Owatonna Public Utilities Utilizes Oblique Aerial Imagery to Make Sense of Overhead Power Lines

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OPU Making sense of Power Lines

- Problems with CAD information
  - CAD lines included minimal identification information and were not continuous or connected other objects
  - Transmission lines were included in distribution lines within city limits
  - No data existed for Transmission lines outside Owatonna city limits
    - OPU helps maintain transmission from Byron to Waseca and from Owatonna to Faribault

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OPU Making sense of Power Lines

- Contracted out electronic conversion
  - CAD .dwg to ESRI file geodatabase
  - Included new schema and relational tables for room to grow

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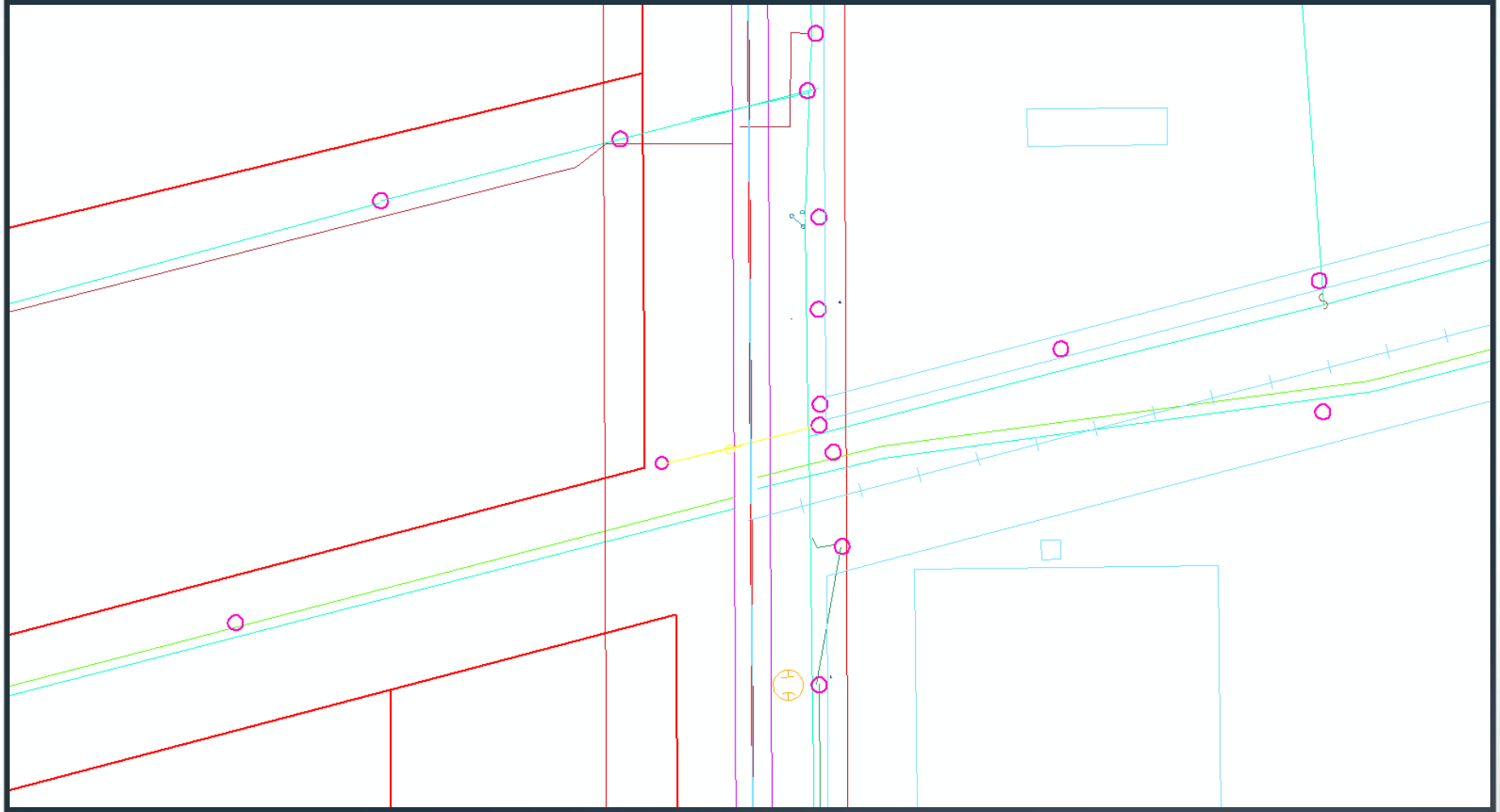
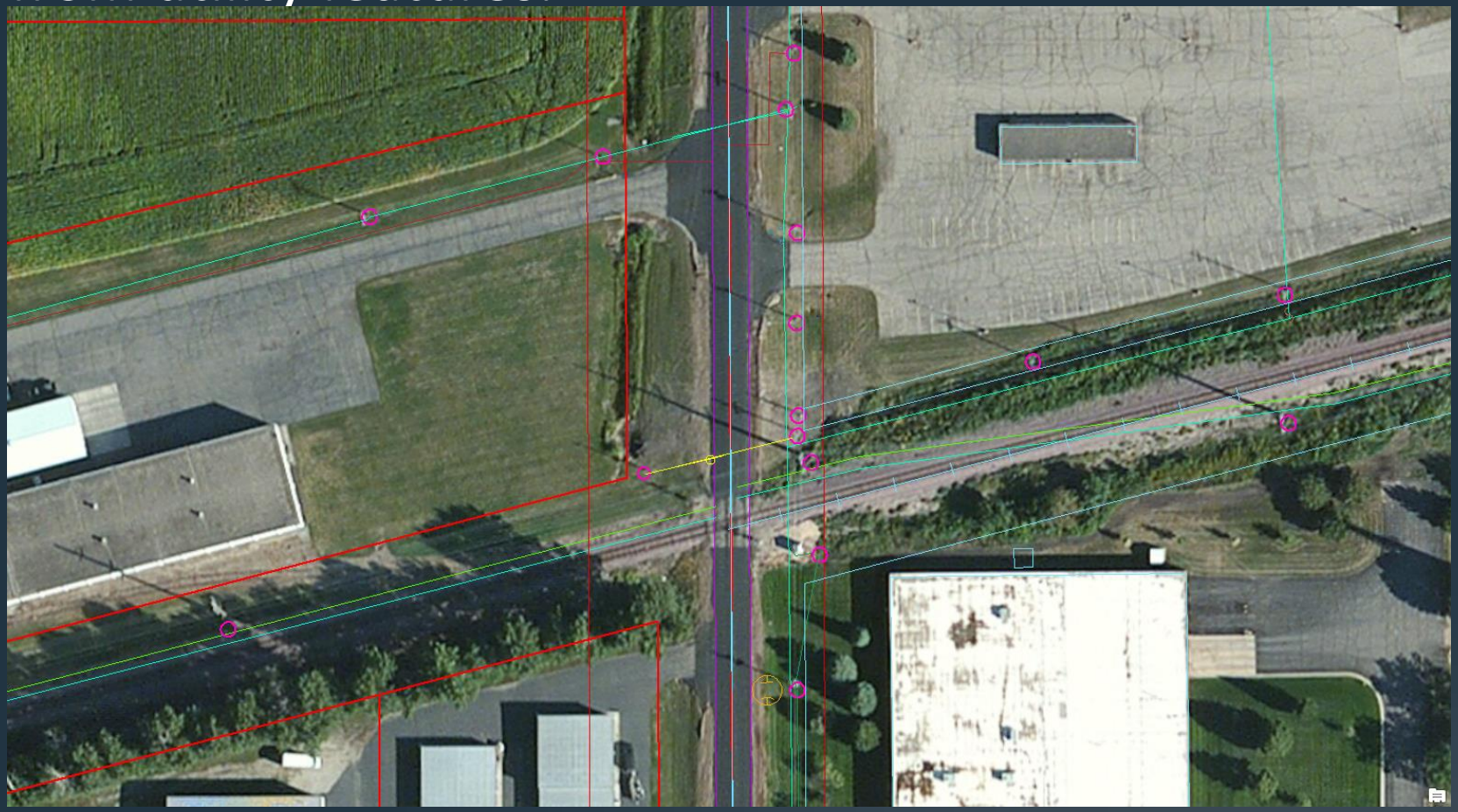
OPU Making sense of Power Lines

- Original CAD File



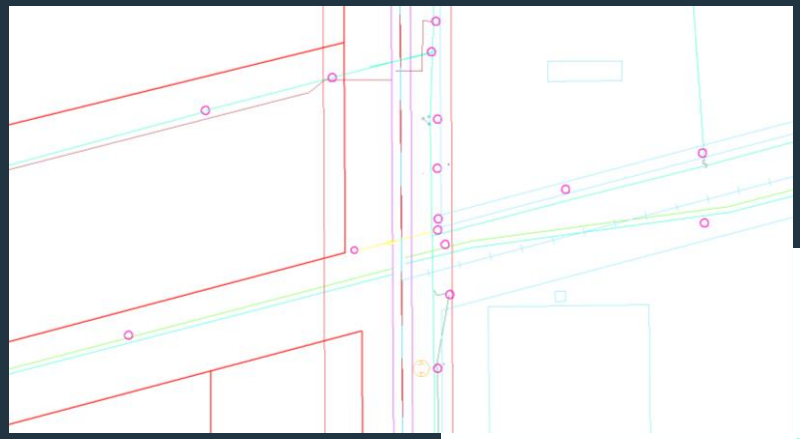
OPU Making sense of Power Lines

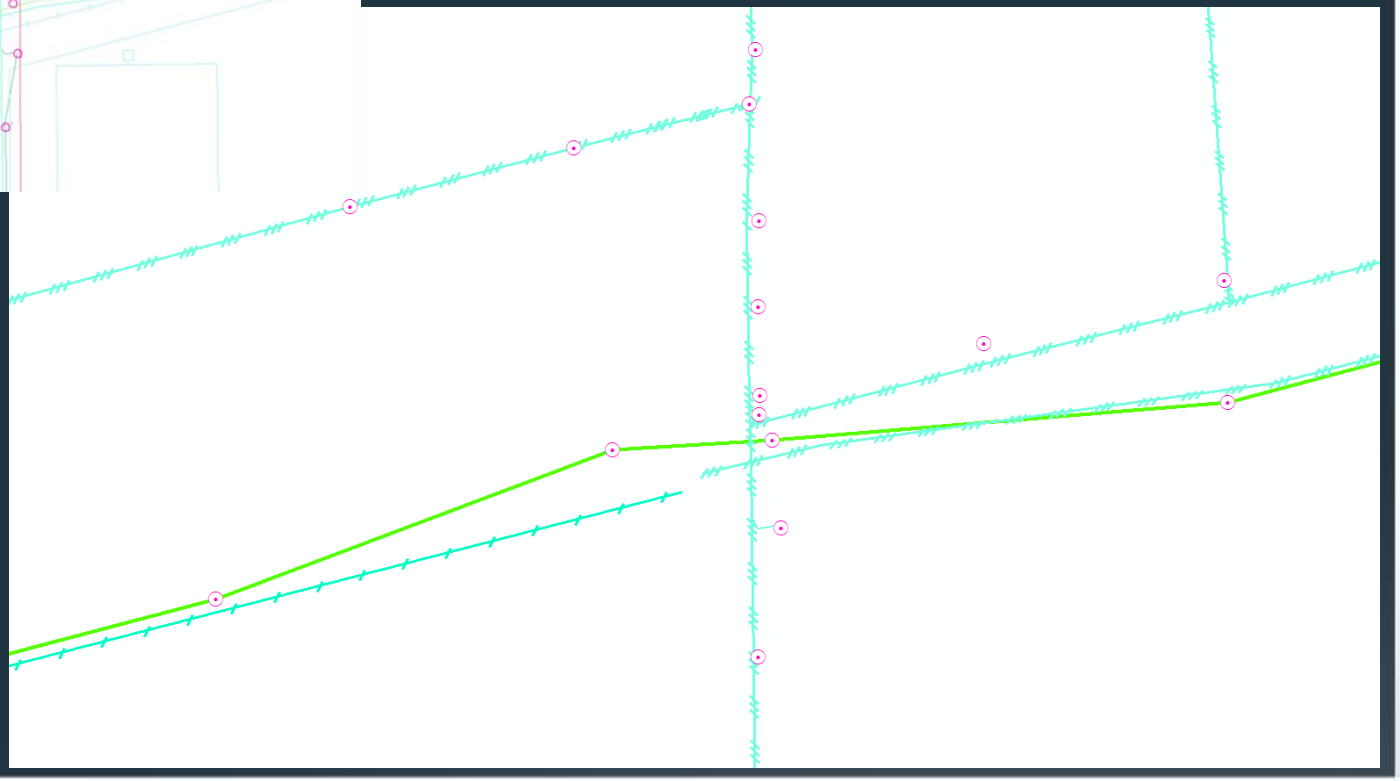
- Original CAD with Aerial distinguishes background lines from utility features.



OPU Making sense of Power Lines

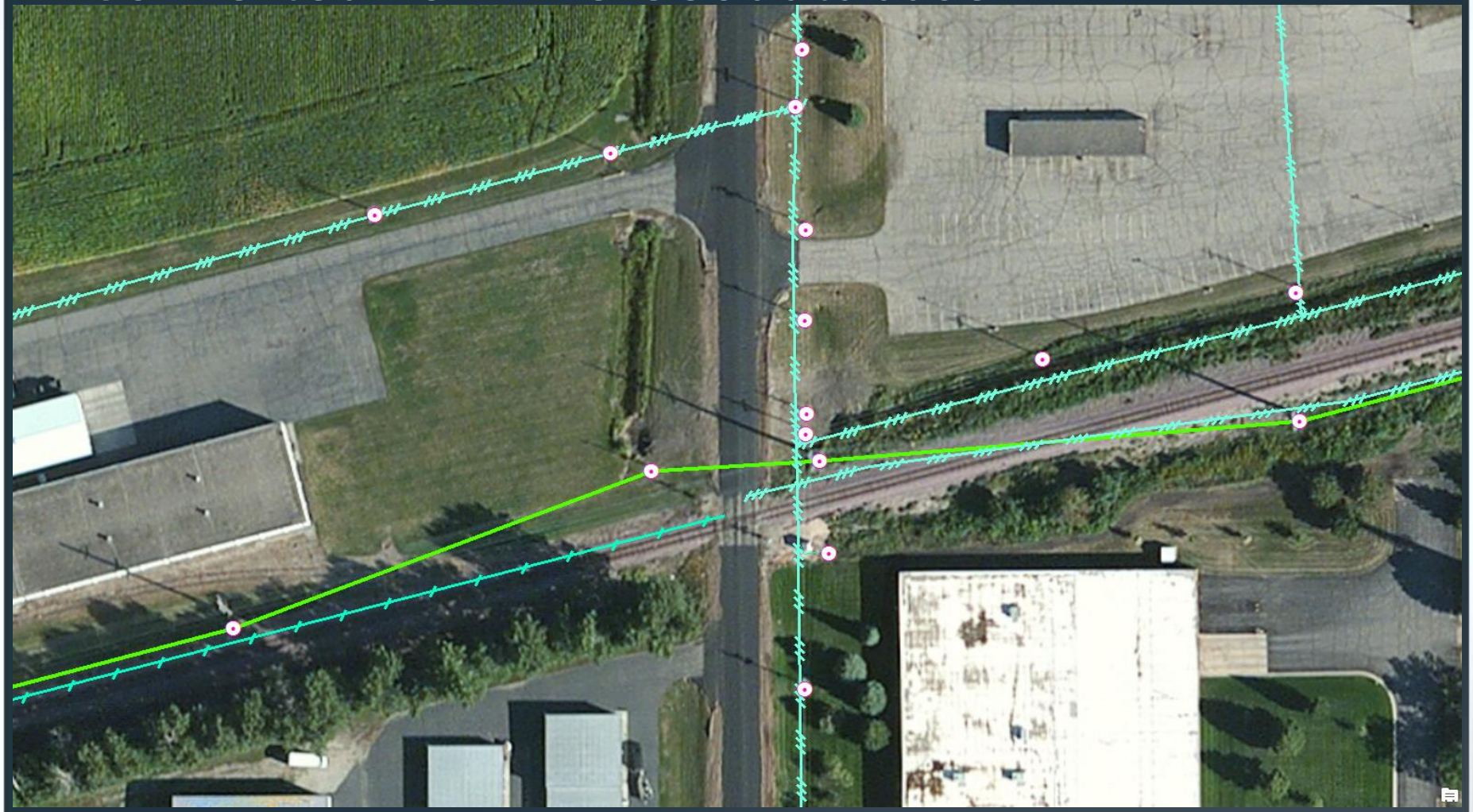
- Converted utility features to ESRI File Geodatabase





OPU Making sense of Power Lines

- Converted ESRI File Geodatabase



OPU Making sense of Power Lines

- Electronic conversion only took us so far
  - Little to no connectivity
    - Lines not attached to poles or attached to the wrong pole
    - Lines not continuous
  - Some lines were drawn on the wrong CAD Layer and therefore not correctly identified
  - Lack of attribute information

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OPU Making sense of Power Lines

- Adjustments needed to be made
  - Field work
    - Time consuming and labor intensive
    - Cannot reach all objects for measurements
    - Hard to trace lines along large spans
  - Oblique aerial imagery
    - No field notes or in field edits to transfer
    - Less Labor intensive
    - Can take measurements of objects easily

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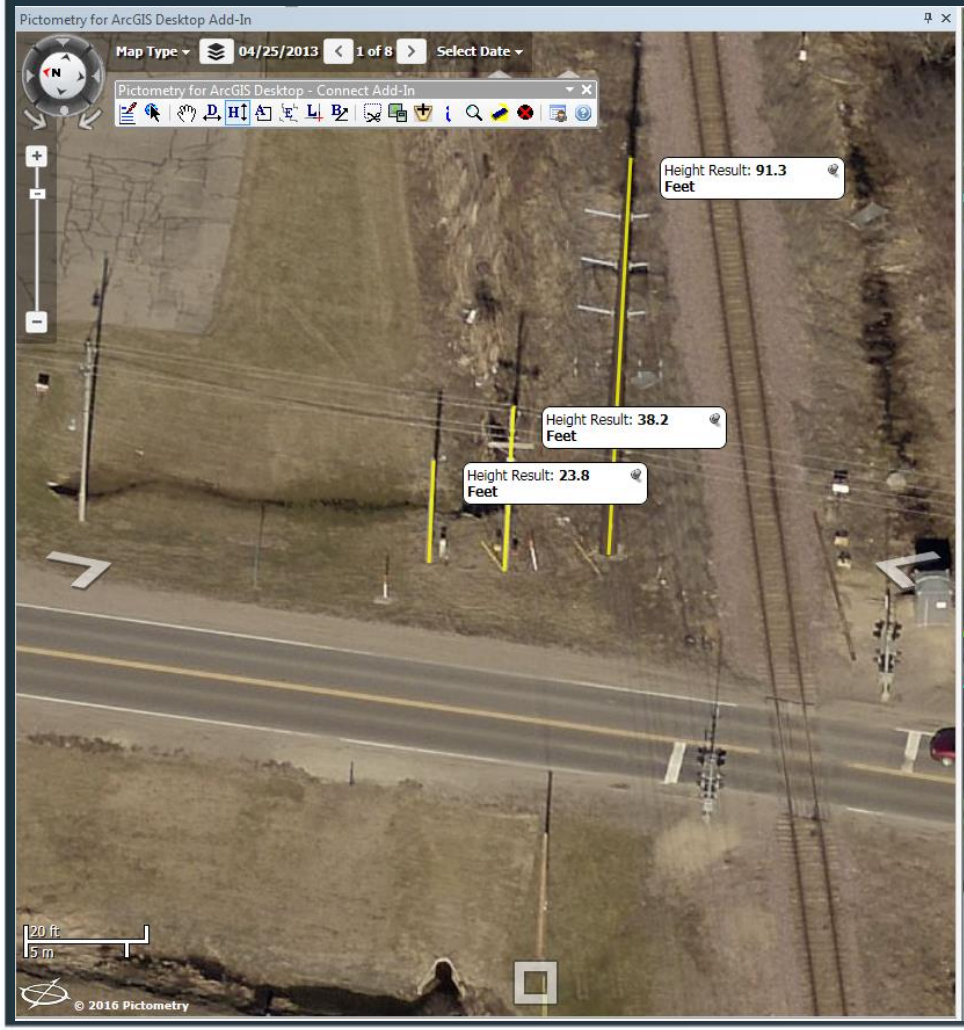
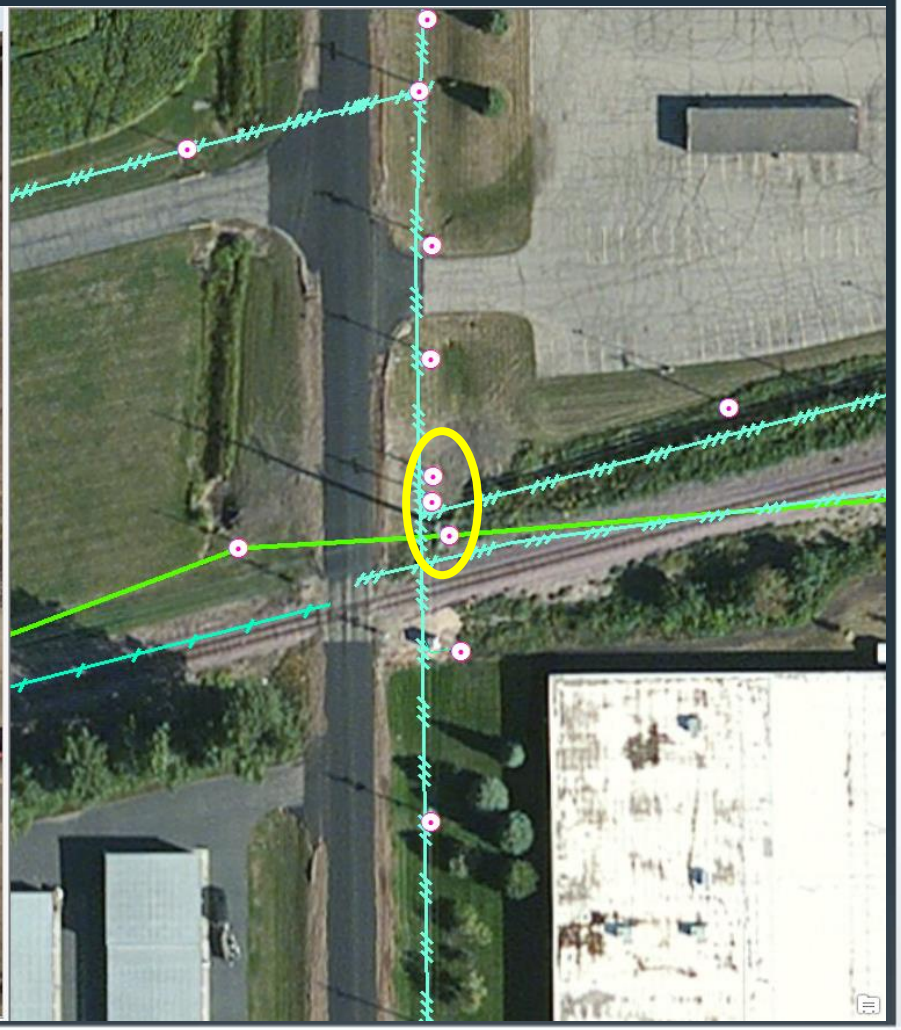
OPU Making sense of Power Lines

- Oblique/Aerial Imagery side by side

OPU Making sense of Power Lines

- Measurements help to distinguish pole connections





OPU Making sense of Power Lines

- What is on this pole?

Original CAD File

Converted Geodatabase

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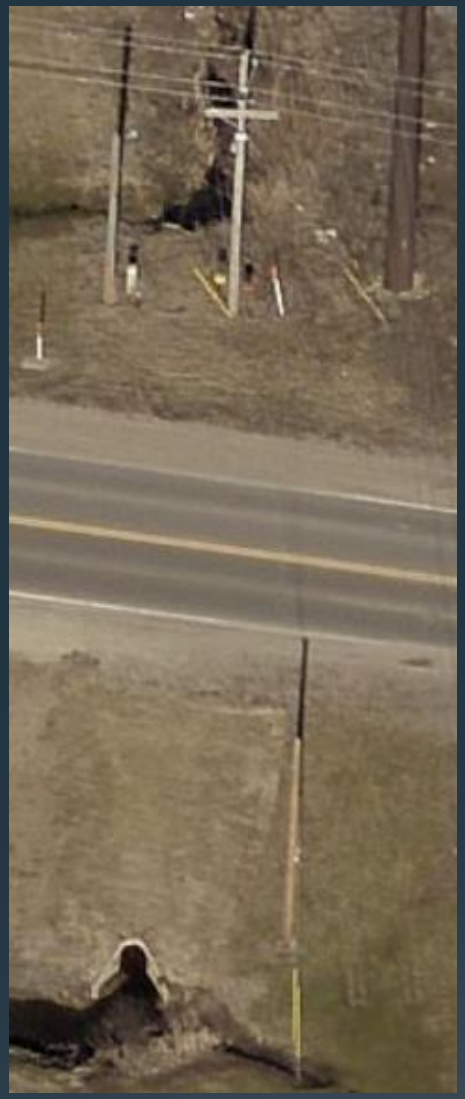
OPU Making sense of Power Lines

- Oblique view shows it is a much shorter pole

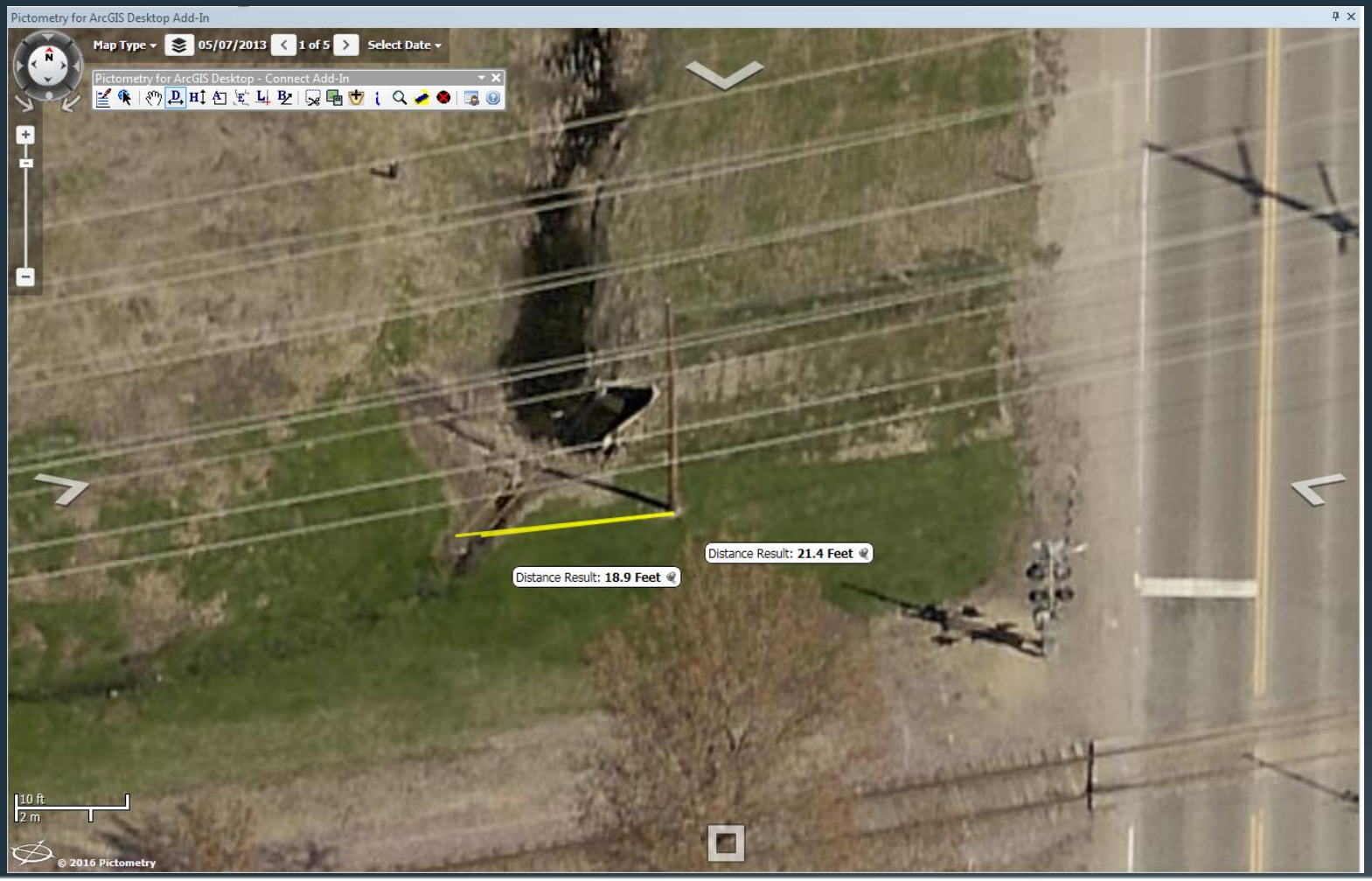
OPU Making sense of Power Lines

- From another angle you can see another clue



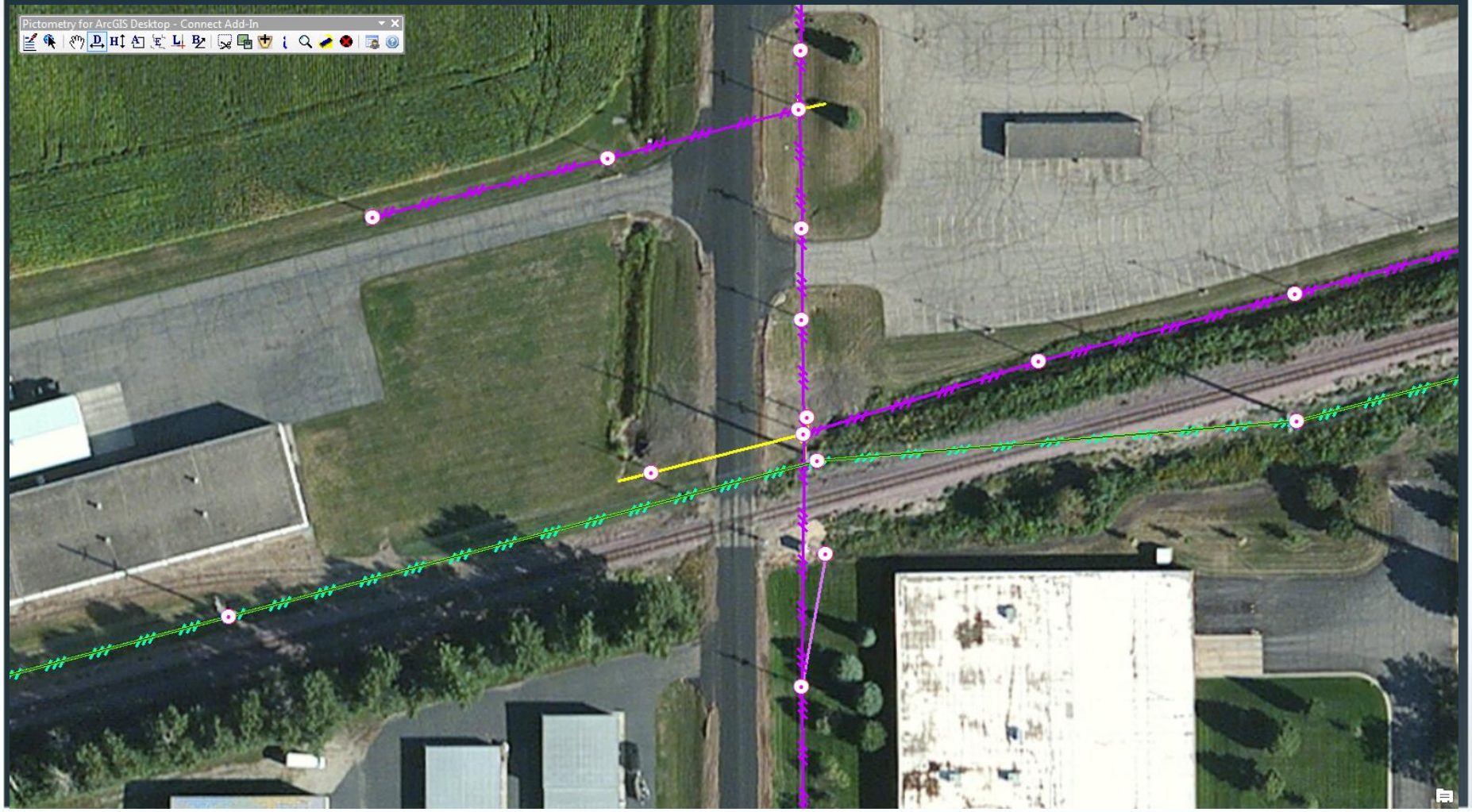
OPU Making sense of Power Lines

- Measure Guy wires distance from pole



OPU Making sense of Power Lines

- Final Product



OPU Making sense of Power Lines

- All distribution was visually adjusted with attributes added from schematics and notes
  - Some field verification will be needed
- Transmission lines were located beyond city limits using imagery
  - Oblique imagery allowed identification of poles with local distribution attachments
  - Minimal infield time
    - Many areas are difficult to access
  - Dynamic interaction between field, map, and schematic

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