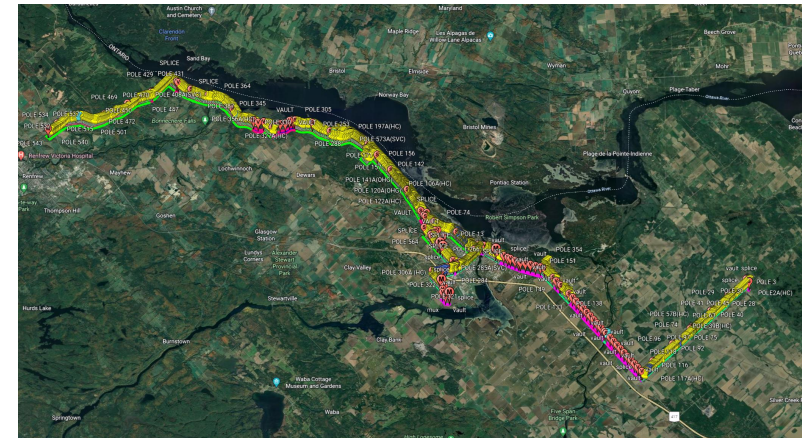
Lessons Learned – Additional poles / Calculations



IKE Office	
Jobs	Last Modified
866 Renfrew	19 Apr, 2022 02:58 pm
561 Arnprior	19 Apr, 2022 02:24 pm



- Thorough examination of all required poles required beforehand by someone with understanding of loading
- Connected poles
- Additional poles down adjacent roads



Lessons Learned – File Size

IKE Office	
Jobs	Last Modified
866 Renfrew	19 Apr, 2022 02:58 pm
561 Arnprior	19 Apr, 2022 02:24 pm

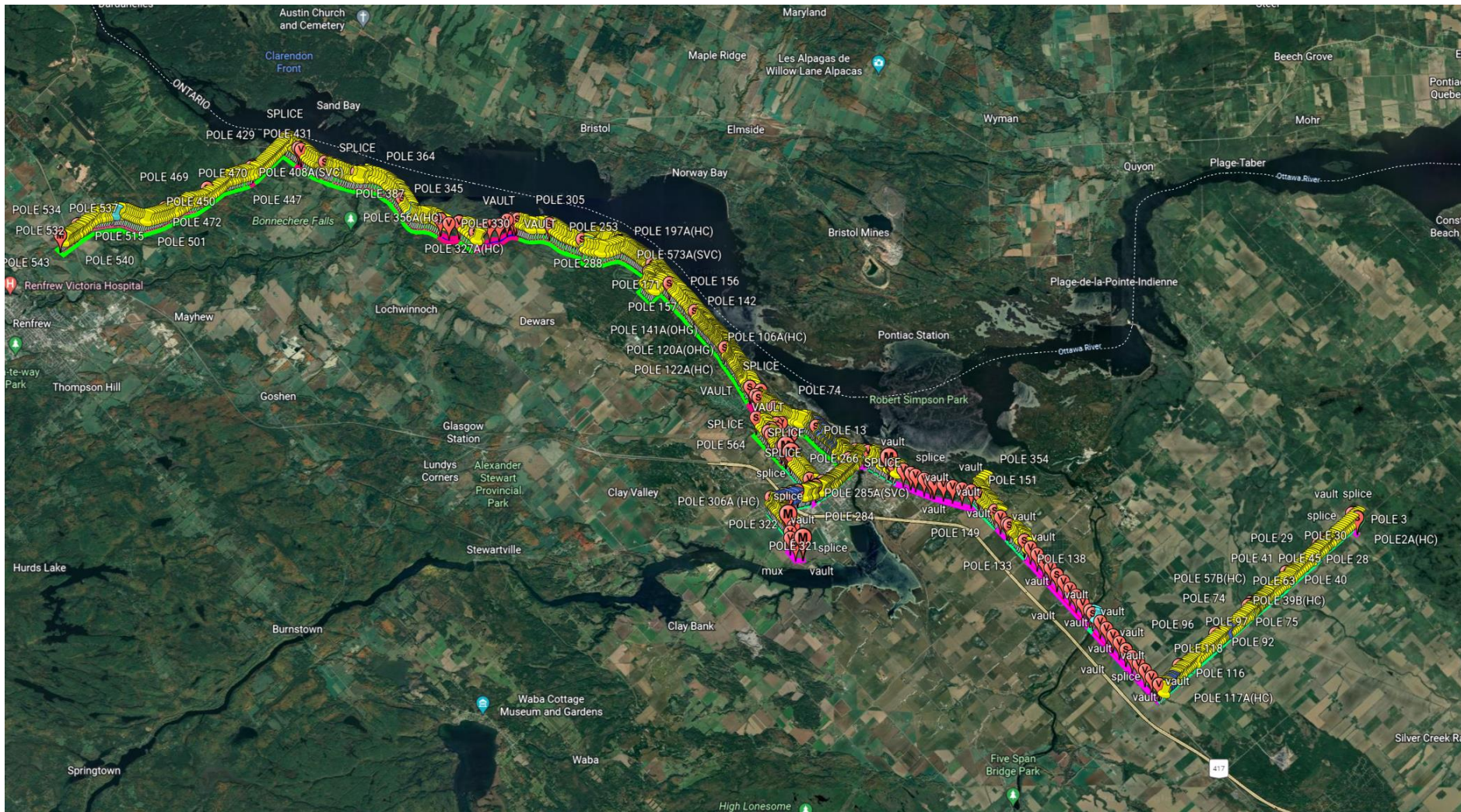
- Break Project into smaller chunks for smaller file sizes
- Unit had very slow download speed in rural area when attempting to sync
- Larger file sizes caused instability in the application, and it would take much longer to load, sometimes crashing

Lessons Learned – Obstructions



- Vegetation / objects blocking sightlines
- Laser requires direct placement on center of pole
- Hand measurements sometimes required

Project Completion



Summary

1. Understand your project and what information needs to be collected.
2. Follow appropriate Standards and Guidelines.
3. The IKE is a valuable tool for collection of detailed Pole Inventories suitable for engineering pole calculations.



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Questions?

