Overhead Transmission

H-Frame Labeling

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Every H-Structure in this dataset is similar.

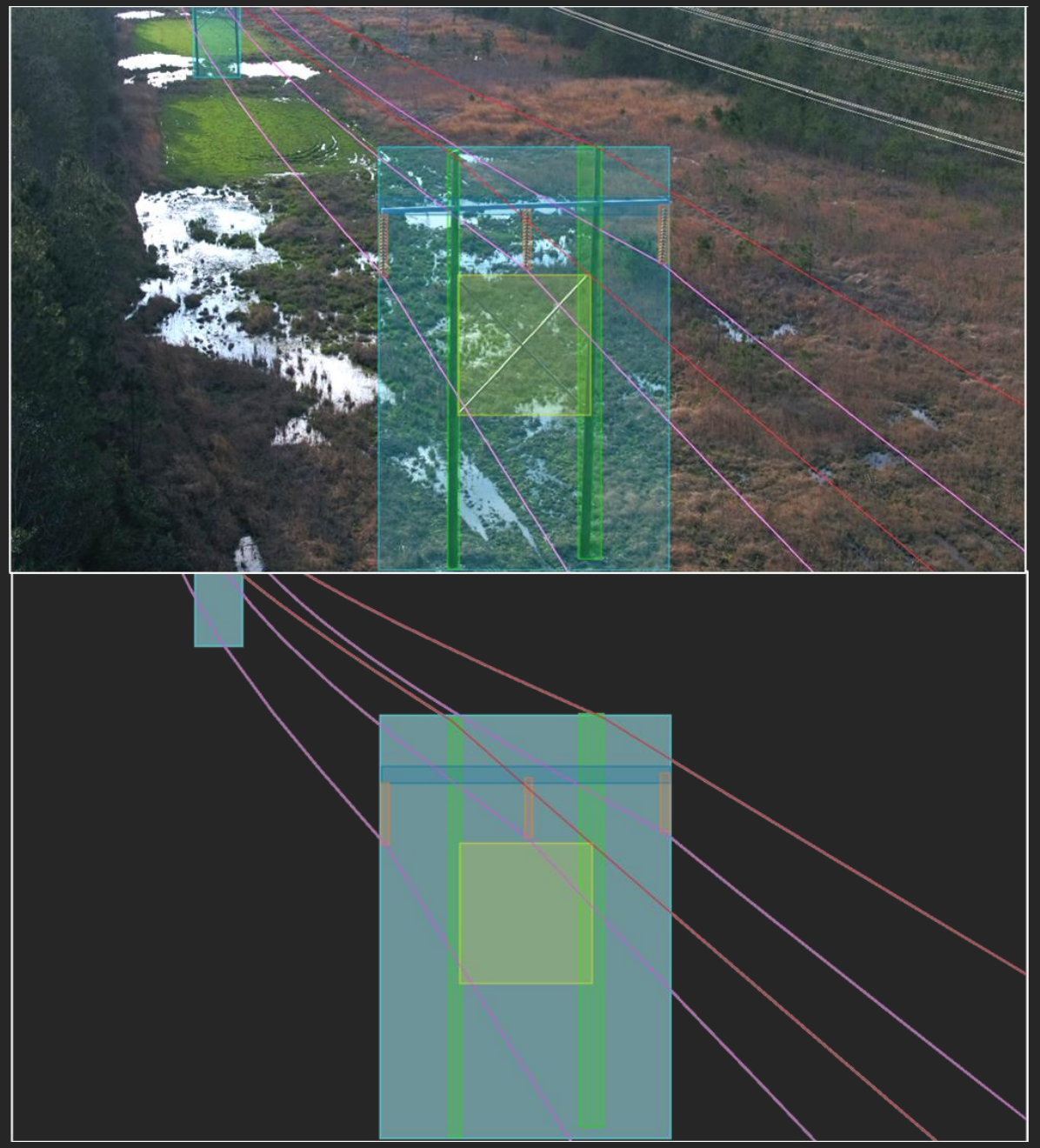
- All structures will contain:
  - 2x Poles
  - 1x Crossarm
  - 3x Insulators
  - 3x Conductors
  - 2x Shield Wires

- Some may contain:
  - 1x X-Brace

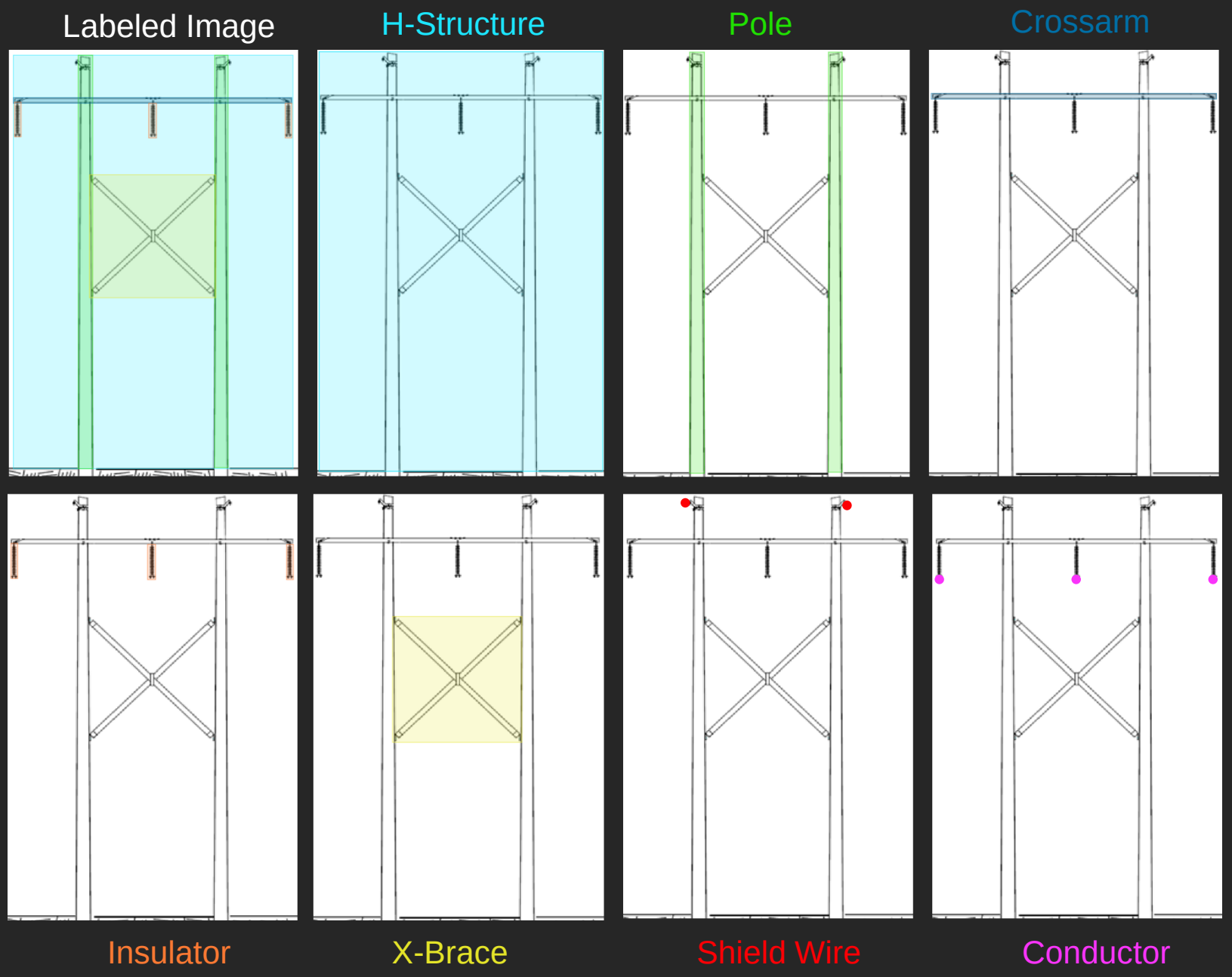
Polylines and Bounding Boxes

- Polyline Classes
  - Conductor
  - Shield Wire

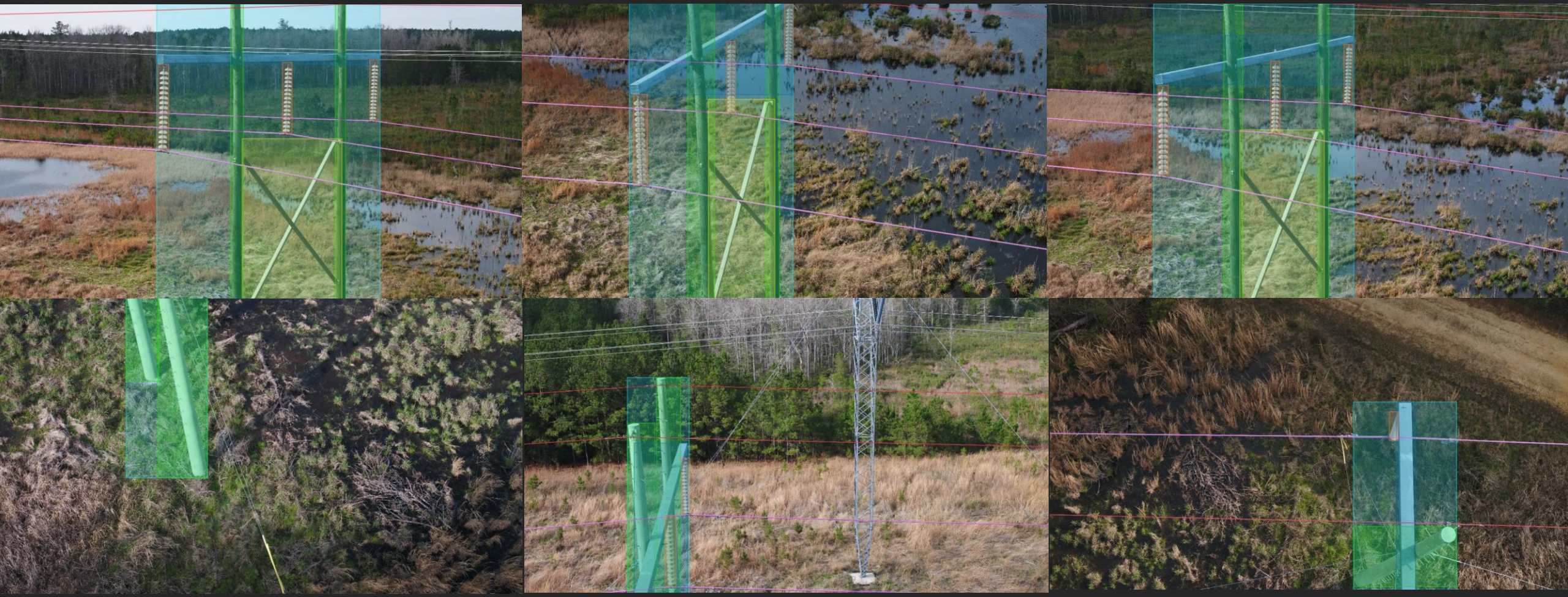
- Bounding Box Classes
  - H-Structure
  - Pole
  - Crossarm
  - Insulator
  - X-Brace



Classes



Labeled Imagery



Polyline Guidance

Polylines should trace over the wire pixels.

Correct

Wrong

Polyline Guidance

Polylines should extend to the end of the image.

Correct

Wrong

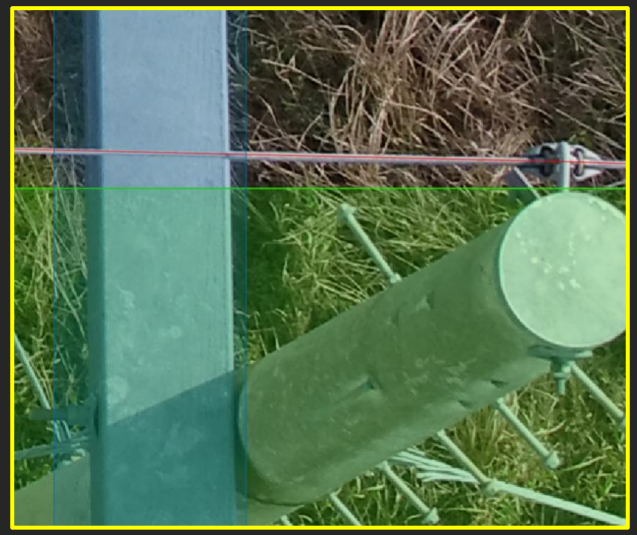
Polyline Guidance

For scenarios with “Jumpers,” don’t label the jumpers, but label the polyline class on both sides of the pole.

Polyline Obscuration

Polylines are obscured if the wire is hidden by a pole, crossarm, or insulator.

The conductor is obscured by the crossarm and the insulator.

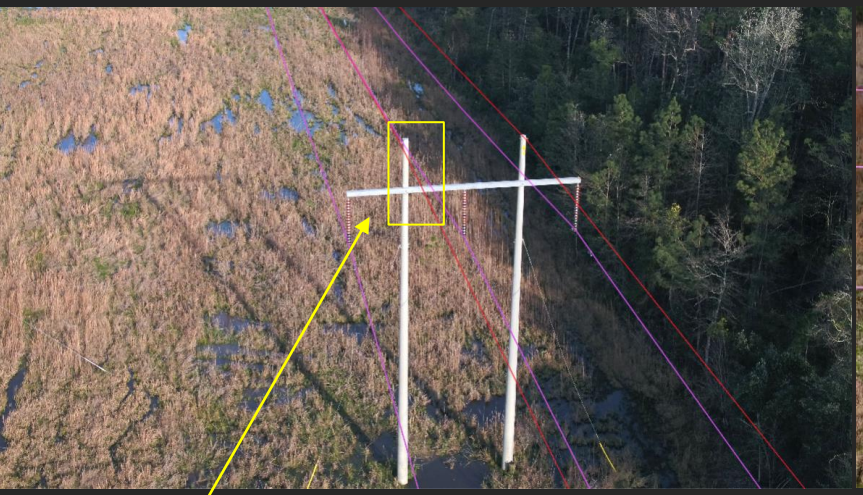


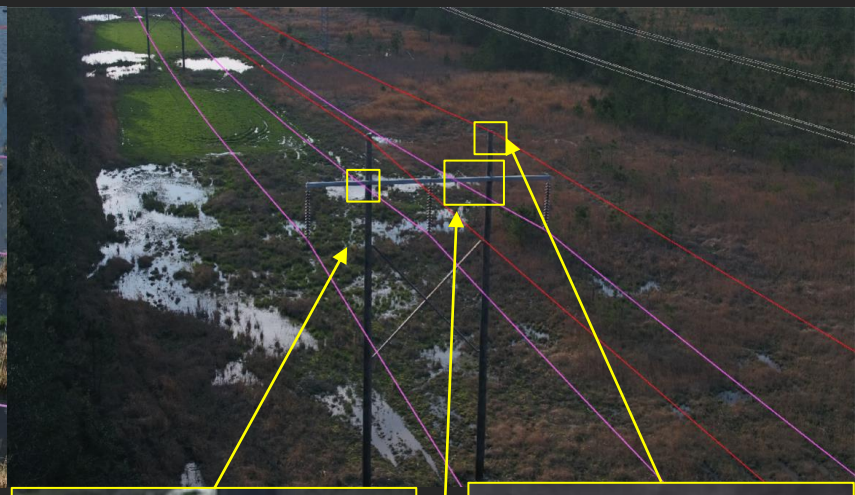
The shield wire is not obscured by the crossarm.

It is rare for shield wires to be obscured by crossarms or insulators.

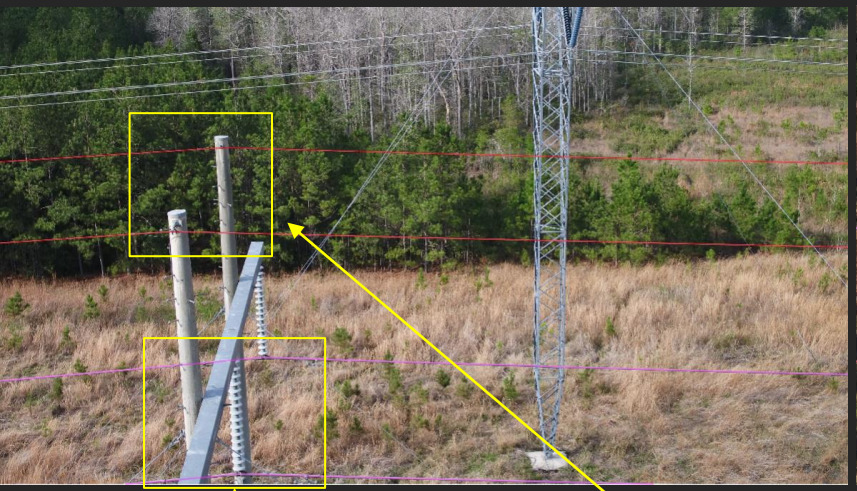
This is because shield wires are installed at the top of the structure.

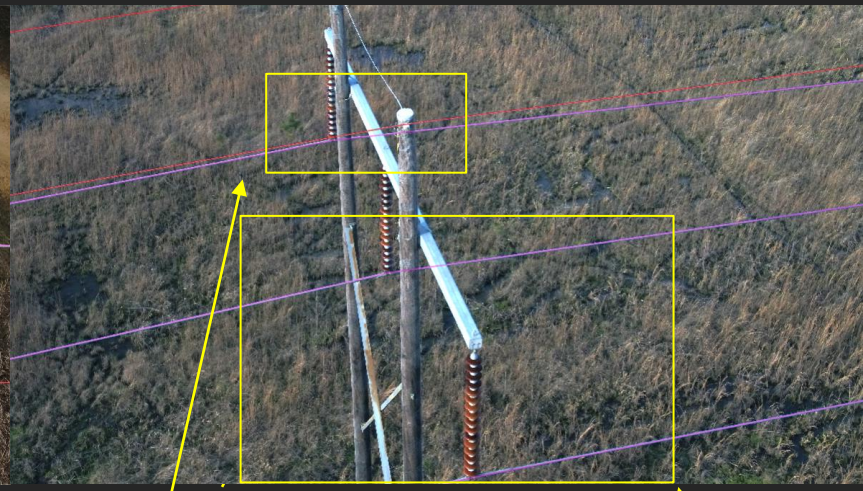
Polyline Obscuration Examples

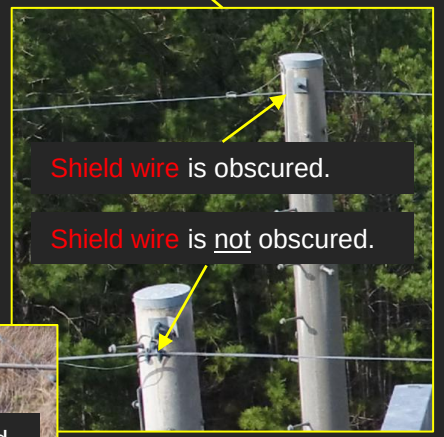


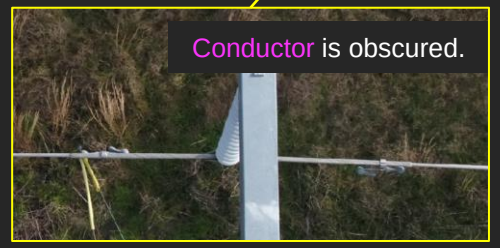


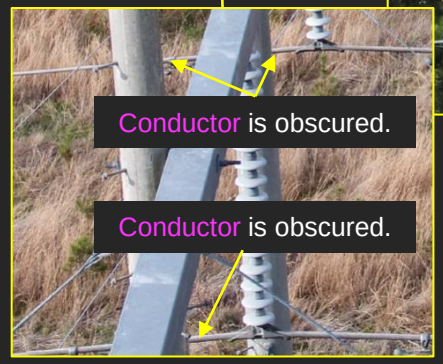
Polyline Obscuration Examples

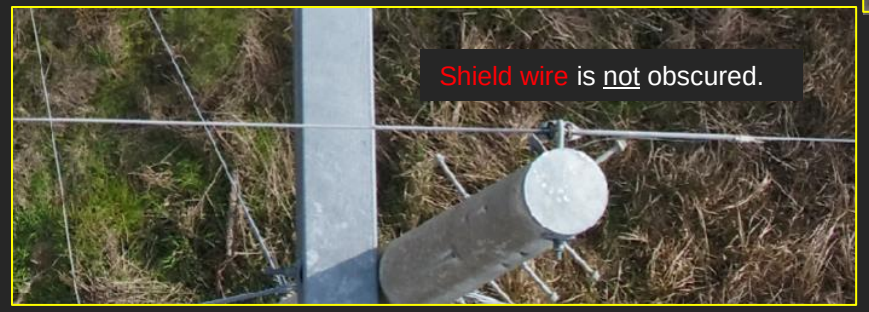










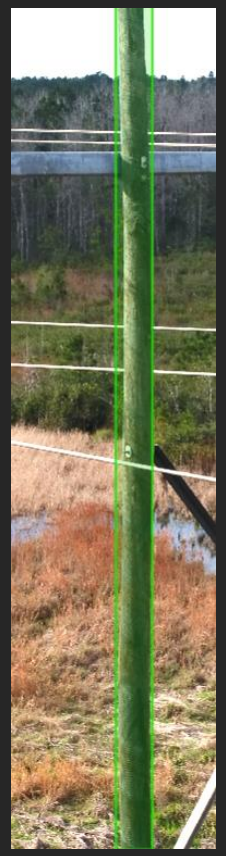


Bounding Box Guidance

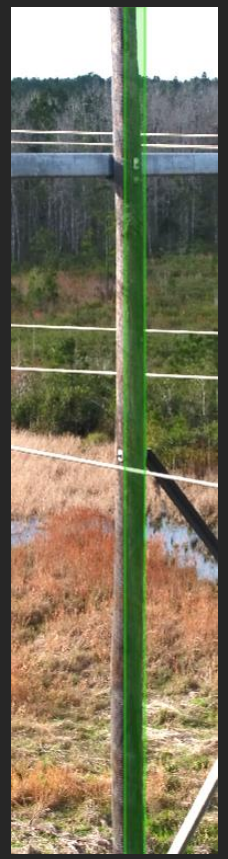
The bounding box should include the entire object.

Correct

Wrong



Correct



Wrong

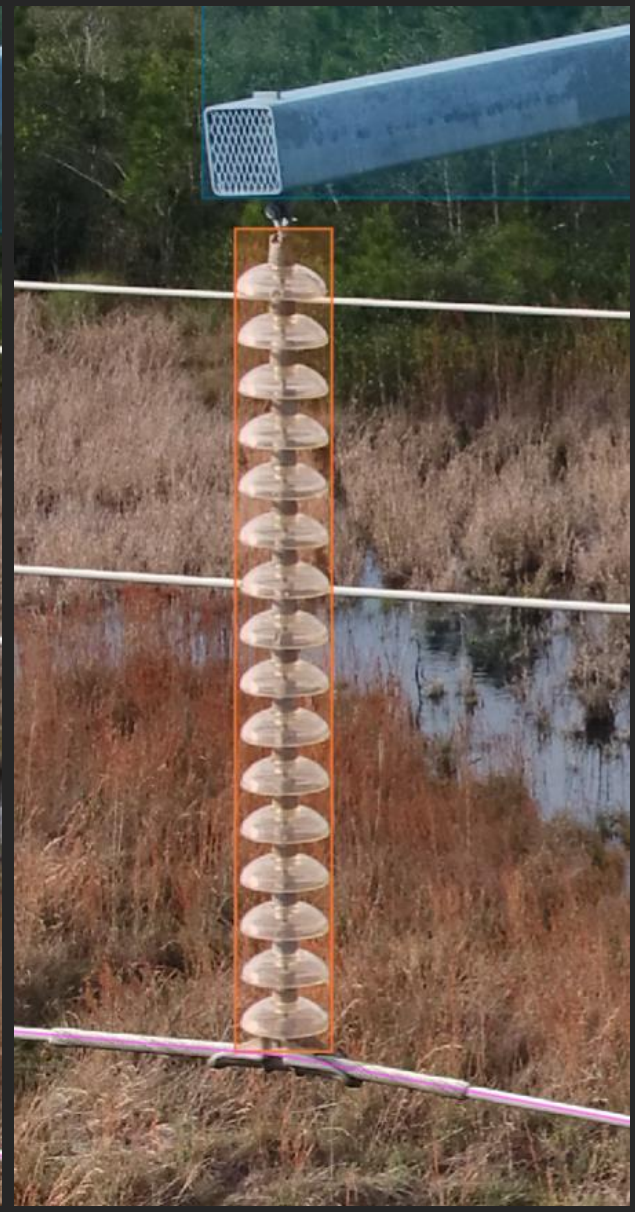
Correct

Wrong

Insulator Bounding Boxes

Bounding Boxes should include the crossarm and conductor attachments.

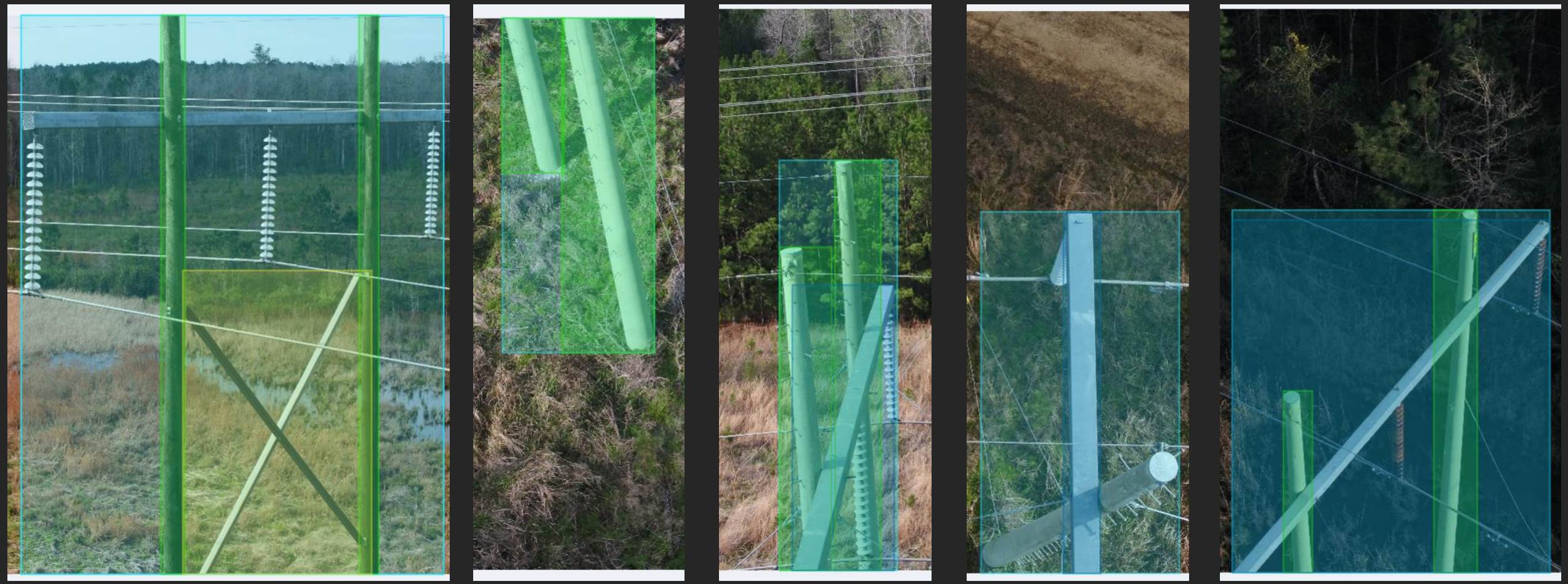
Correct



Wrong

Bounding Box *Truncated* Subclasses

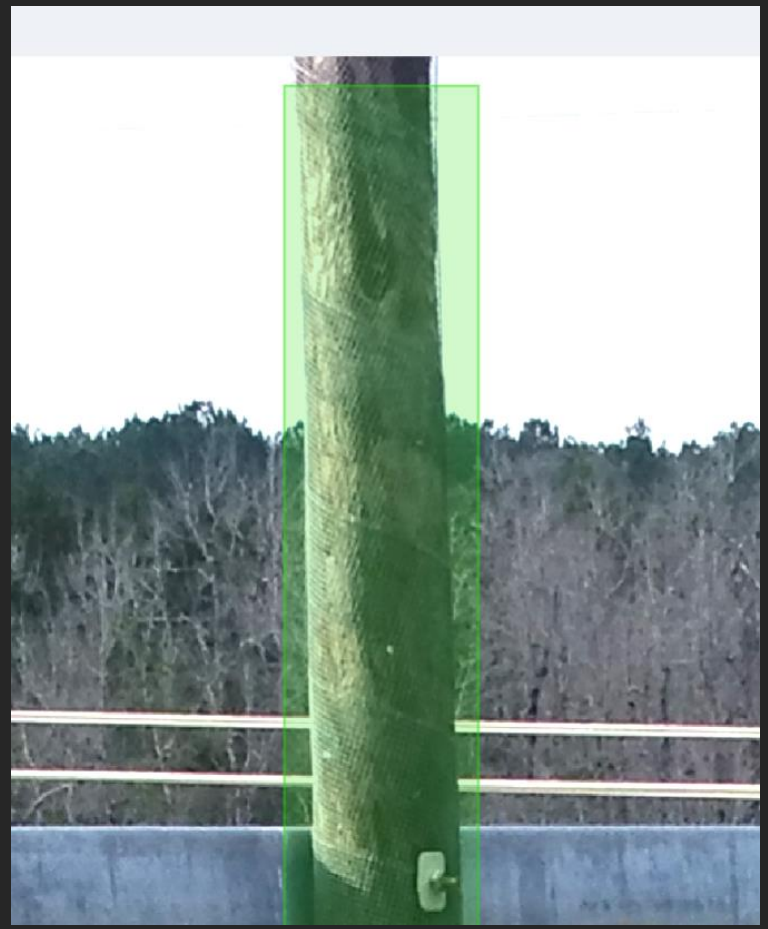
H-Structure, Pole, Crossarm, Insulator, X-Brace classes that extend past the image field of view are subclassified as “truncated.”



Bounding Box *Truncated* Subclasses

Bounding boxes should extend to the end of the image for classes that are truncated.

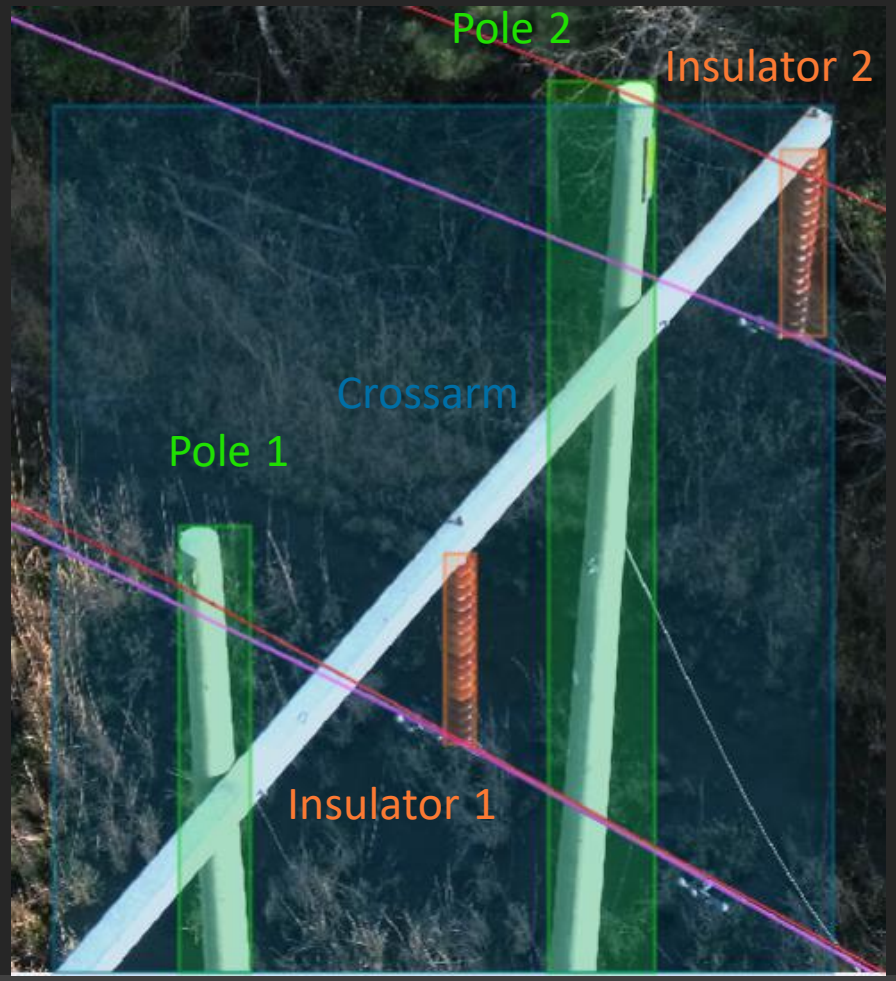
Correct



Wrong

Bounding Box *Obscuration* Subclasses

H-Structure, Pole, Crossarm, Insulator, X-Brace are obscured if the pixels of that object are obscured by anything except a shield wire or conductor.



Pole 1 obscured by Crossarm

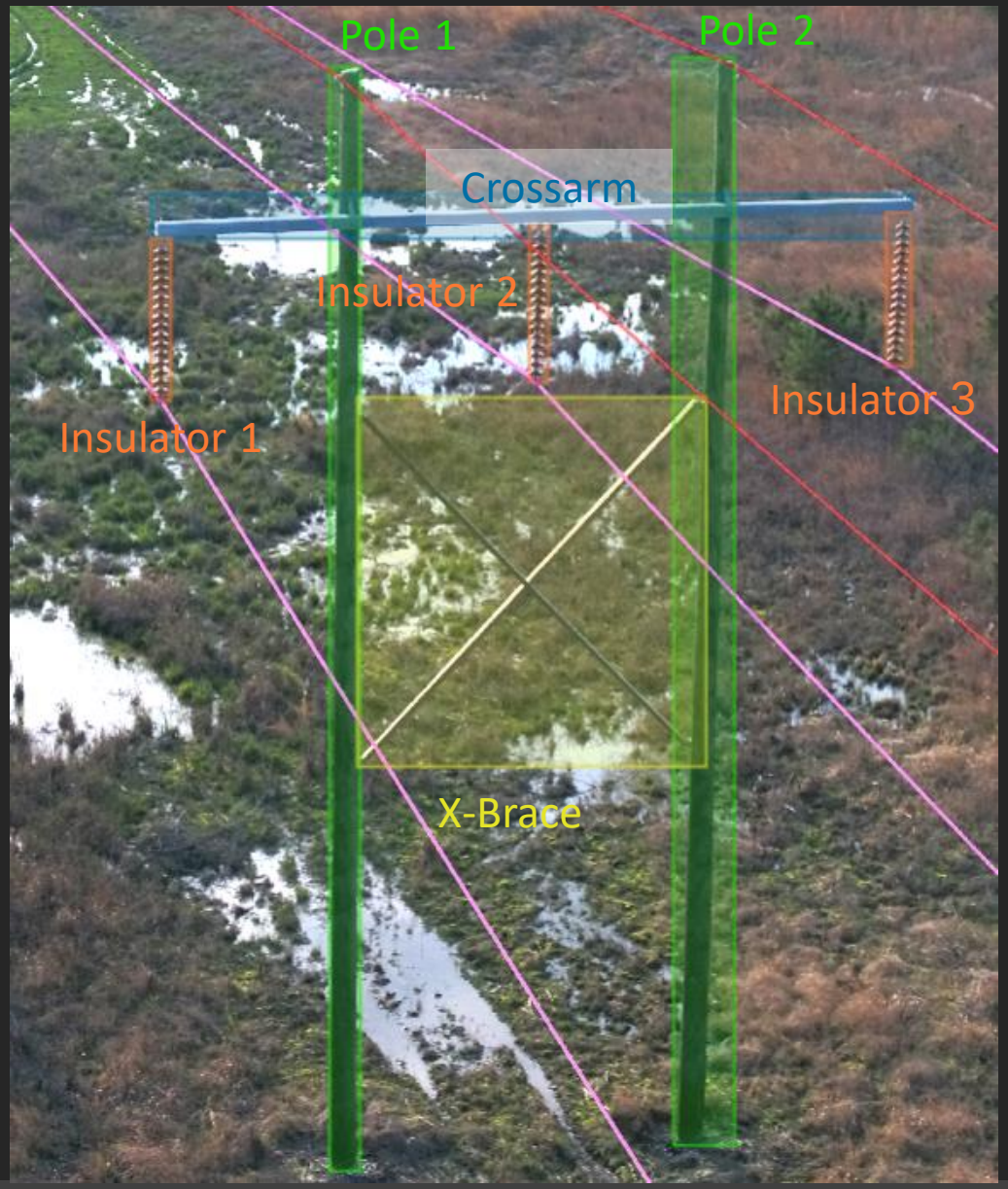
Pole 1 obscured by Crossarm

Insulator 1 obscured by Crossarm

Insulator 2 obscured by Crossarm

Crossarm not obscured

Bounding Box *Obscuration* Example



Pole 1 obscured by Crossarm

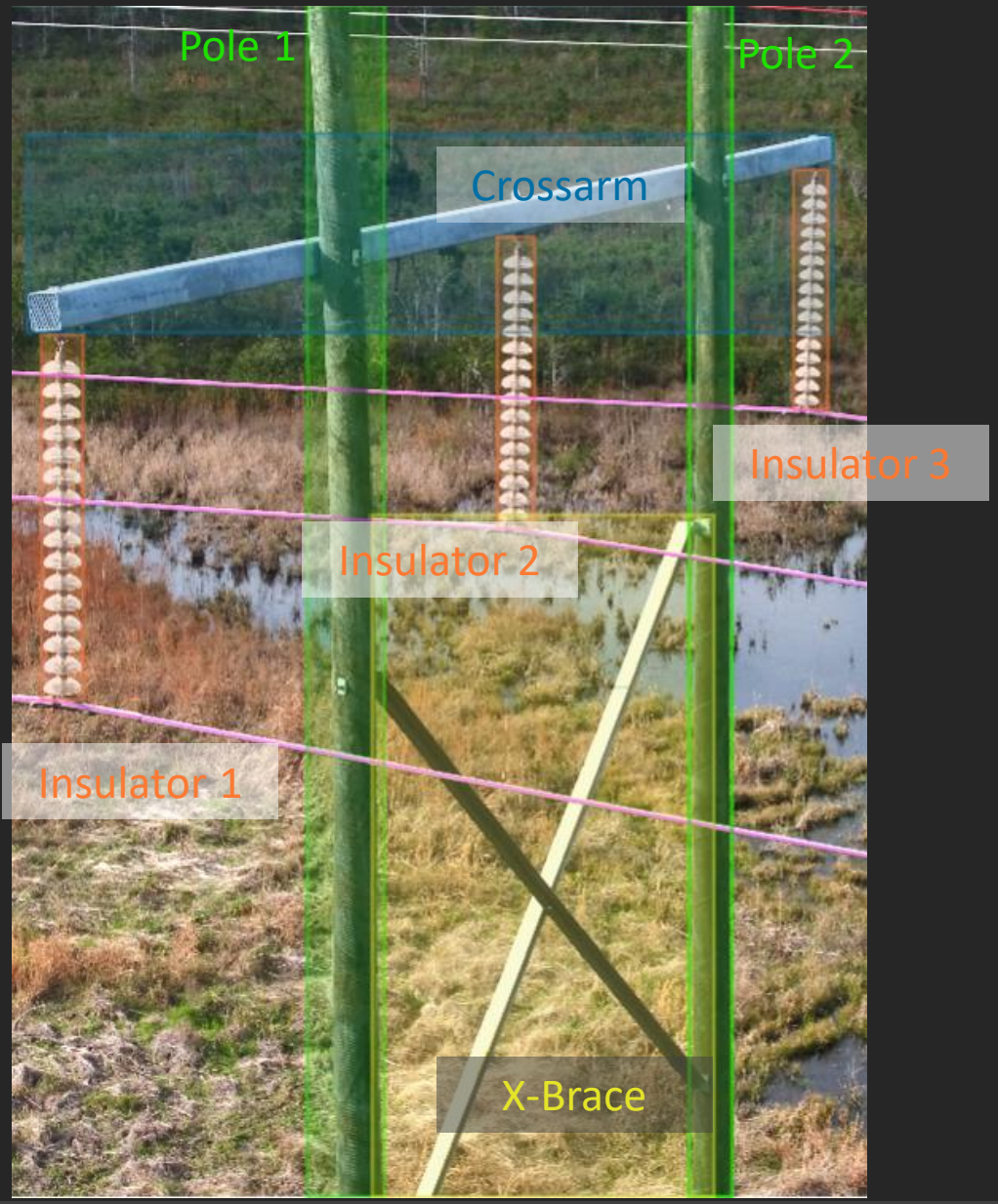
Pole 1 obscured by Crossarm

Insulator 1, 2, 3 not obscured

Crossarm not obscured

X-Brace not obscured

Bounding Box *Obscuration* Example



Pole 1, 2 not obscured

Crossarm obscured by Pole 1, 2

Insulator 1, 2, 3 not obscured

X-Brace obscured by Pole 1

Drawing Bounding Boxes and Obscured Objects

Objects may be totally obscured within the imagery. The Pole in background is a good example. While the pole extends above the crossarm in reality, only label the Pole pixels that visible and mark as Obscured.

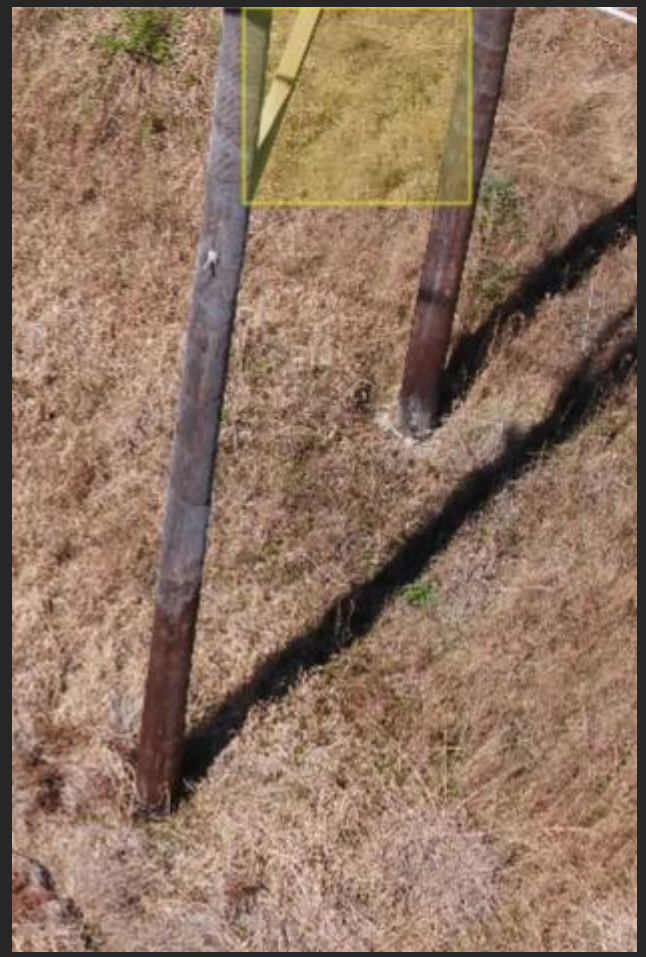
Correct

Wrong

Drawing Bounding Boxes and Truncated Objects

Only a portion of an object may be visible in the image. The X-Brace in this image is a good example. While the X-Brace extends to both poles in reality, only label the X-Brace pixels that visible and mark as Truncated.

Correct



Wrong

Obscuration AND Truncation = Both

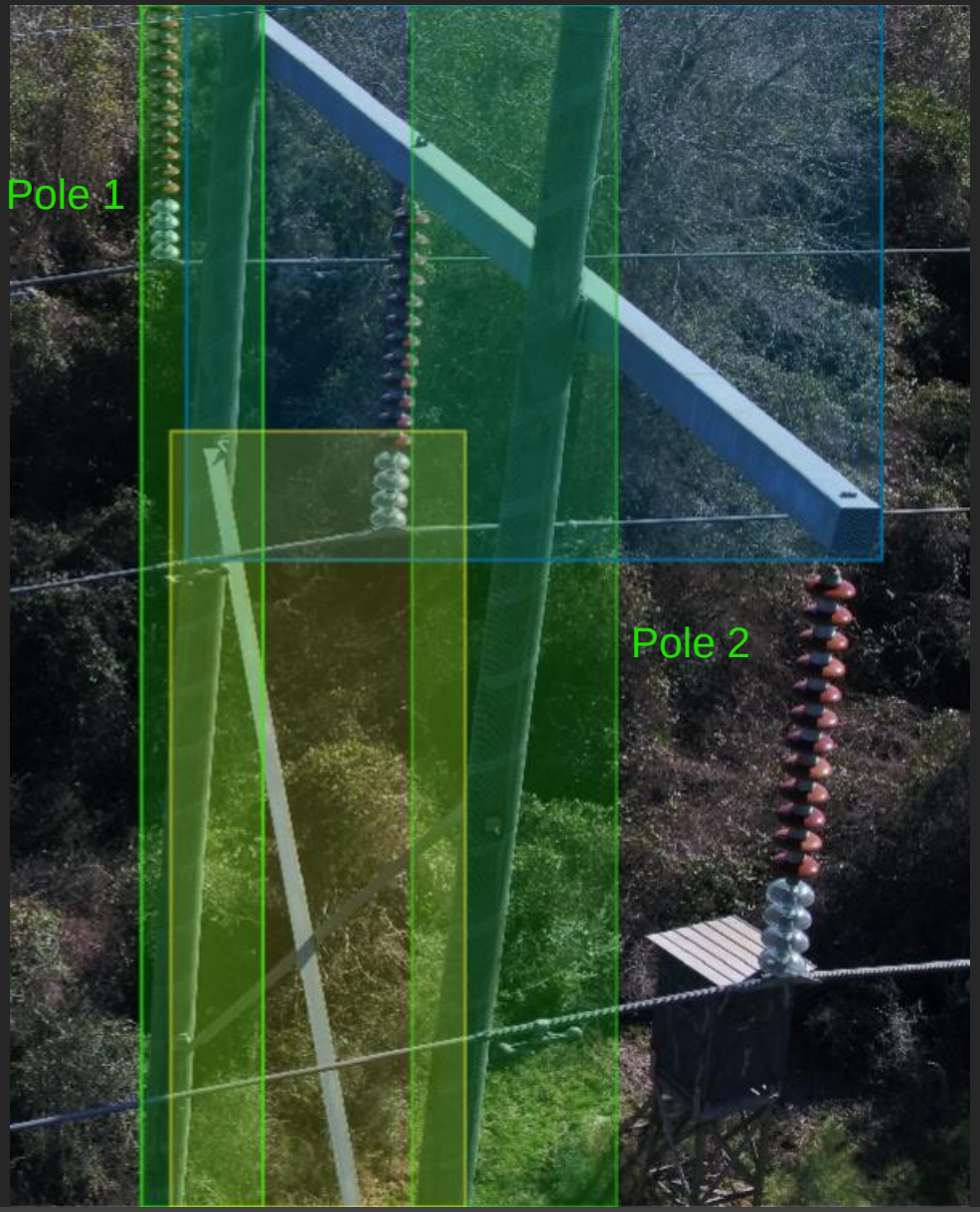
Pole should be marked as Both.

- Pole is obscured by X-brace because the X-brace is in the foreground.
- Pole is truncated because it extends outside the image frame.

Crossarm should be marked as Both.

- Crossarm is obscured by the Pole because the Pole is in the foreground.
- Crossarm is truncated because it extends outside the image frame.

Obscuration AND Truncation = Both



Pole 1 should be marked as Both.

- Pole 1 is obscured by X-brace because the X-brace is in the foreground.
- Pole 1 is truncated because it extends outside the image frame.

Pole 2 should be marked as Truncated.

- Pole 2 is truncated because it extends outside the image frame.

Crossarm should be marked as Both.

- Crossarm is obscured by the Pole 1 and Pole 2 because the Poles are in the foreground.
- Crossarm is truncated because it extends outside the image frame.

Obscuration AND Truncation = Both

Pole 1 should be marked as Obscured.

- Pole 1 is obscured by Crossarm because the Crossarm is in the foreground.

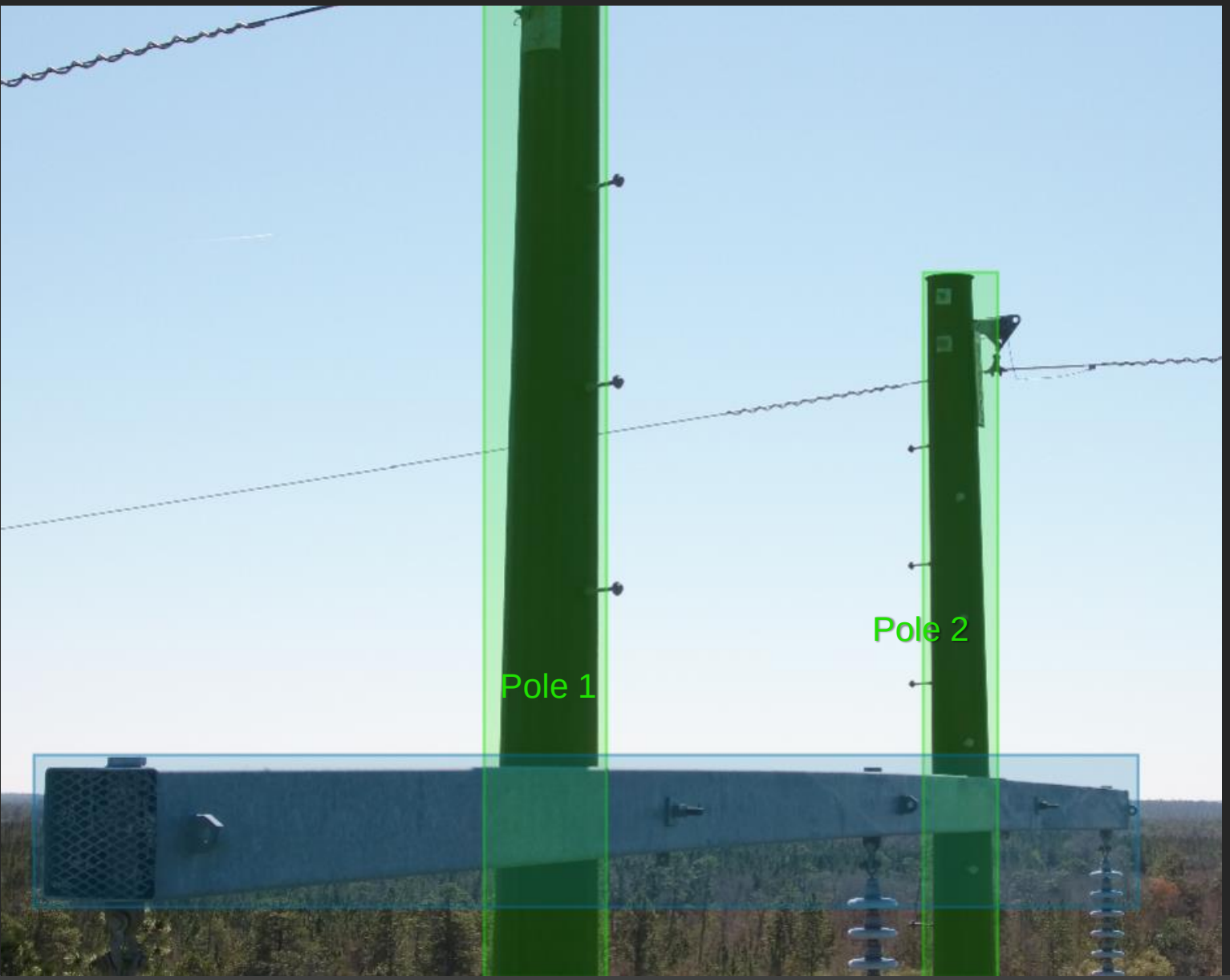
Pole 2 should be marked as Both.

- Pole 2 is obscured by Crossarm because the Crossarm is in the foreground.
- Pole 2 is truncated because it extends outside the image frame.

Crossarm should be marked as Truncated.

- Crossarm is truncated because it extends outside the image frame.

Obscuration AND Truncation = Both



Pole 1 should be marked as Both.

- Pole 1 is obscured by Crossarm because the Crossarm is in the foreground.
- Pole 1 is truncated because it extends outside the image frame.

Pole 2 should be marked as Both.

- Pole 2 is obscured by Crossarm because the Crossarm is in the foreground.
- Pole 2 is truncated because it extends outside the image frame.

Crossarm is neither obscured or truncated. Leave it blank.

Obscuration AND Truncation = Both

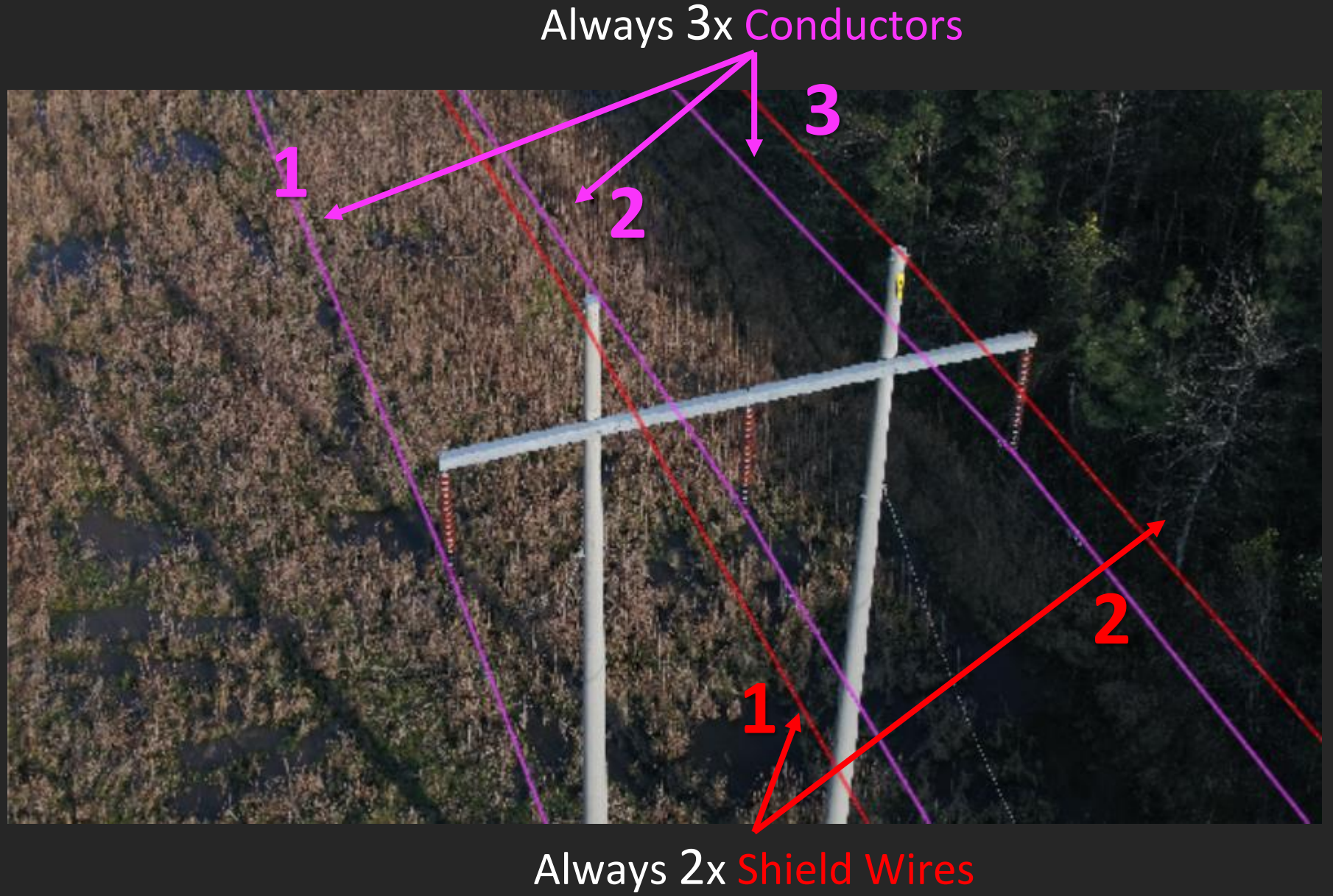
Insulator should be marked as Both.

- Insulator is obscured by Crossarm because the Crossarm is in the foreground.
- Insulator is truncated because it extends outside the image frame.

Crossarm should be marked as Truncated.

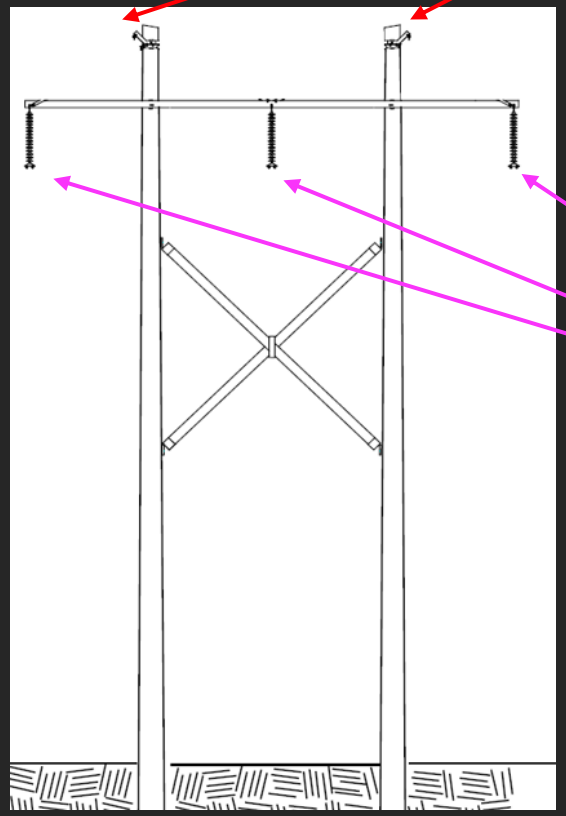
- Crossarm is truncated because it extends outside the image frame.

Conductors vs. Shield Wires



Conductors vs. Shield Wires

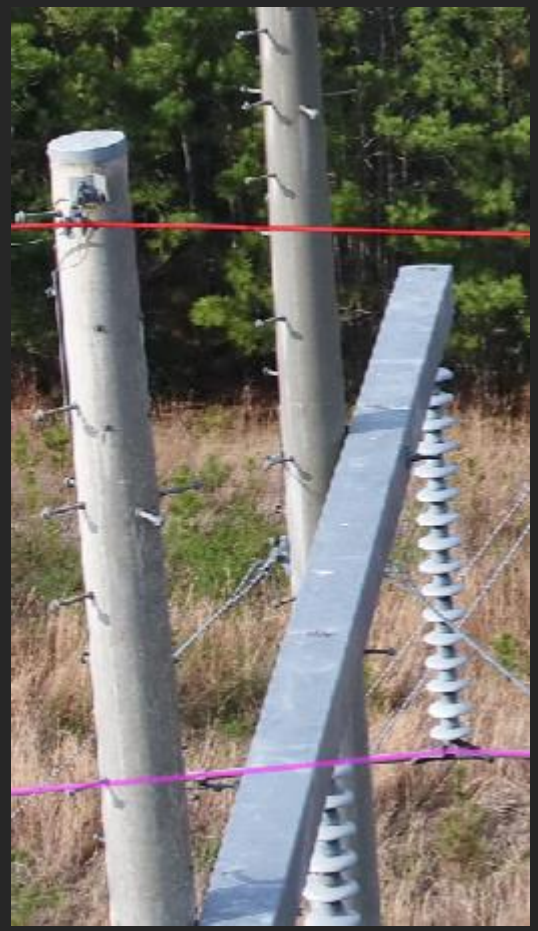
Shield Wires are attached near the top of the Pole, outward facing.

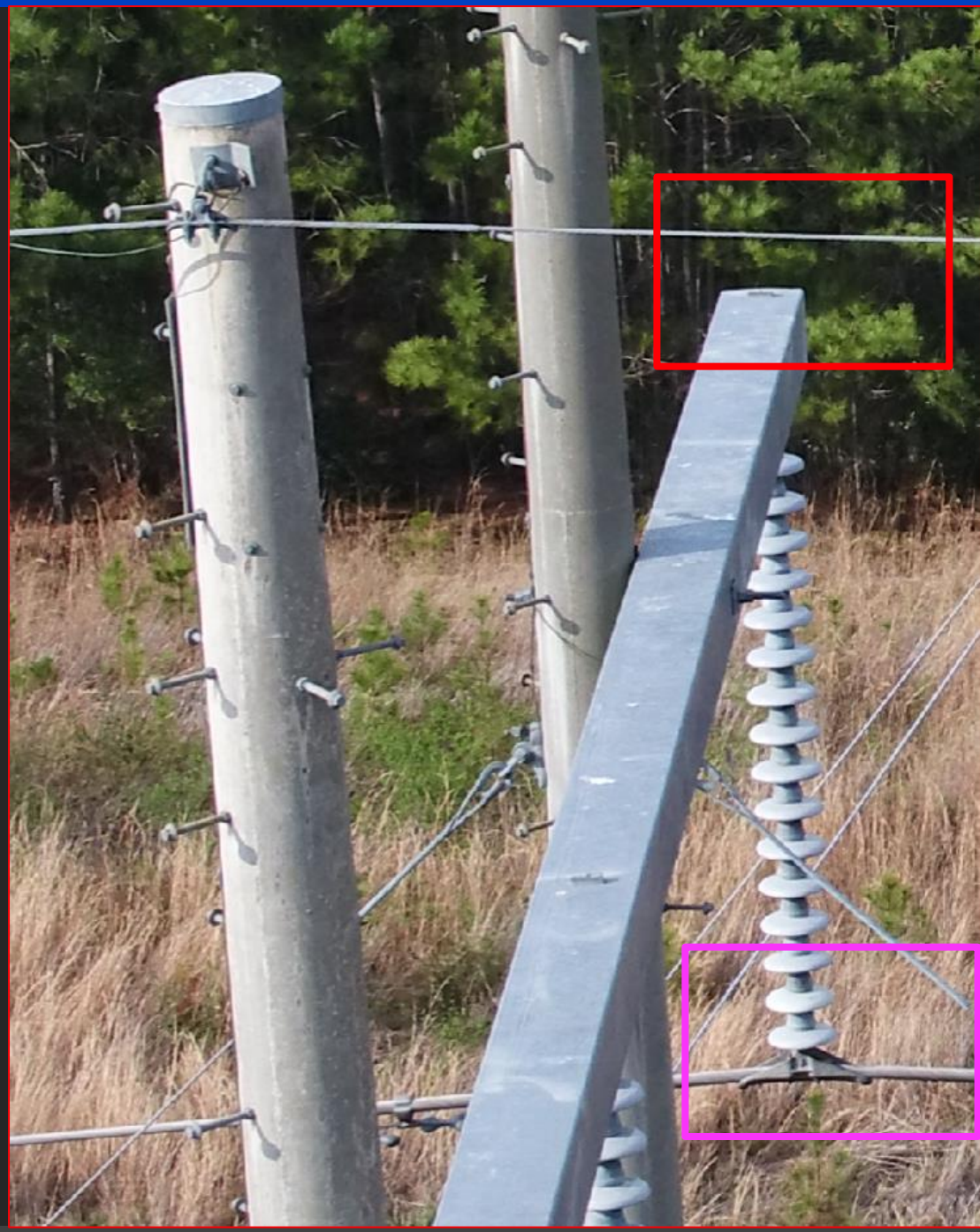


Conductors are attached with Insulators

Conductors vs. Shield Wires

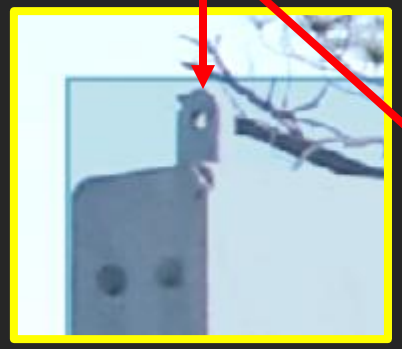
Conductors are **thicker** than Shield Wires



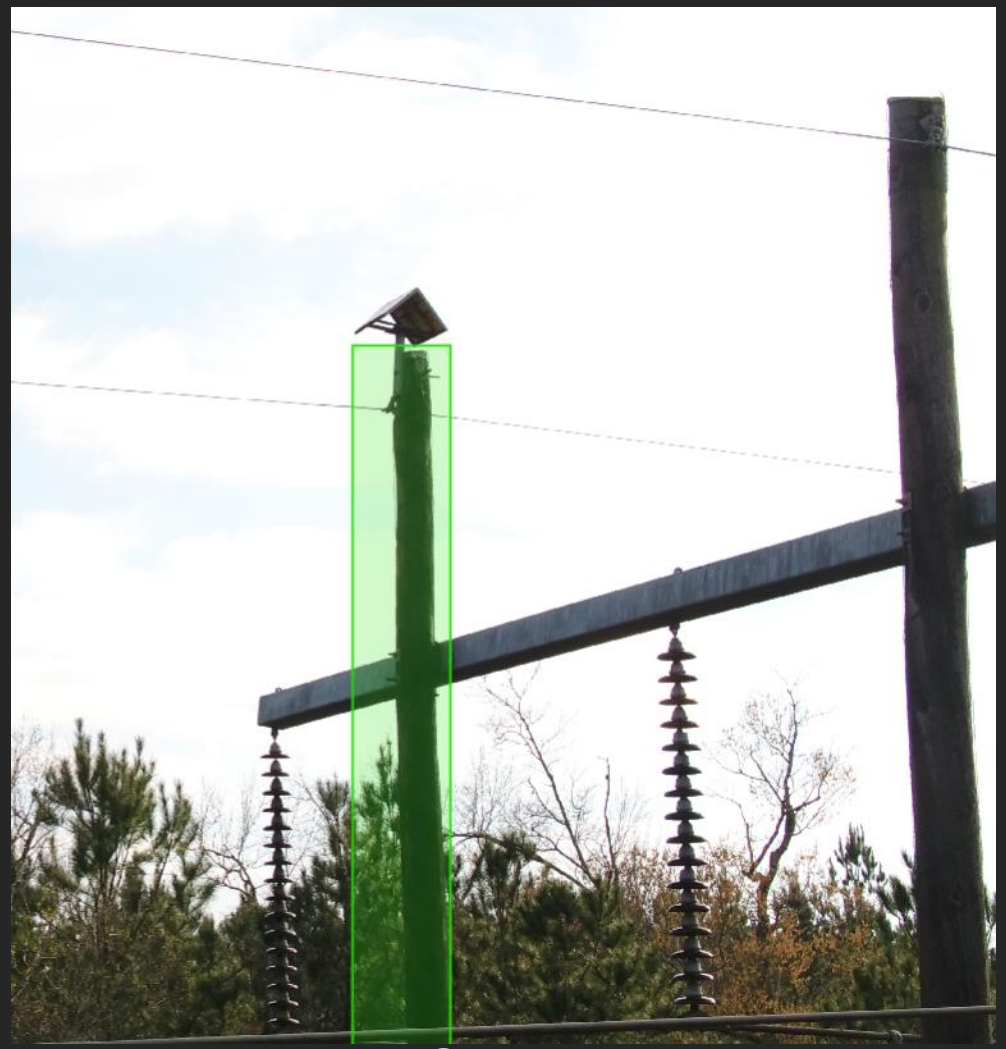


Crossarms

Crossarm includes the "ears" or tabs.



The Pole number/sign is not part of the pole class.

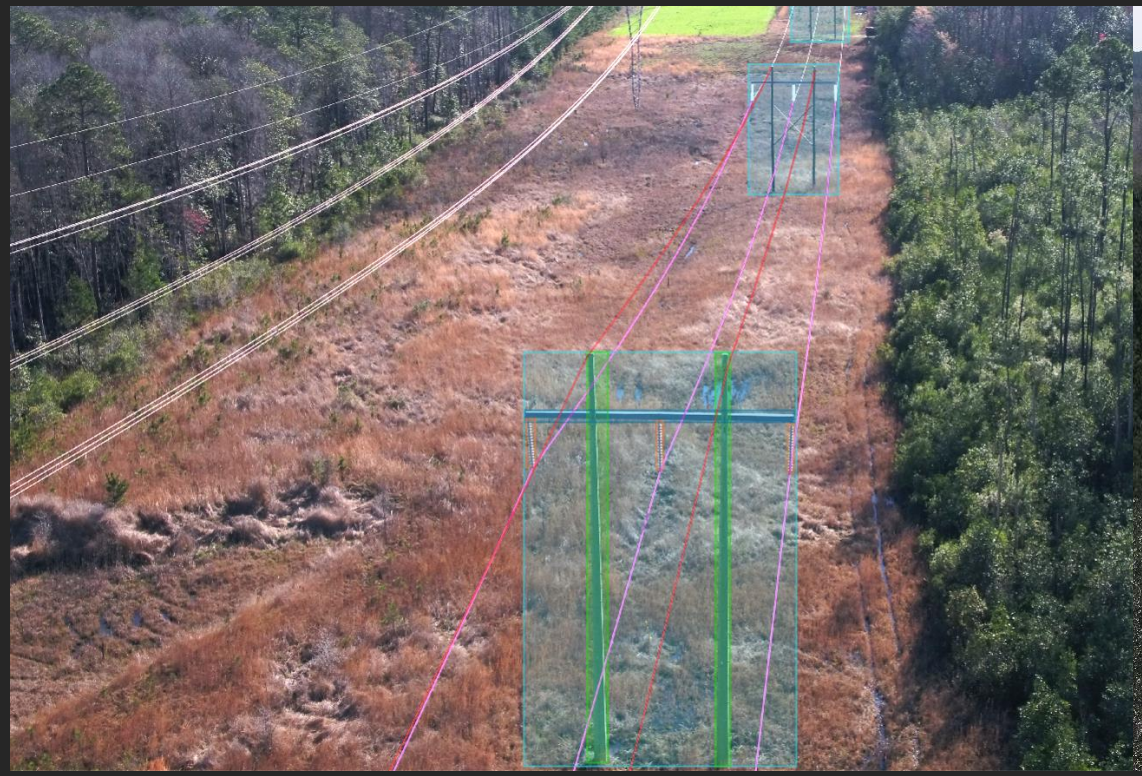


Correct

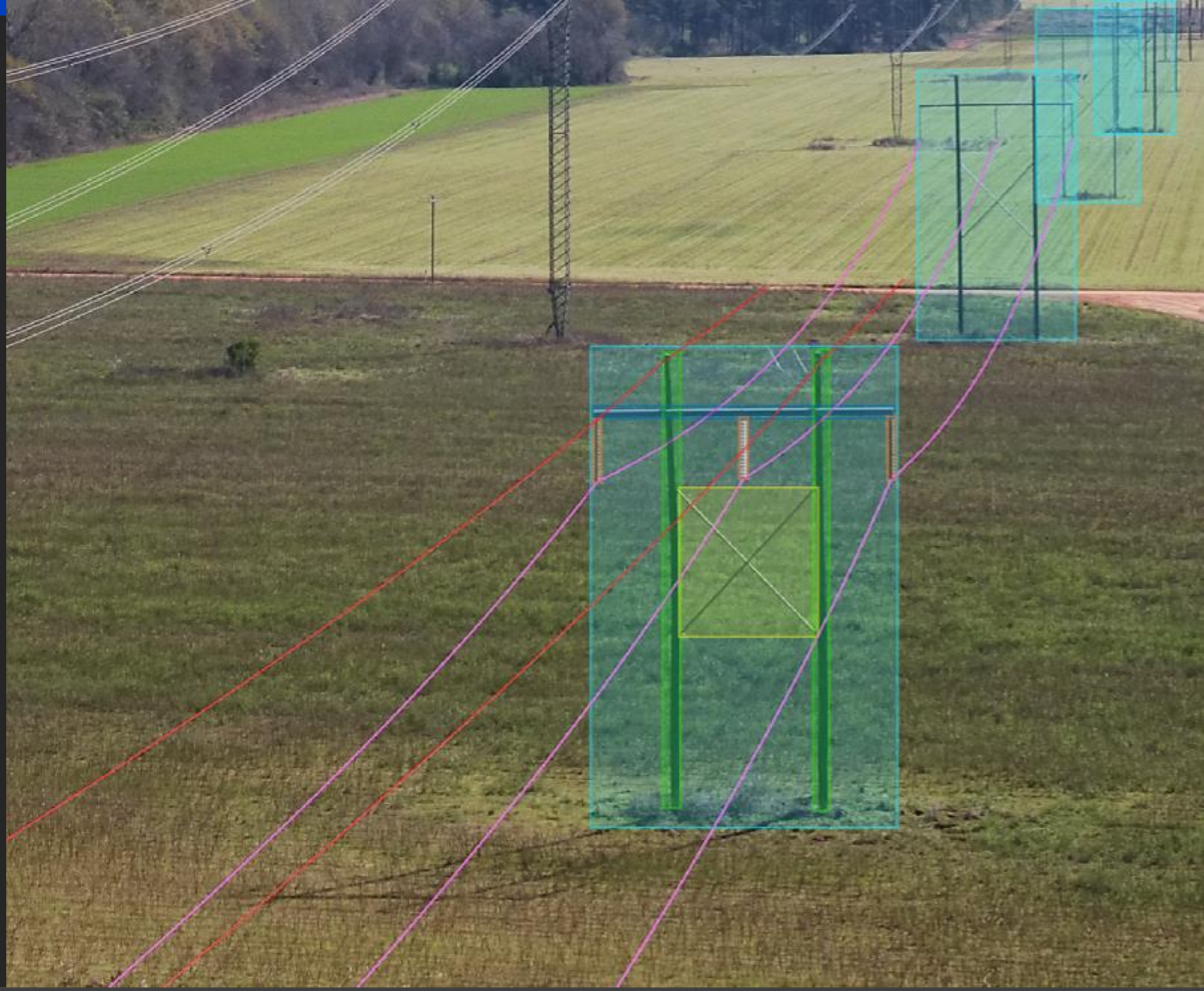
Wrong

Label every H-structure in the frame, but only the classes of the closest structure.

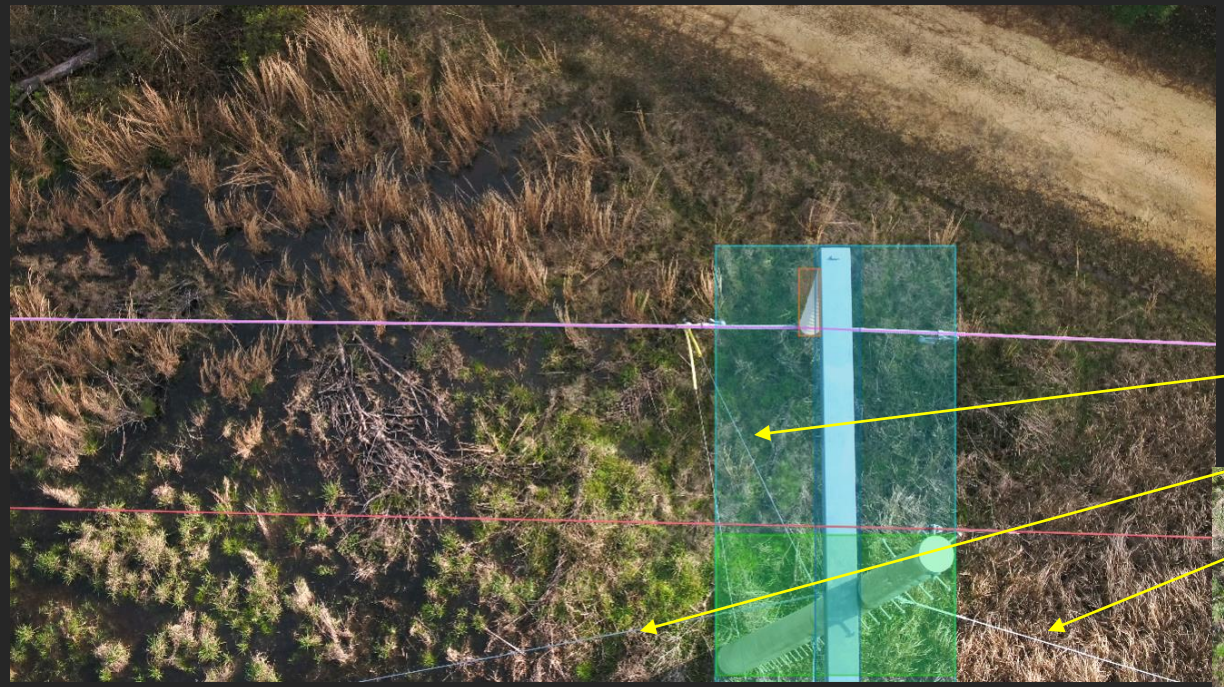
Extend the conductors and shield wires to the next structure, but not further.



However, if you can't see the wires to the adjacent structure, go as far as you can discern.



Do <u>not</u> label guy wires



Guy wires anchor the structure to the ground. They are connected to the pole and the ground. Typically, the are easy to identify due to their downward slope.

Do not label the lattice structure or bundle conductors.

If no H-Structure is in the foreground, skip the image.

Skipped

Skipped