

ambrePole Manual

Table of Contents

Home Tab	4
Project Information	4
Editing Project Details	4
Home Tab Top Toolbar Items	5
• Import / Merge	5
• ambrePole Logo	5
• Add (+)	5
Settings Tab	6
Loading & Saving Settings Sets	6
Auto Focus for Heights Toggle	6
Licensing	6
Quality Control (QC)	7
General	7
• Vertical Height Offset	7
• Units	8
• Vertical Spacing	8
GPS	9
• Polyline AutoTrack Acquisition	9
• Offsetting	9
• Other GPS Settings	9
Poles Tab	10
The Map	11
Toolbars	11
Map Tap Options	12
Structures	12
• Pole	13

• Adjacent	13
• Intersection	13
• Span	13
• Service Drop	15
• UG Route	15
• Anchor	16
• Address	18
• Note	18
Triangulation Tools	18
Textfield Population Aids	19
• Swipe To Accept	19
• Side Menu Selection Lists	19
The Pole	21
i. ID Tab	21
ii. Attachments Tab	25
iii. Dips Tab	26
iv. Photos Tab	28
v. Topo Tab	29
Pole Attachments	30
i. Communication Lines	32
ii. Power Lines	33
iii. Guys	34
iv. Top Line	34
v. Primary Insulators	35
vi. Primary Crossarm	37
vii. Service Drops	40
viii. Structures	40
ix. Anchors	46
'Reallocating' Line Attachments	47
'Reconfiguring' Lines	47

Administrative Processes	49
• Exporting	49
• Transferring Files / Folders	52
• Importing	53
• Import CSV (Comma Separated Value)	54
• Merging (Multiple Surveyors)	54
• Setting the CRS (Coordinate Reference System)	57
• Extended Processing	57
• Deliverables	58
• Devices	59
• Change Log	59

Home Tab

Project Information

When you first load ambrePole, you will arrive at the app's Home tab (1 of 4 main tabs) where you see a list of project cells. On the very first load of the app, you will have only one project with the title "Un-Named Project."

The cell at the top of the table represents the currently loaded project.

Long pressing any project cell will make that project current and bring it to the top of the project table.

Editing Project Details

To edit the project attributes, select the associated project cell.

Once inside the detail form, you can edit several project attributes, many of which will play a part in identifying your ID and project information should you choose to send your data for [Extended Processing](#). Once these fields have been populated for the first time, all of these attribute fields retain the last saved value and offer you this value as a default in the field's place holder. To accept this default value, simply swipe the field to the left or right.

You can also flag your project a specific colour to aid in identifying status. For example, you might choose 'yellow' for projects in phase one of survey, and 'green' for completed survey. Or you might flag colour as per client or area.

Finally, in this detailed view, there are 4 process options you can apply to your project.

1. Make Current

You can make this project the current / active project. If the project is already the current project, it will indicate this at the top of the page, and the 'Make Current' button will be greyed out.

2. Export

If you have purchased a subscription for ambrePole, you can use this feature to export your project. There are several products created during the [Export](#) process including a data file of the project that you can pass between surveyors and office personal.

See [Exporting](#) under Administrative Processes for more information.

3. Delete

Upon selection you will be warned (as this process can not be reversed) and you will have the choice of either, cancelling, deleting the entire project, or just deleting the project's photos (in the event that device storage becomes an issue).

If this project shares photos with another (such as those associated with a project tie pole), those photos will remain.

4. Assigning a CRS

See 'Coordinate Reference System' in the Administrative Processes of this manual for details.

Home Tab Top Toolbar Items

- Import / Merge

You can import a project or starter project that was either previously saved, or transferred to your device from your computer or from another surveyor or engineering in-house personal.

See 'Importing' in the Administrative Processes of this manual for details.

The 'Merge' option allows for multiple surveyors (or staff members) to survey the same set of poles (together or separately), and merge the data together afterwards. This feature is particularly useful if you have surveyors with different experience levels or skill sets. It is also a fantastic way to introduce a 'green' telecommunications surveyor to the process.

See 'Merging' in the Administrative Processes of this manual for details.

- ambrePole Logo

The ambrePole Logo at the top of the Home page is a hyperlink to <https://ambreComm.com/tutorials> where you can access the latest version of this manual and see demonstration videos on most of ambrePole's processes.

- Add (+)

The + button adds a new project and takes you to the project's details page for editing. You can populate these attributes at that time or at a later date.

Settings Tab

Loading & Saving Settings Sets

- Load Default Settings Set

Loads the factory defaults for all ambrePole Settings and custom Selection Lists. It is a good idea to save your current set before loading this set.

Note: 'Selection Lists' are the lists of values that display on a pullout side menu when you select a field with preset options. Most of these lists are customizable on the fly. Some lists are 'fixed,' as these values affect downstream processes.

- Save Current Settings Set

Saves the current set of ambrePole Settings and custom Selection Lists to be retrieved later. Note; if the app is uninstalled, these sets will be deleted as well.

- Load Saved Settings Set

Displays a list of saved sets, allowing you to replace the current set.

Auto Focus for Heights Toggle

When populating the [Pole Attachments](#), if this is toggled on, when you enter an attachment detail that has passed all conditions other than receiving the required height values, the most anticipated blank 'height' text field automatically scrolls into position (when applicable) and receives focus.

This is time saving if a surveyor separates the the attachment height measuring process from the rest of the survey.

Licensing

In the 'Licensing' page, you have two sections; one for Apple's App Store licensing information, and one for ambreComm's administrative information.

If no app Subscription is active, the 'Purchase Subscription' button will be viewable, where you can activate or restore a purchased subscription.

A subscription will unlock the [Export](#) process found in the [Project Details](#). Everything else in the app will be available without the subscription to help you learn how to use ambrePole and let you determine whether you want to commit.

The ambreComm [Credentials](#) section is also repeated along the Export process, but only needs to be populated once. There are a series of fields required to exchange information to and from ambreComm and your company or corporation.

For example, if you are one surveyor or division of a larger company, the 'Corporate ID' might determine specific layering or output options and / or file exchange protocol if your company sends out for the [Extended Processing](#).

Quality Control (QC)

You can edit this control set yourself (as a user), or a manager or coordinator can set this up to ensure satisfactory collection.

'Quality Control' allows you to custom tailor a set of enforcements for almost every aspect of the survey. Depending on your specific use of ambrePole or the level of required survey detail, the number of elements to remember to capture can be overwhelming; especially to a new surveyor.

If you take the time to tailor your QC, you won't forget anything. For example, you can designate a requirement of 0 thru 4 minimum directional photos to be taken of each pole. When that condition is met (along with any others on that tab) the tab badge value switches from red to green. And when all the defined conditions are met, the whole pole goes green.

You can force yourself to get all kinds of values, such as pole 'altitude' or pole 'class.' In the instance of pole 'class,' if you also choose to enforce 'circumference,' when one of the two attributes is populated, the other is no longer required.

General

- Vertical Height Offset

This is one of the most critical settings in the app! It contains a value for the offset and a toggle to turn on or off the feature.

When the feature is on, any new pole placed, receives this offset value by default when you add it to the drawing. When you enter / edit the pole, you will see this value (labelled 'Vertical O/S) at the top of the ID tab. As a surveyor, you may already use a method similar to this one (if using a tripod & laser combination) when measuring your attachment heights.

This offset represents the height at which you mark a baseline height on each pole. This would only be used - obviously - if you are using a laser rangefinder to measure your attachment heights. The older pole measuring method - would not work with this. So, if this is your method, leave the toggle set to 'off.'

This method of using a marked offset, eliminates the error of mis-selecting an improper position due to foliage obstructing your view thru the laser. It also allows you to make the mark as strategically as possible. Most people consider the base point of the pole to be the **common** grade level positioned at the 'roadside' of the pole. If there is a hole or fresh gravel slope discrepancy at that position of the pole, discretion is to be applied in ascertaining the correct 'common grade.' A pole located within a steep ditch slope can reap drastically different attachment heights if this rule of thumb is not applied.

To use this method with your attachment heights, we recommend using a sub-decimetre laser (such as the TruPulse 200X - which we plan on integrating into the app soon), a tripod (a must) and a thick sharpie for making your pole base marks.

We find that 1.0 meters (if using metric) works best in the warm season and 1.5 meters in the heavy snow season. In heavy or hard snow, we suggest carrying a thin lightning rod to dip thru the snow bank to the frozen ground. Mark the rod with red electrical tape and copy the mark onto the poles. The exceptions to your standard heights will be when foliage or other obstructions get between the pole mark and your tripod setup. In these cases, change the mark to whatever you can see, and make the change to the value in the pole's Vertical O/S field. The next pole placed will receive the default value entered in the setting.

The 'critical' part of using this offset method, is making sure that your offset listed in the pole, matches what you use in the field. If you make a mistake (such as turning off the feature and forgetting to omit the method for a pole or so) all of the height measurements for those poles will be off by the entire amount you thought you were offsetting to. So we recommend either always using the method (and always using the same offset where possible) or never using it at all!

One last point - unrelated to the app, but infinitely valuable to the survey. If you are a nube, or if you have never noticed; all laser rangefinders that have height measuring routines incorporated, have a 'back' function that you tap to step back one part of the routine. Because the routine typically includes a 3 step process capturing first the distance to the object, then the base point of the object, and then finally the specific element height of the object. We have seen people repeat the entire process for every attachment on a pole, when all they had to do after capturing the first attachment height, was back step to repeat the 3rd phase. Neglecting to do this, not only adds tons of wasted time and battery drainage, but huge inaccuracies to the heights captured.

- Units

Measurements can be expressed (throughout the app) and exported in any of 4 unit types:

1. Metric: 1.0m
2. Imperial (Feet-Decimal): 3.218'
3. Imperial (Yard-Decimal): 1.094yd
4. Imperial (Feet-Architectural): 3'-3"

- Vertical Spacing

For both Insulator brackets and steel Crossarm attachments, set the standard vertical spacing between attachment bolts. This allows for default height population on the second bolt height - once the first height is entered.

Default spacing for both is 25cm (or the imperial equivalent).

GPS

- Polyline AutoTrack Acquisition

This refers strictly to the 'Auto' feature that can be enabled during placement of UnderGround polyline path. See the green dashed line available in the Map pull out menus.

This feature will allow you to walk or drive a path and automatically lay down your route line accordingly.

Set the Minimum PDOP value to the distance accuracy you want the device's GPS to reach before automatically placing path vertices. If you don't have a minimum, your path could be scattered about if you begin without having good GPS reception.

Set the Minimum Point Distance to the distance you want the feature to allow you to travel before placing the next vertice.

- Offsetting

A feature that will be available in a future release that will allow you to use bearing and distance to capture object position via GPS when wanting to avoid the inaccuracy of canopy interference.

GPS Settings can be accessed from the Map Left Pullout Menu as well, since it will be used there.

Another feature in the works is bluetooth connectivity with specific laser rangefinders. This will offer several data entry options plus, if paired with a laser that captures bearing, an automatic population of bearing and distance per laser shot. Although, automatic bearing capture is often fairly inaccurate with most lasers (except where distance is short), but can allow position to be captured from a vehicle on the road.

- Other GPS Settings

1. Geo Street Naming

Toggles on / off feature that fetches Apple Maps' street data for pole address fields.

2. Geo Street Aligning

Toggles on / off feature that attempts to align a digital street line (thick blue line seen in the pole's Imagery Pane) with the pole. When this is aligned correctly, it speeds up attachment position, and most importantly, it optimally aligns profile drawing views in the Extended Processing.

If the Apple Maps (or Google Maps once added to ambrePole) street centreline database is significantly off or if a pole is too close to an intersection, the desired alignment is often not attained automatically.

To correct alignment, while in the pole form, long press on the Imagery Pane to activate a manual alignment.

3. Snap Offset

The radius in which an aerial Span or Underground Route polyline will snap to a point object (such as a pole), when maneuvering the map. If placed in this snap zone, your line or polyline will be associated to that structure.

If trying to position a line or polyline away from a point structure - but inside the snap zone, tap the blue 'Snap' toggle button at the top of the Map. The button text will turn grey to indicate 'snap' is off.

4. Map Source

When added to ambrePole (coming soon), this toggle will allow you to choose between Apple Maps and Google Maps imagery source. The added Google SDK will add image clarity to many locations plus, hopefully, allow you to zoom in much closer than currently possible with Apple Maps.

Poles Tab

A Table View of the poles which can be sorted by any of the following attributes:

- Reference
- Owner
- Usage
- ID tag 1
- Class

You can also delete a pole in this view

The tab badge value shows the number of poles in the current project

The Map

Toolbars

Within the Top Toolbar on the Map tab, when no map objects are selected, there are two selection menu buttons; one on the right (+ symbol) and one on the left (= symbol).

When infrastructure objects are selected, or when you are in the middle of a structure placement or alignment routine, these two buttons change their icon and function to accommodate the specific item or task. For example, when a Pole is selected, the buttons change to 'Edit' and 'Move.'

- + 1. The right pull **down** menu drops into view the 'Quick Launch.' You can place any point object or line/polyline route from this menu. The bottom two elements in this menu are Triangulation Tools to help place your poles.
- = 2. The left pull **out** menu reveals the 'Side Menu.' You can find everything from the Quick Launch in this menu (except for the 'Intersection Point'), plus a layer control for the elements, as well as a few additional administrative tools.

Use the 'Layer Control' checkboxes for display clarity or to turn off layers allowing you to select physically congested elements.

- 3. The Top Toolbar gives you access to the two aforementioned toolbars, plus 5 other buttons.



Centre on GPS toggle on / off:

When this button is tinted blue, the map is centred on the device's GPS location. And so any object or polyline point placed in this mode, positions itself by GPS location.



GPS toggle on / off:

When this button is tinted blue, GPS is on and you can see your location if the map region includes your device's position. GPS accuracy and altitude are displayed at the bottom of the map.

Snap Snap toggle on / off:

When 'Snap' is tinted blue, and the 'Span' (or any polyline routine) feature is active, the current line end point will 'Snap' to structures when your placement point (the map centre) intersects with the snap setting radius of that object. When you place the end of one of these lines in this region, you also achieve an association between the two objects.

To place your endpoint randomly, or to omit association, toggle the 'Snap' button off during the line routine. 'Snap' toggles back on by default during the next line placement.



Zoom Extents:

Zooms the view to fit around all of the elements in your project.

The Centre Button of the Top Toolbar only appears when applicable and can be one of 3 functions:



'Fine Tune Position' on / off toggle: This toggle controls the view of central map chevrons that appear during map positioning routines. The chevrons move the map's position by 10cm (4") increments in any of the 4 orthographic directions. Toggle these buttons off when you don't need such fine adjusting or if they obstruct your ability to maneuver the map.



'Object Information' when a pole is selected - pressing this button offers 'Export' (of the pole to another project) or 'Delete.'



'X' - deletes the selected object

Map Tap Options

Touching any object will drop the 'Information Display Band' into view which displays pertinent information to that object.

When placing a line or point object, double tapping the map will accept the map centre position or the 'Snap' point - if in an object's snap point radius.

When *not* in a feature placement routine, if you double tap any object (other than a triangulation tool) you will enter a detail form to edit that object.

Triple tapping the map will repeat the last command.

Long pressing the map will reload all objects in the project.

Structures

All structures are placed at the crosshairs at the centre of the screen. Therefore, when not using GPS, position the map so that the crosshairs centre where you want your element placed. Point structures include a Reference label that automatically increments up 1 number (or 1 alpha character in the case of Adjacent structures). You can edit this Reference when you enter the structure. If you do, the auto reference feature, will increment up 1 from the number you edited, unless it is already taken, in which case it will iterate thru till the first available reference. Note; you can not export your project unless all structures have unique References.

- **Pole**

If you place a pole at the same position you ended a span, the span will automatically associate with the pole. If not, when you position a pole within the snap radius of a Span or UG Route line, you will be asked if you want the Span(s) to associate or be left as is.

Before editing and layering your attachments in a pole, make sure you have a Span laid out (and associated) for every line deflection you see in the field. These Spans are just route lines, where the actual lines (Comm, Secondary, Guy, Primary, etc) are added to the map Spans while you are inside the pole attachments.

See [The Pole](#), for details on populating the pole, and see [Pole Attachments](#) to see how to configure the attachments.

- **Adjacent**

Deflections to the pole line or network that you are surveying should be associated with 'Adjacent' structures. These references will show up in your pole profiles (if you are sending out for [Extended Processing](#)); eg: '30 Neutral -> 23.4m NNE to Building Attachment 4a.'

When you edit an 'Adjacent,' you can specify what type of structure it is, and take photos - if you suspect they may be pertinent to the survey.

- **Intersection**

'Intersection' is a type of Adjacent structure, but will offer snap attractions to 'Perpendicular' points or 'Intersections' between spans. Further into this manual in the [Pole Attachments](#) section, you will see the line continuity of attributes between poles. The 'Intersection' point breaks that continuity when needed.

'Intersections' can have photos associated and will allow for line attachment extending if you were to place and divide a span (or set of crossing spans) before the attachments were all added.

Poles, Adjacent & Intersections are all interchangeable, should you realize that you should have placed one of the other types. For example, if you placed an Adjacent, and then realized that you will indeed have to include that Adjacent as a fully surveyed pole, when you enter to edit, just change the 'Type' attribute to 'Pole' and then exit.

You will see that it is now a standard pole and it will retain any photos that you may have associated with it while being another entity.

- **Span**

After placing a pole, choose 'Span' to snap to the pole, and stretch the span out (by maneuvering the map) to the desired length and end point. As you move the map about to define your span, the span distance displays in the 'Information Display Band'

that pops down. Finish the span by placing your next pole (or adjacent structure) while your map is centred on this point.

When you complete the Span, any end that is not associated with a structure (such as a pole) shows with a yellow dot.

For a complete survey, all Span ends should be associated to something, whether that be an inline pole, or an adjacent structure such as a Drop Pole (DP), Building Attachment (BA), Tower, etc.

If you select the Span and tap 'Adjust' from the Top Toolbar, you can reposition an end point. When you specify this new position by tapping 'Place,' you will be prompted to choose between dragging the pole (which keeps Span Association) to this location and Orphaning the span (which abandons Association).

When selecting the span, if you choose 'Adjust,' the endpoint that receives focus to be adjusted will be the one closest to the centre of the screen. The map then moves to centre on this point.

If you want to switch focus to adjust to the other end of the Span, tap either of the directional Chevrons that appear after you choose 'Adjust,' and you will see the map reposition itself around the opposing point.

To edit the Span's attributes, Double Tap the Span or select it and choose 'Edit' from the Top Toolbar. If the span is too short to select - where other structures get in the way - if you select another longer Span attached to a common structure, two directional Chevrons will appear, allowing you to iterate thru all the spans associated with the common structure. When you see the Span you want to edit selected, tap the 'Edit' or 'Adjust' button to perform the desired action.

You can populate any of the Span attributes your engineering team want to capture.

- **Laser Length**

Enter the measured span length

- **Clearance Type**

Choose the crossing type, such as 'Water,' 'Hwy' or just 'Alongside Road.'

- **Span Role**

Identifies the 'construction' type, such as 'Overlash' or 'Place New Strand.'

- **Tree Trim**

Select the tree trimming requirement value (click the 'help' question mark for a value description).

- **Comment**

Enter any Comment specific to the Span

- **Temperature**

Enter if clearance sag is critical to the point of calculating temperature.

Below the Span attribute fields, you will see a table of cells containing information for any Comm, Guy or Secondary line that you have added from within the attached Pole structures. Many of the commonly edited line attribute fields are available for editing here.

If you haven't populated the Pole Attachments yet (or are not including that information in your survey), then you, of course, will not see any cells.

• Service Drop

Place your service drops by either selecting a pole (if they are fed directly from the pole) or by selecting a span (when they are span fed).

If you select a span, the service drop will - at first - originate from wherever you touched the span, and end where you position the end point. The drop will associate with both the span and the pole or structure at the end of the span that is closest to where you touched. A Quick form will pop up that will allow you to enter the exact offset to its parent pole (typically calculated with the use of a laser), and such optional properties as neutral conductor gauge, residential and commercial unit counts, address and drop length. The drop will physically move over to whatever offset you enter.

You can also select a drop 'type' such as Power, Telco or CATV. Comm drops (Telco or CATV) are not needed for permit load calculations, but may be desired if you are using ambrePole for telecommunications database purposes other than that of constructing permits. Drop 'type' will change the display colour of the drop to easily distinguish them. And the last 'type' you enter will default the next drop type, so that you don't have to keep changing them if you are conducting a survey specifically for a type of Comm database.

You can access a form with a more detailed set of service drop attributes (if they are 'Power' type) from within the Quick form, or from within the Pole Attachments. In this form, you can specify values for additional fields such as Number of Conductors, Bus type, Attachment Type, Attachment Height (if mounted to the pole), Drip Loop Height, isBonded, isAnchored, doesDip, etc.

• UG Route

The Underground Route is a multisegment polyline that you can either manually layout, or use GPS to place. When you select the UG Route button and begin the placement routine, all of the placement control buttons drop down. If you select 'Place by GPS,' 'Auto Tracking' will begin. You can then have ambrePole layout this route as you walk or drive. See GPS > Polyline AutoTrack Acquisition in Settings of this manual for more information. Other controls include, Undo, Add Point, Done (✓) and Cancel. You can also 'Adjust' the polyline afterwards with similar controls.

If you Double Tap the polyline or select it and tap the 'Edit' button, you will be able to edit attributes such as Length, Method (eg: Trench, Bore, DB, etc), Type (eg: Existing, Proposed, Potential), Number of Conduits, Description and Comment.

- **Anchor**

Choosing Anchor from the structure menus will prompt you to select a Pole to associate with. When you do so, you are then prompted to Align the anchor's rotation. The alignment process offers Snap points, for logical positions, but if the field alignment is slightly off, you can simply tap off 'Snap' (in the Top Toolbar) to make the alignment random. The Logical Positions will vary depending on the existing Spans associated with the pole. If there is only 1 span connected, the anchor will automatically align itself (and provide a Snap point) opposing the single line. If there are 2 lines connected, the anchor will align itself to the 'greater bisecting angle' and provide a Snap point for this angle, along with Snap points for angles opposing both lines.

If more than 2 lines are connected, the logical point is too complex to automatically calculate, so Snap points will be created to angles opposing the attached lines.

If the anchor appears with the Logical Alignment the way you want it, tap 'Accept,' otherwise, rotate your finger around the pole. You will see the anchor move (while feeling the Snap points grab) and you will also see dynamic angle measurements between all deflections and anchors. 'Accept' when aligned as desired.

If you have more than 2 lines connected, but anchors are directly bisecting specific pairs of lines, you can place your lines sequentially with this in mind, or temporarily disassociate a line or set of lines, to place your anchors with the desired association.

If an anchor is placed by any Logical Snap Point, an association is maintained with an opposing line or bisecting angle of a pair of lines, and will maintain that relation even if an element of this structure collection's position is adjusted.

Place an anchor for each physical anchor (NOT per Down Guy) you see in the field. Down Guy attributes and other element attributes are populated within the Anchor form.

You can enter this form from either the Map or from within the pole on the [Attachments tab](#). To enter from the Map, select the associated pole, and tap 'Anchor' from the segment control that appears.

Inside the form, there are two main views: the dimensioned drawing view, and the main attribute view. The drawing view - on top, reacts to the values that you specify. The only attributes you need to worry about handling in this half of the form are the hasStrut checkbox, the Number of Down Guys segment control and the Slope Type (Level, Downward or Upward) segment control. These will all affect what attribute fields become visible down below.

Specify the number of Down Guys the anchor has. This opens up the down guy section down below.

If you check the 'has Sidewalk Strut' checkbox, the drawing will reflect and strut height and length fields will open up. Similarly, if the Slope Type is not left at the defaulted 'Level' selection, the drawing will shift to match and a negative or positive slope field will appear in the drawn slope.

If you no longer need the drawing to examine your outputs, you can now minimize it, along with the Top imagery pane, by tapping their respective 'Close Pane' buttons.

In the lower 'main attribute view,' you can specify and populate all of the attributes required by your anchor Quality Control settings. These attributes include:

Assembly

- Lead Length
- Strut Length (if applicable)
- isWishbone checkbox: select if the anchor is part of a split wishbone anchor.

Down Guy

- Client: first select either 'Comm' or 'Power' from the segment control above the Client(s). This will determine which Side Menu selection list will appear.
- Height: enter this value when you are in the height measuring phase of your survey (typically done with a tripod and laser). This field is duplicated in the upper Drawing view as well.
- Gauge
- Aux Eye: check this box if the down guy is attached to an accessory Auxiliary Eye rather than the anchor's built in resistance allotted eye(s).

Rod

- Diameter
- Eye Type: Determines number of eyes.
- Construction Type (eg: 1x Piece, 2x Piece or Rock Anchor)
- Angle of Deviation: Enter the angle in degrees that the anchor rod is deviating from the angle of the Down Guy.
- isConcealed checkbox: If you can't access a view of the rod assembly enough to enter the required information, check this box. As a result, the next attribute field becomes visible.
- Concealed By

Marker

By default, this section is set to 'Omitted' in the Quality Control settings, as most surveys will not require this information.

- Marker Material (eg: wood, plastic, metal, etc)

- Condition

- **Address**

You can use ambrePole for general utility database surveys, and collect feed and address information. The 'Address' object collects the following attributes:

- Occupancy Type (Residential, Commercial or Mixed)
- Establishment Type (eg: SFU, MDU, Duplex, etc)
- Establishment Name (only prompted when Occupancy Type is Commercial or Mixed)
- Address (suggested value fetched by Apple Maps database)
- Street (suggested value fetched by Apple Maps database)
- Locality (suggested value fetched by Apple Maps database)
- Actual Residential Units (number of fed)
- Potential Residential Units (maximum penetration of fed and potentially fed)
- Actual Commercial Units (number of fed)
- Potential Commercial Units (maximum penetration of fed and potentially fed)
- Comment 1
- Comment 2

- **Note**

You can place a note that you would prefer to pertain to a section of the survey rather than a comment placed within a structure.

These notes will show up in all Overview and Topographical output products.

Triangulation Tools

Triangulation tools are drawing aids used to place poles that do not export to finished product. The only file that retains them on export is the '.ap' data file used to share projects between devices.

- **Place Vector**

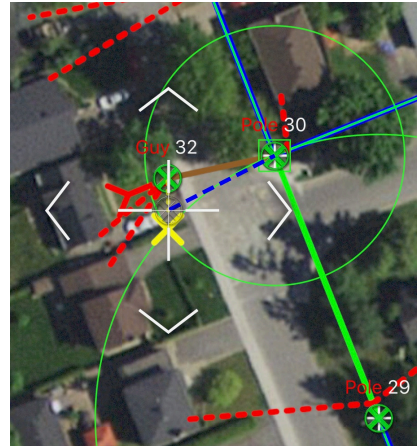
Prompts you to place a thin green vector line that can be used to align poles along. In the field, if you determine (either by map imagery, by site, or by driving out) the start and end pole of a line of poles that does not deviate in angle; you can snap a vector line between these poles. Then simply align the poles along this vector according to the span distance you take with your laser.

- **Place Circle Reference**

Places a green circle to the defined radius.

You can triangulate the position of poles that have moved or are hard to pin point on the imagery by placing a Circle Ref at two poles, and defining the radiuses of the circles by the distances taken by your laser. Where the circles intersect, the third pole (a Guy pole for example) sits exactly.

You can also use Circle Refs to offset a Pole from a visible street centreline or sidewalk edge.



- **Erase Vectors**

Erases all the Vector lines in the current project.

- **Erase Circle Refs**

Erases all the Circle Refs in the current project.

- **GPS Settings**

Pulls up the GPS Settings for quick changes

Textfield Population Aids

- **Swipe To Accept**

Almost all text fields in ambrePole save the last value entered and either offer the same value again, or a logical value calculated by other field values or other means.

This value is displayed as the text field's placeholder. Placeholder text is light grey and only displays on un-populated fields.

So if the value is not the text field's identifier or help text, simply 'Swipe to Accept' and the placeholder value swaps out to 'Entered text.'

- **Side Menu Selection Lists**

Most text fields that are not for Height or other Dimension values, when you touch them, launch a pull out selection list menu that extrudes from the left side of the screen.

The lists in this menu contain preset values. The majority of them are customizable on the fly. A customizable list shows an 'Edit' button and an '+' (Add) button at the top of the menu. The 'Edit' button allows you to Delete values or rearrange values.

Some lists are fixed and cannot be edited, as these values affect downstream processes.

As described in Settings, you can save 'Setting Sets' that retain all your current customized lists and settings.

The Pole

Inside the pole form everything is viewed in 'Portrait' mode. In the main view, there are 5 tabs to complete - depending on what information you are gathering. The only portion of your screens' view that remains constant between these tab views is the upper third, which is occupied by the satellite 'Imagery Pane.' This view can be minimized by the Pane Minimizing button located at the bottom right corner of the pane.

The Imagery Pane shows you the pole's position overtop of satellite imagery. On the left side of this pane, you have controls to adjust imagery opacity, zoom in and out of the pole's proximity, and a toggle for showing your GPS position.

You also have a 'long press' option that works differently depending on what portion of the pole form you are in. When in any of the 5 pole root tabs, the long press on the imagery pane activates setting the 'Street Relation' (identified by the thick blue line across the pane).

You will receive a choice of either manually setting the relation by rotating your finger around the pole, or by re-fetching the alignment from the maps' source data (either Apple Maps or a later version of ambrePole that will include Google Maps).

The only reason you would re-fetch the data, is if there was no internet connectivity when the pole was originally placed. Choose 'Rotate Manually' if the data fetch aligned incorrectly or to a perpendicular street to the street you are profiling.

When this is aligned correctly, it speeds up attachment position, and most importantly, it optimally aligns profile drawing views in the [Extended Processing](#).

When the tab information is populated to meet your [Quality Control](#) settings, the corresponding badge number or text will change from red to green.

When all tab Quality Control conditions are met, the pole ring (at the centre of the Imagery Pane) will also change to green, as will the top toolbar title.

Pole Tabs

i. ID Tab

• Reference

The 'Ref' field is autogenerated sequentially, but can be edited to whatever reference you want for a pole, as long as there are not two the same in a project. If there are, you will be prompted and dis-allowed to export your project. Poles are raised one numerical increment with each pole added to the project and Adjacent poles are raised one alpha character as an extension to the parent Pole they originate from (eg: 1a, 1b, etc). If you change a pole reference, the next reference autogenerated raises 1 from this one, unless that reference is taken, in which case the sequence is iterated thru until the first available reference.

- **Vertical Offset**

Represents the height between the base of pole (at grade) and a base mark you apply to the pole (with a 'Sharpie' for example) to reference all of your attachment heights to. To avoid critical errors, you should always use this feature (and use the same height when possible) or never use this feature. If you don't use ambrePole to capture attachments heights, then you won't need to use this feature at all. See [Vertical Offset](#) in Settings to learn more.

- **ID Fields**

There are 3 ID tag fields, 1 TX (Transformer) tag field and 1 SW (Switch) tag field.

If 'Tag ID' is required as in your Quality Control settings, you will be required to enter a value for 'Owner Tag.' If one is not posted, enter 'NT' for No Tag.

If you have taken a photo (in the Photo's Tab) of any of the ID tags that correspond to these specific fields, the corresponding label(s) here will colour yellow. And if you tap any yellow label, the picture associated will pop down over the imagery pane so that you can easily copy the tag string into the tag field. Double tap or pinch the photo to zoom in. Tap the imagery pane minimizer button to dismiss the photo.

If you tap a Stepper + or - button, the corresponding tag field will first bring down its associated photo (if one was taken) and then increment the tag value by one number or alpha character (whichever is applicable). If no value currently exists in the field, the stepper will increment the placeholder value by one character and bring that value into the field. The placeholder field, will show the previously saved value for that field up to the number of characters assigned in your settings for that specific field. To access these settings, tap the yellow note icon above the Owner Tag textfield.

If you wish to enter a TX or Switch tag without having a photo pre-taken, check the corresponding checkbox to access the tag field.

- **Survey Type**

Select 'Partial Survey' for lessor Pole Pass conditions. For example, when Partial Survey is selected, nothing on the attachments tab, including the measured pole height, needs to be completed for the pole to pass. This is helpful if splitting the work between two surveyors for a '[Merge](#)' information survey, or if attachment data has been collected by other means such as a 'LIDAR' collection method.

When you pass the conditions for a Partial Survey your pole colours change to blue instead of green in the Full Survey mode.

Whichever survey Type you choose, the next pole added to the project defaults to that type as well.

- **Pole Type**

Permit Surveys usually only ever require the survey of 'In-Line' & 'Guy' poles. Adjacent & Drop poles are most often just the adjacent structures that you need placed for reference. Certain surveys, however, do require the full survey of these types, therefore,

all are available. The selection made here will appear in the header of the pole profiles returned in the 'Extended Processing.'

- **PT (Pole Transfer)**

If surveying a pole that is in the process of transfer, check this box. You will then see a selection of either 'New Pole' or 'Old/Stub' pole. Select to indicate which type you are surveying. If combining the information of the two into one surveyed pole, this selection can identify the position of the main pole (of the two) that you are surveying.

- **Structure Type**

By default, if you have placed a standard Pole (as opposed to an Adjacent pole or Int), then you will see 'Pole' selected in this field. If you change this to Int or any of the other types in the selection, and then Save to exit, you will see that the icon for the structure has changed, and when you edit it, the corresponding new form type will pop up.

- **Address Fields**

This collection of information identifies the address property OR the closest address property to the pole.

The 'Relation' field identifies the pole's relation to the address property you enter (eg: Front, Side, Opposite, etc)

There is a second Address field for when the pole lands on or near the property line separating two addresses.

There is also a second Street field available in the event that the pole is located at or near an intersection and your engineering team want that much detail.

The Address & Street field place holders both auto-populate from fetched Map data provided you have network connectivity. Verify that the Map source data is correct and then Swipe to Accept if so. Most times (particularly if you are in a populated area) the address is correct. At or near intersections, however, the data sometimes selects the next address over. If the auto-fetch retrieves an adjacent street to the one you want, you have the option of Swiping it (to accept), and then tapping the 'Swap Streets' button to place the perpendicular street in the second Street field. You can then manually enter the Street name you want in the first Street field.

- **Stamp Fields**

Enter the values that you see printed or engraved on the pole Stamp. The easiest way to do this is to first take photos of the stamp and IDs posted on the Pole. Then switch to the ID tab where you will notice some of the field labels are highlighted Yellow.

If you tap a yellow 'Class' label, you will be presented with the pic of the 'Stamp' photo where you can copy in most of the values in this section. Since the 'Install Nails' & 'Inspection' date are separate entities, the labels for these two fields highlight according to their own respective photos.

You must specify your pole 'Composition Type' (eg: Wood, Concrete, etc) before the lower 3 Stamp fields can potentially appear.

If Quality Control settings dictate, you will be required to enter either a pole Class or a pole Circumference as part of the Stamp requirements before the pole ID tab can Pass.

Owner and Usage labels will highlight as Orange or Red if corresponding values and / or conditions don't add up. For example, if conducting a Full Survey and you have selected an Owner from your Power Utility Owner list (rather than your Comm Utility Owner list), and your usage is Telecomm or you have only Comm attachments on your Attachments tab, then these labels will highlight to warn of likely errors.

• **Pole Condition**

If there is a severe issue with the pole that you know will cause a pole to fail permitting or require major adjustment or replacement, select 'Inspection Recommended' and then enter the issue in the Condition field that appears. This field is a customizable pull out list, to make entries quicker.

Whatever you enter in this field, will appear in Red in the Extended Processing Pole Profile and in the CAD Overview 2D profiles.

Save minor issues or concerns for the notes section below.

You also have checkboxes for common issues such as 'Has Ambiguous Grade' (when the grade sod or earth around the pole is under construction and therefore not final) and 'has Pole Lean.' If you check the 'has Pole Lean' checkbox, aids to allow you to quickly enter the lean appear. If you tap the diagram that appears, it enlarges and you can hold your device up in front of the pole and compare the diagram as you adjust the lean angle. Tap the plus and minus buttons to adjust by 5 degree increments, or enter manually for an exact degree.

• **Comments**

There are 3 general comment fields and 1 MR (Make Ready) field. These fields display the last entered value for the Swipe to Accept option. Swipe or enter a value in any of the 3 comment fields and upon Save, the comments will move up to the first available comment field.

• **Survey Tools**

This section is strictly for survey use; The values will only export in the data file used to exchange projects between devices. You can flag and place notes to yourself to remember to revisit, or for supervisors to view in finalizing or answering questions regarding the survey.

Besides being able to flag the pole, you can toggle the flag colour (for multiple flag references).

The flag colour will supersede the passing status of the pole on the main Map.

• **Coordinates**

You have the option to move the pole by plugging in the longitude and latitude coordinates and pressing 'Apply.' This might be useful if you have the coordinates from some other source.

All of the attached spans will adjust with this move.

- **Altitude**

Non linear telecommunications survey requires the Z coordinate, and an iPhone provides a pretty good level of accuracy for this if you don't need perfection. Regardless, you can use any external equipment combination to determine your altitude, and then enter it here for a complete survey.

If you use the iPhone, keep ambrePole's GPS on all the time for better results. When your VDOP (Vertical Accuracy) is better than 5.0 meters, the accuracy read-out goes green and allows you to capture the Altitude. When you tap 'Capture,' you are given a textfield for entering a Vertical Offset to the altitude your device is receiving. This offset is to represent the vertical separation between the base of the pole (the point you want identified) and your device. For example, if you are standing on the road, and your pole is 1.2 metres down into a ditch, enter a vertical offset that adds up to the 1.2 meters below where you are standing plus the distance up to the device in your hand or on your tripod.

When you capture the final Altitude, you also capture your VDOP so that the engineering team know how much credence to give your value.

ii. Attachments Tab

On the Attachments Tab, tap the add (+) button to add any line or hardware attachment to your pole. Line attachments will network to the adjacent poles.

Tapping 'Edit' will allow you to re-arrange attachments within a group, or delete an attachment.

Attachments are grouped from top to bottom in the following groups:

- Structures (eg: Transformer, Light, Switch, Cabinet, etc)
- Line attachments (eg: Comm, Power, Guy, Insulator combinations & X-Arm combinations)
- Power Service Drops (which are added from the Map view and are all in one attachment)
- Anchors (which are added from the Map view and are all in one attachment)

Sort Arrangement: the order of attachments listed in this tab is not important to the output that ambrePole expels during project Export. For Example, you could have a Primary Insulator attachment (which is an array of insulator tiers) and there could be a Crossarm situated directly in the middle of the tier array. You don't need to create two Insulator arrays to space around the Crossarm attachment. The pole builds itself based on the height values that you enter, not attachment order.

Order may be critical, however, for your own mental organization. For example, sometimes intersection poles can be extremely busy and the spacing between line attachments is very small. And so, when you get to the height measuring task of the

survey, if your attachment order matches that of the order in the field, you are far less likely to enter the wrong height measurement in its respective field.

Besides deleting an attachment when in 'Edit' mode, you can also just swipe **left** to delete a cell and its corresponding attachment. For Line Attachments, you can also swipe **right** to delete (a rarely used tool), but this deletes in a very specific way. When you add and populate a Line Attachment, the attachment is also created for the adjoining pole(s), and every 'branch' attribute you add or enter a value for, carries over. When you delete by Swiping **right**, you only delete the line attachment at the current pole. This can be useful for scenarios such as when you span from one pole to another (on the main Map), but the 'power' lines, for example, pass over a specific pole and extend to the next pole. That is; the current pole is a mid span pole that just supports the Comm lines. When you have a system that uses line continuity, there is rarely an option for accommodating certain situations. So, in this instance, you enter the mid span Comm pole, extend the power lines (in their attachment) to the next pole, save the line attachment, and then **Swipe Right** to delete the attachment. This will delete the attachment only at this pole and maintain the continuity between the attachments at the two outer poles. You will be warned of the continuity break when you use this method (when you Swipe Right).

See [Pole Attachments](#) for details on the specific attachments and how to configure them.

iii. Dips Tab

There are 4 side menu lists at the top of the Dips pane from which you can add a pole Dip. They are all editable lists, but the 'Power' list is unique.

1. VGs

Adds a Vertical Ground.

2. Power

NOTE: Any Secondary dip chosen from this list (existing or added), when the dip's Mast Height is populated, will be assessed to evaluate the Pole's lowest exposed secondary vertical point. So if you don't want this height used for this calculation, use or add the appropriate element to the 'Other' list instead.

3. Comm

Adds any Coax, Copper or Fibre communications dip.

4. Other

Adds any other dip such as fully encased power cable dips between pole structures, Traffic Light dips, Antenna dips, etc.

After you select your desired dip, align its position with your finger and when satisfied, tap 'Accept' from the Top Toolbar.

Select the Dip and a 3 option menu selection appears at the top of the Dips Tab.

- Delete
Deletes (with caution prompt) the selected dip
- Position
Allows you to re-align the dips position around the pole. Use your finger to align.
- Edit
Brings up the Dip's Detail form for editing. You can also get here by double tapping the dip. When finished editing, tap the 'Accept' from the Top Toolbar, or tap anywhere outside of the Detail form. To abandon detail edits, tap 'Cancel' from the Top Toolbar.

Dip's Detail Form

If your Dip Quality Control settings require, you will need to populate all but the Comment field.

- Dip Type
This was chosen when placing in the main Dips Tab, but you can change the Type here if it was incorrect.
- Mast Height
Enter the height here and remember, if the Dip is a secondary type chosen from the 'Power' list, this value will be assessed in calculating the poles's lowest secondary point. If a secondary attachment or secondary drip loop height is actually lower than this value, this value will be ignored in this assessment.
- Mast Diameter
Enter the Diameter of the narrowest part of the dip Mast. For example, if you have a power Service Drop dip passing down a 2" conduit which further down is incased in a 3" U-guard, enter 2" here and select 'Conduit' for the Mast Type (not the larger U-guard).
- Comment
You can enter any comment or dip description that you do not have incorporated in the dip Title, such as 'Abandoned' or 'Exposed at mid pole area.'
- Mast Type
Choose U-Guard, Conduit or NA (for Not Applicable).
If 'NA' is selected, or if the item is from the 'VGs' list, you will not be required to enter a Mast Height - even if your Quality Control settings require you to.

iv. Photos Tab

There are 7 rows of pole Photo categories, some of which you can scroll sideways to view more photo title options. While taking your pole photos, select one of the two photo Source options from the the photo window that corresponds with the desired Photo Title. If you wish, you can tap and change the photo title to any of the preset options from that category. You would do this if your accidentally took the wrong photo for that title, or if there is no option for that specific photo in the preset section of the category row.

To obtain a photo, you can either take a photo with your device's camera, or you can select an existing photo from your device's cameral roll.

After a photo is associated, you can enter a detail view of the photo where you can zoom in, delete, re-take or replace it with another photo.

When you export your project, a folder with all the photos you take will be created with a file nomenclature representing the Pole or Structure Type followed by the Title you see here. These photos will also be embedded with the same titles in your Google KMZ Overlay.

When you export, the photos from the pole ID category save down to lower resolutions to save space. You can further customize the different photo sizes (per category) during the export process.

As explained in the pole [ID Tab](#), when you take photos with certain Titles from the ID category, the labels from the corresponding field values show yellow allowing you to tap and present the photo for easy data entry.

To ensure you don't forget to complete your photo sets, you can set the minimum number of required photos for several of these categories in your settings Quality Control Photo Requirements. For example, you can force yourself to acquire at least 2 Directional shots and / or 1 Power shot - where applicable.

If your pole Usage value is Joint Use (or unpopulated), then your Requirements will be determined by fulfilling the photo conditions for both Power and Comm. If your Usage is Comm (for example), then you only fulfill the Comm photo condition.

1. Directional Photos

You can take and associate up to 4 directional photos. The default titles start with 'North' and cycle in a clockwise direction. Retake the photo or change the title if you realize your bearings where wrong and you have the photos mis-represented.

2. Power Photos

Take desired close ups focused on the specified Power Zone in the photo title.

3. Comm Photos

Take desired close ups focused on the Comm Zone.

4. ID Photos

There are several ID photo options including options for associated Stub or New pole ID's, Push/Brace pole IDs and all the possible main tag options. Again, adding many of these photos aid in populating the associated field values.

5. Anchor Photos

Use for anchor attachment details, anchor overview shots or for proposed anchor views.

6. Other Photos

Add photos of anything else of interest, such as Hazards or specific sections of the pole. For example, choose 'Base' to get a close up of the available pole base conduits or a cluster of elements you want your engineering team to notice.

v. Topo Tab

This tab will later change to a more visual and drawing oriented feature that will be used to touch and place Grade Elements (such as Sidewalks and Curbs) and Street Furniture (such as Trees, Fire Hydrants and nearby pedestals).

For now, you can manually enter common grade element Offsets. These offsets will transfer to your KMZ and Pole Profile (if using Extended Processing) rake-offs.

The most commonly used value here might be the 'Vertical Offset to Grade.' Use this to identify the vertical separation between the base of the pole and the common grade (eg: Sidewalk or Road). This is particularly useful if downstream processes need to know Street or Driveway crossing heights - where you would enter this value for poles positioned around Crossings you intend to make.

Pole Attachments

If performing your height calculations separately from the rest of the pole attachment's population procedure, when you save and exit an attachment, the attachment cell will receive a green checkmark (✓) when all Quality Control conditions are satisfied - minus any required heights. When these conditions are met AND the height requirements are met, the cell will also change background colour from white to a semi-opaque green.

If 'Auto Focus for Heights' is set to 'On' in your settings, when you enter a form that passed the first condition phase (has a green checkmark), and the default height field is blank, that field will automatically receive focus and keyboard availability - to help speed up the heights routine part of your survey.

Only populate the fields that you are required to provide values for for your particular survey. Use your Quality Control settings to force specific collection.

Note that all attachment height fields show a second un-editable field to their right - that displays the combined height of the measured height and the Vertical Offset entered in the pole ID tab. This value is a dash (-) when Vertical Offsets are not used.

Top Attachment Cell

The Top cell in the Attachments table is unique. Its labels displays the Top of Pole height and underneath that, the Lowest Exposed Secondary height.

If you select and enter the cell's detail form, you have access to edit the fields displayed plus the height fields for the other electrical points of interest. These include Lowest Exposed Primary, Street Light Drip Loop and Traffic Light Drip Loop heights.

These fields are also accessible in specific power attachments.

You can also enter dimensions for a pole Bin Wall.

The diagram illustrates a vertical pole with various attachment points and a bin wall at the base. The form fields and their corresponding values are as follows:

Top of Pole	9.70m	11.20m
Lowest Primary	8.50m	10.00m
Lowest Secondary	5.80m	7.30m
SL Drip Loop	SL Drip Lo...	
TL Drip Loop	TL Drip Lo...	
Top of Bin Wall	BW Height	
Bin Wall Radius	Radius	
Bin Wall Diameter	Diameter	

Note: When present, measure attachment heights from **BOTTOM** of bin wall - NOT from top
Base Offset marks should also measure from bottom of bin wall

Line Attachment Specific

Any line specific attribute value (such as for 'Gauge' or 'Type') entered in 'Line Attachments' will maintain continuity between poles, eliminating redundant data entry and errors due to forgetting the continuing attributes as you survey the line.

When in any Line Attachment form, tap the plus (+) icon to add a leg/branch to the attachment. (You can add a leg to any Span route that you added while in the main Map.) tap on the desired grey dashed Span route, then align the attachment position by rotating your finger around the pole, or by selecting any of the likely pre-set

positions that exist on the drop down menu that appears. Preset positions include RS (Road Side), FS (field Side), Centre, Opposite or Shared (when all existing legs already share the same point). The app will first present a temporary alignment at the most likely position, where you can either 'Accept' or specify another position.

If you have more than one leg in the attachment, if no lines are selected, any field you populate will pass that value to all legs in the attachment. Adversely, if a specific leg is selected (touch to select), values you enter ONLY pertain to that leg. Deselect to view all information. Fields with varying values (different between legs) identify with orange text (as opposed to black) or with a semi-opaque grey such as with a check box checkmark or a segmented option selection.

Line Attachments draw by the following colour scheme:

- **Comm** **Blue**
- **Guy & Trolley** **Black**
- **Secondary** **Red**
- **Primary** **Burgundy**
- **Subtransmission** **Magenta**

To reposition a line or to transfer a leg or tier of lines to another attachment see [Reconfiguring Lines](#) and [Reallocating Line Attachments](#).

Common Line Attachment Attributes

• **Strand Gauge**

Select the gauge of the 'Strand' from the preset list. Note the options of Messenger or SS (Self Support). You will get different value lists depending on your Unit Type specified in the your General Settings.

• **Conductor Gauge**

Specify the line/cable gauge. When multiple cables are braided or lashed into one line, specify by NEUTRAL gauge (when neutral is present).

• **Show Bolt Heights**

Check this box if your comm attachment hangs from a single or double bolted attachment (which is rare) and the line height is quite different from the bolt heights, to reveal the optional bolt heights.

• **Line Height**

Enter the line's attachment bolt height. Unit formatting will apply after you press enter or exit the field.

- **Is Bonded**

If bonding for this attachment is to be recorded, you can check this box if the attachment is bonded to a Vertical Bond. The 'Bonded To' selection then becomes bold where you can identify whether the bond is to a Comm VG, a Power VG or to the Neutral line on the pole.

- **Dips**

Check this box to indicate that the lines (or selected line) dips at the current pole. The 'Association' feature is not yet available, but when it is, it will try and associate to the most likely dip laid out in the Dips section, or prompt you to layout a new dip.

- **Is Anchored**

Check this box to indicate that the lines (or selected line) is (are) anchored. As with the 'Dips' attribute, the 'Association' feature is not yet available.

- **Flying 90 & Extension Arm**

After selecting the appropriate instance (when they occur), enter the offset distance between the line and the pole. With Flying 90, measure to the centre of the pole, and with Extension Arm, measure to the face of the pole.

- **Is Slack**

If a line is un-anchored, check this box. Perhaps ignore when field situation is ambiguous such as when a length of pole spans is anchored on one end but not on the other.

- **Broken Lashing**

Check this box when the cable lashing has broke and obviously needs repair.

- **In-Line Switch**

Check this box if line has an in-line primary switch.

- **Comment**

Enter any line or attachment specific comment.

i. **Communication Lines**

- **Owner**

Select the attachment Client / Owner name from the side menu list. Add clients to your list if not already listed. Re-arrange list to put commonly used providers at the top.

- **Hidden Attributes**

Tap the oval Expansion button to view more Comm attribute fields

- **Cables**

Tap 'Add' (+) to add a cable or multiple of the same cable. You will be presented with options to specify quantity, Cable Category (Fibre, Coax, Copper or Strand Variation) and specific cable type (eg: 500 Coax or 144F).

The Cable Type list is editable, so you can add any missing Type including descriptive types such as 'Unjacketed 412.'

Swipe left or tap 'Edit' to delete an entry.

All Cables transfer in continuity to their adjoining poles.

- **Equipment**

Tap 'Add' (+) to add an in-line piece of equipment such as a Line Amplifier, Copper Splice, Fibre FOSC or Fibre Loopback. This side menu list is customizable. Make certain that you have selected the appropriate line or have all legs deselected when a value applies to all legs.

Swipe left or tap 'Edit' to delete an entry.

ii. Power Lines

- **Power Type**

Select the specific power line type such as Spun-Bus, Neutral or Primary. Types that typically contain more than one cable reveal more attribute fields when specified.

- **Number of Conductors**

Specify the combined number of secondary and neutral conductors. Do not include Strand when bus contains strand AND its own neutral conductor.

- **Braid Type**

Select either Lashed, Braided (has NO Lashing), or Strand Lashed. This selection is often vital to making tension and load calculations, so pay careful attention.

- **Conductor View**

When the Power Type is specified to 'Open-Bus' (a collection of evenly spaced secondary conductors), a view expands to add an array of conductors defined by the 'Number of Conductors' that you select above.

The default array from bottom to top ensues as 'Secondary, Secondary, Neutral, Secondary, Secondary Secondary' (stopping, of course, after the number you specified).

Tap any conductor to change its type to either 'Secondary, Neutral, SL Wire or Empty'

With this Open-Bus selection, you also get **Top Line Height** and **Bottom Line Height** fields to replace the single **Line Height** field.

When Open-Bus conductors have varying gauge, or spacing, or when the bus changes configuration offer throughout the pole line, it is probably better just to add individual attachments per conductor to your pole.

- **Lowest Secondary Height**

Enter the lowest drip loop or exposed secondary point when the assembly dips below the height of the attachment. If it does not dip lower, no entry is required; the lowest secondary attachment point will be calculated on pole 'Save.'

- **Attachment Type**

If not 'omitted' in the Quality Control settings, you can choose the attachment hardware type used to fix the line to the pole.

iii. Guys

- **Comm or Power Selection**

Both the Power Type and Comm Provider lists are editable, and combined could add to be very lengthy. Therefore, the lists are separate and will pull out in the Side Menu as per this selection.

- **Guy Type**

Specify what element is being guyed. For example, specify a Provider Name if the element is Comm or use the Power Type if the element is Power. You can be as specific as required. You can umbrella power Type as always being 'Power,' or you can be specific and choose 'Service Drop' or 'Neutral,' etc.

iv. Top Line

The Top Line will almost exclusively be a vertical insulator supported Primary conductor, but every odd situation exists somewhere. Therefore, you can change the Type or 'Reallocate' a line from another attachment to this Top attachment.

Since the Top primary so often changes configuration when there are Crossarms or Tiers of primaries attached to the pole lines, you have access to the Top Line(s) in both of the Crossarm and Insulator attachment types. Use the 'Reconfigure' feature in either of these two attachment forms to quickly reconfigure the Top Line(s) to other positions.

If required, when in a Crossarm or Insulators form, you can quickly rotate the Top Line's top position by tapping one of the two 'position control' chevrons. In the Crossarm form these chevrons are semi-opaque and located around the Arm section's title. In the Insulators form, they are located around the Top Line tier in the Stack view.

The Top Line field attributes are the same as in the Primary Insulator's Tier View (see below).

v. Primary Insulators

'Primary Insulators' is a form that houses a stack of primary tiers. It can handle all of the tiers attached to a pole, unless primaries run in more than 2 directions. In the case of the latter, more than one 'Primary Insulator' attachment will have to be added to the pole.

You can configure the basic primary line arrangement in this form and then tap an insulator graphic to enter that primary's specific tier detail form. This detail view is similar to those in the formerly covered Line Attachment forms.

Parent View

If no primaries are currently set up, and if none have yet been extended over from the survey of the adjoining pole(s), tap 'Add' (+) and then specify a first Span. A configuration selection pops down; if your tier consists of just a Centre line and that line Dead Ends here, choose 'Centre (DE),' Otherwise choose one of the other tier options. Next, tap to choose the 'thru' Span of your tier. If you are satisfied with your choice, tap 'Accept' and your top Tier will configure.

Note the green arrow that appears on the imagery view which shows the viewing angle of the Tier View that draws below.

If only one tier exists (or one tier and a Top line tier), you can select any leg on the imagery pane for editing. If you have added more tiers, you must first tap to select the tier in the Tier View, before you can select any specific leg for editing. When a specific tier is selected, you will notice that only the legs from that tier draw over the imagery pane.

You can rearrange tiers by Long Pressing on a tier and then sliding it to a new position by the tier handle that appears.

You can also delete a tier, but because Line Attachments have continuity with the adjoining poles, this would typically only be done with a middle tier that is emptied from rearranging tier legs.

To add consecutive tiers, tap the '+ Tier' button. The lowest tier will clone itself to the next tier position down. Therefore, you should first populate your detail tier attributes when adding a tier with different attribute values. For example, if your top 3 tiers all have 556 Conductor Gauge and southbound In-Line Switches, and the a second set of 3 lower tiers have 336 Gauge and no Switches, configure as follows:

After creating your top tier, touch one of the insulator graphics from that tier to enter its Tier Detail. Without selecting any legs, set your Gauge to 556 and then select the two southbound legs (one at a time) and check the In-Line Switch box. Save to exit and then press the '+ Tier' button 3 times. You now have 4 tiers all with the same attribute values. So now, enter the lowest tier (Tier 4) and change the Gauge to 336 and deselect the grey-checked In-Line Switch checkbox (grey because no lines are selected but only some legs are checked to have switches). Save to exit and then add two more tiers.

After creating tiers, you can select a tier in the Parent View to edit configuration. For example you may want to delete the Road Side half of the bottom two tiers. Select one of those tiers, then, one at a time, select the road side legs and choose delete from the selection menu that pops down.

To add just a leg to a side or centre position of a group of lines within a tier, tap the empty section of the tier to receive a pop-up option to 'Add' a leg there.

When there is a fair angle on the two legs of a tier, the insulator types typically change to more suspension type form factors. The app tries to configure the set as best as it can when the first tier is configured. Regardless, if the tier collection or the bulk of the tiers don't have the insulator form factor you see in the field, Long Press on the imagery pane to cycle thru the main configurations.

If some of the insulators are different from those in other tiers, or the main configurations don't have the form factor you are after, you can enter into the tier detail form to change the insulators and other attributes tier at a time.

If there is a Top primary line attached to the pole, it will appear at the top of the Tier stack. If it matters to your survey, the Top tier (usually consisting of two lines and one insulator) can be quickly pivoted to one of 4 main positions using the chevrons to either side of this tier in the Tier View.

Now, when you Save to exit the Insulator form, the same tier configuration will transfer to the adjoining pole(s) making the next Insulator View (if the configurations are the same) a 2 second edit (minus entering height values).

Tier View (Detail View)

The Detail View for the primaries in a Tier is similar to the form for a Comm or Secondary attachment, only there is a Model view that reacts to the lines you select in the imagery pane. Except for 'Centre' attached primaries, there will usually be two lines that stem from an insulator, so when a leg is selected, many of the values you enter into attribute fields, transfer to the leg shared by the insulator.

If you select a leg, the Model view will zoom from a view of the insulator pair to just the insulator that supports that leg and its twin. Then, if you change the values such as the Insulator itself or the primary's gauge, both legs receive the new value.

Detail View Attributes

• Top of Pole

As like the pole's Top Attachment Cell, you can enter the Top of the Pole height in both the Insulator views and in the Crossarm details.

• Heights

Besides the Top of Pole height, there are 3 heights that correspond to most insulator attachments. When you enter one, the other 2 are auto-populated according to common suspension relations and the spacing increments set in Settings > General > Vertical Spacing. The default spacing between upper and lower bolts is 25cm (10").

- **Lowest Primary Height**

Enter the height at the lowest drip loop or exposed primary point when the assembly dips below the height of the attachment. If it does not dip lower, no entry is required; the lowest primary attachment point will be calculated on pole Save.

- **Vertical Line Adjustment Chevrons**

After one of the three primary heights are populated, because of the Auto Height Population, a Line height is guaranteed to be present, and so these Chevrons will quickly raise or lower the Line height by increments of 5cm (2"). This will only need to be used when the line height is off considerably from the value that the app auto-populates for it.

- **Insulator Type**

You can change the Insulator Type for all legs, or for a selected leg and its twin (if applicable), either from the side menu list presented when you touch the textfield or by iterating thru visually when using the horizontal chevrons located at the bottom of the Insulator Model View.

vi. Primary Crossarm

Note the green arrow that appears on the imagery view which shows the Crossarm viewing angle drawn below in the Portrait Model View.

As with the Imagery pane, all Subviews in the Crossarm form have Minimizer buttons to exchange viewing room to other views.

By default, the Crossarm aligns itself perpendicular to the set Street Alignment. If the alignment needs to be adjusted, long press on the imagery pane. The new temporary position will be opposite (180°) to the previous position. If still undesired, rotate your finger around the pole to align by any of the available Snap points. If the desired position is between Snap points, double click the Imagery pane to disable the snap feature (double tap again to enable it). When the alignment is correct, tap 'Accept.'

Lines will extend from the adjoining pole(s) if they have already been populated. If not, and this is a new attachment, add lines by tapping the 'Add' (+) button in the Imagery pane. Now select any of the Span routes that you associated with the pole from the main Map. A thick dashed orange line appears over that Span to identify where the new legs will end up. Now select one of the leg configurations that are presented in the pop-down selection - either '+1, +2, +3 CA End or Top.'

If you choose '+2' (for example), you will then see 2 yellow dashed lines appear over that same Span (the orange line disappears). These yellow lines show you the defaulted disbursement of the lines for that Span. You can either 'Accept' this configuration or slide your finger to one side of the line array to lay the lines to one side of the Crossarm.

If you choose '+3,' the same thing would happen, except when you selected a side of the Arm, 2 lines would lay out on the side you selected, and 1 line would stay on the opposing side. Tap 'Accept' when your specification is as desired.

You can add more lines to the same Span (same side of the Crossarm) if needed; the lines will space as needed.

For the other unpopulated side of the Crossarm, you can perform the same procedure or much easier, you can select the 'Thru' option that is added to the pop-down selection. This will extend all lines from the other side thru to the next pole.

When not in the 'Add' mode, when you select a line in the Imagery pane, a pop-down selection appears that allows you to either Delete a line, Reallocate it or Reconfigure it.

Crossarm Attributes

- **Members**

Select either a 1 or 2 Member Crossarm

- **Composition Type**

Select either Wood, Metal or Composite Composition Type

- **Bolt Configuration**

Select either a 1 or 2 Bolt Configuration

- **Arm Width**

Enter the arm width if required

- **Arm Comment**

Enter comments pertaining to the Arm such as 'Arm Supports TX and Fuse.' Do not enter 'line' specific comments here.

Portrait Model View

The Model View will visually illustrate Configuration and transform as per many of the form's attribute values. It also holds a buttons to add On-Arm Switch(es) and to access those Switch Details.

Tap the '+ Switch' (or '- Switch' when switches already exist) button to add Switches to a selected leg (and its twin) or all legs - when no leg is selected.

To access the Switch's details, tap on the Switch graphic. To access all the Switches' details simultaneously, tap on the Crossarm itself.

In the Switch detail, you can specify whether the selected Switch(es) is (are) Primary Switch(es) or Secondary Fuses for Transformers. You can also iterate thru mounting angles. Tap outside the Detail View to Save and return to the Crossarm.

- **Dead End or Thru**

Select the Dead End or Thru configuration for the selected Primary or for all the primaries if none are selected. 'Dead End' terminates the primary at the centre of the crossarm. 'Thru' puts the primary at the tip of a vertical insulator mounted - usually - on top of the Crossarm, but sometimes to the underside of it. When 'Thru' is specified for

all or any lines, when you perform the heights portion of the survey, you will be required to enter insulator heights OR line heights (the other is calculated automatically) in addition to the Crossarm height.

- **Power Type**

Specify the Power Type from the side menu list. Primary is the default, but there are often primary Guys attached to one side of or an end of a Crossarm, and sometimes a neutral pops up to the Crossarm for certain spans. The Neutral is usually brought into the attachment by means of the 'Reallocation' feature.

- **Top of Pole**

As like in the pole's Top Attachment Cell, you can enter the Top of the Pole height in both the Insulator views and in the Crossarm details.

- **Insulator Height**

Enter the insulator height. If the Crossarm Height is already entered, and you enter this height, the Line height will automatically calculate for the corresponding line(s). Adversely, the Insulator Height will auto calculate if you have the other two heights entered.

- **Crossarm Height**

Enter the Crossarm height. If the arm configuration is a 2 Bolt configuration, those bolt heights will be saved as per Settings > General > Vertical Spacing. As well, Centre mounted Crossarm primaries will save their heights 'up' by the same spacing.

- **Lowest Primary Height**

Enter the height at the lowest primary drip loop or exposed primary point when this point dips below all the primary attachment points. Point will be calculated on pole Save if the lowest point is an attachment point.

- **Conductor / Strand Gauge**

When the Power Type is 'Guy,' select the Strand Gauge from the side menu list. For all other Types, select the appropriate Conductor Gauge.

- **Has Switch Pole**

Check this box if a switch mounted to the Crossarm operates with a Switch Pole. You will then have the option of defining the Switch pole's position. To do this, tap the 'Set Switch Pole Position' button to change position mode. The button will turn green to indicate this mode. Now you can specify the Switch Pole's position by rotating your finger around the Main Pole. Tap the button again to exit this mode. The Switch Pole will now show up in your pole's Dip tab.

- **Comment**

Enter any comment(s) specifically related to the lines; use the Crossarm Comment field for comments related to the arm.

vii. Service Drops

Service Drops have a similar form to that of [Power Lines](#).

As like Anchors, Service Drops are placed from the main Map. When you double click a Service Drop from the main Map, a quick edit form pops up allowing you to edit the Conductor Gauge, Length, Provider Type and Unit information. In the quick form, you also have access to enter the detailed form that you edit here from within the pole.

All of the Service Drops associated with the current pole group together into one attachment. Certain attribute fields are not available to Service Drops that are span fed (as opposed to pole fed) such as Height fields, isAnchored, Dips & Attachment Type.

Adversely, the 'Offset to Pole' length is not available to Service Drops that are pole fed.

When there is more than one drop and no drop is selected, even though values from these specific fields may be displayed, they only pertain to the applicable Service Drop Type (span or pole fed).

- **Drop Type**

Touch the Drop Type textfield and then select from the side menu list that appears. drop Types include "Spun-Bus, Open-Bus, TL Cable, SL Cable & Utility SD."

- **Number of Conductors**

Specify the combined number of secondary and neutral conductors.

- **Heights**

When the Drop Type specified is 'Open-Bus' **Top Line Height** and **Bottom Line Height** fields replace the single **Line Height** field.

- **Lowest Secondary**

Enter the height at the lowest drip loop or exposed secondary point when the assembly dips below the height of the attachment. If it does not dip lower, no entry is required; the lowest secondary attachment point will be calculated on pole Save.

- **Attachment Type**

If not 'omitted' in the [Quality Control](#) settings, you can choose the attachment hardware type used to fix the line to the pole.

viii. Structures

Structures are objects such as Lights, Cabinets & Transformers that do not extend over the Spans to other poles.

Some Structures, by default, align themselves by the Street line. To adjust alignment, touch the Imagery pane and rotate your finger around the pole to the desired point.

Logical Snap points aid in the alignment, but if an angle between Snap points is desired, double tap the Imagery pane to toggle Snap on or off.

Structure Height Textfields

Structure heights are recorded by varying points, but most structures have a logical reference point and that point will be used first in app and product output references. If that point is not supplied by the surveyor, other points may be accepted and used for these references. But if an attachment is placed and the Survey Type is 'Full Survey,' the app will not flag green (will not pass) until some workable point is entered. For example, a Street Light or Traffic Light absolutely requires the Top bolt height.

You can enter more than the minimum required points too. All entered points will be published in profile rake-offs. For example, some engineering processes require varying attachment points for Transformers. So you can provide heights for Bolts and Top & Bottom if you choose.

- **Top Height**

Refers to the Top of the structure

- **Top Bolt**

Refers to the Top Mounting Bolt

- **Centre Arm or Mid Point**

Refers to a central member or additional support bracket point

- **Bottom Bolt**

Refers to the Lower Mounting Bolt

- **Bottom Height**

Refers to the Bottom of the structure

- **Drip Loop or Lowest Exposed Point (can refer to Secondary or Primary)**

Refers to the lowest point of the electrical assembly or cable network not shielded enough to bypass safety standard requirements. In other words, if it requires a specific licence to touch or get near a part of the structure, this entry is to be evaluated in assessing this point.

Other Common Structure Attributes

- **Type**

Except for 'Transformers' & 'Holes,' each category of Structure contains various specific types. For example, the category 'Cabinets' contain CATV Power Supplies, Switch Cabinets, Disconnect Boxes, etc.

To specify structure Type, choose either by taping the 'Type' textfield and then selecting from the side menu list, or by advancing visually using the picture chevrons.

Note: Not all structures have pictures, particularly because some of the structure lists are editable. Therefore, you can add your own structures to these lists.

- **IsBonded**

If structure bonding is required, check this box if the structure is bonded to a Vertical Ground or the Neutral line.

- **Dips**

Check this box if cable from the structure Dips down the pole.

- **Comment**

Add any comments of interest pertaining to the specific Structure

Structure Categories along with their **Unique Attributes**

Transformers

If you touch the Imagery pane before you specify the Number of Transformers, it will default to 1 and align position to your touch point. It will also default the associated Fuse position toward the Street.

- **Number of Transformers**

Specify either 1, 2, 3 or 3 Phase Cabinet.

- **Bushing Height**

Refers to the top of the Bushing Insulator mounted on top or on the side of the Transformer. Enter this height and if the primary cable attached to this Bushing dips lower than this point, enter the lowest point into the 'Lowest Primary' textfield as well.

Fuse Section:

- **Fuse**

Check this box if there is a Fuse in the transition primary cable leading to the Transformer.

- **On X-Arm**

Check this box if the Fuse is mounted to a separate Crossarm

- **Set Position**

To change the Fuse position on the pole, tap this button and then rotate your finger around the pole to align. Tap the 'Set Position' again to return the alignment feature to the Transformer.

- **Number of Fuses**

Specify 1, 2 or 3 Transformer Fuses mounted to the pole.

- **Arrestor**

If required, specify the placement of the Arrestor; either attached to the Fuse assembly, attached to the Transformer or independent - such as attached to a Crossarm.

- **Configuration**

Specify either a 1 or 2 Bolt Fuse mount Configuration. The selection result will determine the number of Fuse Height textfields that are made visible. By default, this is set to '1 Bolt.'

Switches

- **Stand Alone or Bar/Rack**

Specify which type of switch. If 'Stand Alone' is selected, a **Number of Switches** selection appears. If 'Bar/Rack' is selected and the assembly is an 'Outward' assembly, you will also have a **Number of Switches** selection (but with 6 options). Vertical Bar and Rack Mounted Switches have a set number of switches, and so this option is not visible.

- **Crossarm Members**

Specify either 1 or 2 Crossarm Members

- **Number of Switches**

Choose either 1, 2, or 3 with a 'Stand Alone' Switch, or up to 6 with Bar mounted Switches

- **Has Switch Pole**

Check this box if the switch (typically only the Bar mounted ones) operates with a Switch Pole

Power Guides

Power Guides are mounted insulators that direct Primary dip cables to their destination hardware. They can be used for Secondary cables as well, but this use is not as common.

- **Number of Guides**

Specify either 1 or 2 ('2' configures the guides in opposing position)

Additional Power Hardware

This category includes items such as Reclosers, Primary Dips (if you want to identify a dedicated attachment assembly rather than just checking the 'Dips' checkbox in a Switch attachment) and Arrestors.

- **Number of Guides**

Specify either 1, 2, 3 or Rack (such as in the case of Reclosers).

Street Signs

Some surveys require the identification of authority issued Street Signs. Other publicly placed signs are temporary and usually light weight, and therefore are not required to be surveyed.

- **Mount Type**

Specify either Flat, Protruding or On Arm

Lights

- **Upper Guy/Arm**

Refers to an Upper support member for certain types of Lights such as a Trussed Light.

- **Lower Support**

Refers to a Lower support member for certain types of Lights such as a Decorative Light

- **Is LED**

Check this box if the Light has been changed out to new LED lighting and if this information is required in your survey.

- **Right Side Mounted**

When looking from the Street or towards the face of the pole, if the Light is mounted to the Right of the pole, check this box.

- **Left Side Mounted**

When looking from the Street or towards the face of the pole, if the Light is mounted to the Left of the pole, check this box.

Cabinets

The Type list is editable to allow you to add your own Types.

- **Width & Depth**

If a Width and / or Depth is provided, the cabinet will be drawn to scale in product output.

- **Drip Loop**

If 'Status Monitor' is the specified Cabinet Type, a separate field is set to store the drip loop height to distinguish this height from the lowest points of other electrical drip loops and assemblies.

Cylinders

Any cylindrical apparatus mounted to the pole can be included in this category. This would include such structures as Fibre FOSCs, Telco Splices and Telco Housing Cylinders. The Type list is editable to allow you to add your own Types.

- **Diameter**

If a Diameter is provided, the cylinder will be drawn to scale in product output.

Other

The Other category includes structures such as pole mounted Cameras, Antennas & CATV Equipment.

The Type list is editable to allow you to add your own Types.

Holes (For Concrete Poles)

There are 20 available height fields for Holes, but typically you would only be required to record the ones near the height your engineering team may want to mount a new line or place hardware. Some requests do, however, require all holes thru the pole.

You can place two Hole attachments on a pole to record both the Street Facing holes and the Parallel to Street holes - if, for example, you are not sure if a new line will continue past or dead end at a given pole.

Top of Pole Elements

This category is for structures that mount and extend vertically upwards from the Top of the pole. Default structures include Vertical Pole Extensions, Top of Pole Antennas and Top Mounted Street Lights.

- **Composition**

Select the Composition type from the side menu list that appears when you touch the textfield. Types include Wood, Concrete, Fibreglass, etc.

Push / Brace Poles

Push Poles are placed inside the Pole form, but are also visible on the main Map.

For upper attachment Height entry, enter either the attachment Mid-Point, or both the Top and Bottom of the attachment. 'Top & Bottom' can be bolt heights OR edge of hardware heights.

- **Lead**

Enter the distance from the face of the pole to the centre of the lower end of the Push Pole

- **Height Relative to Grade**

Only enter this height if the bottom of the Push Pole is higher or lower than the base of the pole. Enter a negative number if the Push Pole extends lower than the Base of pole.

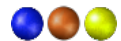
ix. Anchors

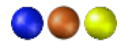
Anchors are placed from the main Map, but the attributes can be edited there, or from here in the Attachments tab.

See [Anchor](#) in the Map section of this manual for details on populating Anchors.

'Reallocating' Line Attachments


Line attribute continuity flows from pole to pole, but with multi-line configurations such that you have in primary Tiers and on Crossarms, the configurations often change from pole to pole. Therefore, when you are in a line attachment form, you can select a line in the imagery pane and from the selection pop-down, choose 'Reallocate' to transfer a line or a tier of lines to another attachment.

 If you are in a Primary Insulators attachment form and you choose 'Reallocate Whole Tier,' all lines from that tier (including centre attached lines) will transfer.

 If you are in a Crossarm attachment form and you choose 'Reallocate Whole Tier,' Centre lines and the **outer** most line from all 4 sections of the Crossarm will transfer.

You can only transfer Tiers of lines between these two types of attachments.

You can choose to transfer to a new attachment or to an existing attachment. When you choose an existing Insulator attachment, the transferring tier will add to the bottom of the specified tier's existing stack.

 If you transfer a single line; when transferring to a Crossarm attachment, the most likely position is calculated by the position it currently resides in. If you transfer to an existing Insulator attachment, you are given a choice of tiers (an existing one or a new one), followed by a choice of position (Left, Right or Centre) . If that final position is occupied, you are notified and the transfer is cancelled.

If you send a line or tier to the wrong tier position in an Insulator attachment, it is easy to remedy. Simply open the Insulator attachment that you send lines to, long press the newly added tier to activate 'Editing' and then slide the tier to its proper position in the stack.

If needed, before performing this, minimize the Imagery pane to view more tiers.

The same options exist with single line selections from all line attachment types, plus you can transfer them into any other kind of line attachment (not just Tier oriented types).

Therefore, if in the field, a Neutral (for example) suddenly moves from its normal position in a Power Line attachment, up to a Crossarm, you can transfer the line into the Crossarm attachment. Or, if you have Guy lines stemming from a Crossarm, that span to the centre of the adjoining pole, you can transfer these out - one at a time - to 'Guy' line attachments.


'Reconfiguring' Lines

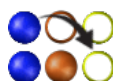
'Reconfiguring Lines' moves a line to a different position within the existing attachment.

When you select a line and choose 'Reconfigure' the procedure will differ depending on attachment type.

In a standard line attachment such as a Comm, Power, Guy or Top attachment, when you select a line and choose 'Reconfigure' you are run thru the same procedure as when you first add a line to a Span route. You can choose between the common attachment points, or manually position with your finger.

In a Crossarm attachment, when you select a line and choose 'Reconfigure,' left and right chevrons appear in the pop down display allowing you to cycle the line thru the different positions. You will see the highlighted line move in the different views, plus you can see the name of the position below the pop down display - which is helpful with overlapping positions such as Centre or Top. When the cycle takes you to the desired position, choose 'Accept.' When not in the 'Reconfigure' mode, these same chevrons just cycle thru the selection of existing lines (rather than swapping a line's position), which helps if you find it difficult selecting lines that are close together.

 In a Primary Insulator attachment, you can reconfigure legs within a tier in either the Parent or the Tier Detail view.

 When in the Parent view, you can go further and reconfigure a line to a position in a different tier altogether. You are first given this choice to Reconfigure Within the same Tier or to Move to Another. If you choose the latter, you then choose any existing tier or you choose to Create a new Tier at the bottom of the collection. (Remember you can easily swap tier positions afterwards.)

Regardless of tier choice (within the same or in another), you finalize your move by selecting the **Left**, **Centre** or **Right** position. If the position is occupied, the option will be accompanied by the word (Swap).

The Imagery and Tier views use coloured attachment points to let you know where the '**Left**' and '**Right**' positions will land your new line position.

Administrative Processes

- **Exporting**

Exporting is the only function that can **not** be performed without an ambrePole subscription.

To Export your survey project, go to the Home tab and tap the corresponding project cell to enter its detail form. Tap the 'Export' button located under the project attribute text fields. If you do not have a subscription, you will be prompted here to first obtain one. AmbrePole also checks to see if you have any poles with the same Reference title. If you do, you will receive a list of duplicate references to first make unique.

When a subscription is present and there are no duplicate pole references, you can proceed.

Credentials

The next screen has a series of credential text fields that you may need to populate, depending on what features you want in the export. Other than the FTP credentials, this information can also be accessed and edited from the Settings > Licensing section of the app.

The values will be remembered by the app, so you don't have to enter this information again unless it changes.

If you don't intend on purchasing the 'Extended Processing' check the checkbox for 'I only need app processing (kmz & data files).' This will remove the 'required field' asterix's where you can tap 'Continue to Export' regardless of whether you have populated the credential fields or not.

If you want Extended Processing, ensure the following text fields are populated:

- **Company Name ***

If you don't have a company name because you are a sole proprietor, you can just enter your own name. A name is required in case there is specific processing variances that you or your company has arranged with ambreComm.

- **Corporate ID**

This is an ID to go along with your company name that you can enter if you have received one from ambreComm

- **ambrePole Registration # ***

This is a registration number that is automatically generated when you first launch the app. You shouldn't have to adjust this field unless later instructed.

- **Telephone Number**

Enter your telephone number if we should have to reach you regarding your processing if you prefer this type of correspondence over email.

- **Corresponding email ***

An email is required and this correspondence will occur, if only to inform you of your processing completion.

- **Extended Processed Files Return Method Preference**

Choose your preference for how you want your 'Extended Processed' files delivered to you. You can choose between Email, Your FTP site or Our FTP site (ambreComm's). If you choose 'email' beware that the files for a project usually range from 2mb to 20mb, so make sure it is an email that can handle this. File size will depend of number of poles surveyed and how loaded those poles are.

A copy of your data files, photos and kmz file (with embedded photos) all come directly from your device, so you don't need to receive those files back. For help on transferring those files to your engineering group, see ['Transferring Files / Folders Between Devices.'](#)

If you want to exchange files via Your FTP, you will need to ensure that you enter the following fields correctly. The other two delivery options do not require these credentials.

Note: you or your company administrator can set up ftp so that ambrePole only has access to a dedicated folder to keep anything else on your FTP private.

- **Username ***

Enter the FTP username (case sensitive).

- **Password ***

Enter the FTP password (case sensitive).

- **ftp Base URL ***

Enter the Base URL (example: ftp.yoursite.com).

- **Project / Sub-Folder Path**

Enter a sub-folder path if there is a dedicated subfolder designated for ambrePole files (example: /ambrePole/Processed Files).

Test FTP Credentials

Tap this button to test that your credentials work (requires internet connectivity). You will receive a response to its success or failure.

When you have completed what you need here (likely just the one time), you can proceed to Exporting by tapping the 'Continue to Export' button.

Export Options

Set the parameters of your export. You will likely keep the same parameters for all your exports, so this would also be a one time setup.

- **Project Folder Name**

Select 1 of 4 project data values to name your exported Project by. The project name is prefixed with “ap_” followed by a date text string.

- **Imagery Overlay (kmz)**

Check this box if you wish to create a GIS kmz file (typically opened by Google Earth).

Check ‘**Include Photos in kmz**’ to embed a low resolution version of all your photos in the file.

- **Create Data Table (csv - for CAD)**

Check this box if you wish to create the csv (Comma Separated Value) file necessary to send out for and produce Extended Processing. You can also use the database file to transpose data into other software such as Design or Load Calc software. Or, even if you just wanted the pole references and their Lat/Long coordinates, you could extract those columns of data.

Check the ‘**Re-Submission**’ box if you have already submitted this project for Extended Processing and you had to make some revisions. There is a grace period after first submission where you can re-submit the same project (or a portion of it) at half the regular processing rate. Date and pole UIDs will be compared during processing to validate this option.

- **Create Raw Data File (ap - for export/import)**

Check this box to create the data file required to exchange projects with another iOS device (or, on upcoming OS version, Mac computer). This file also is used by the subordinate device in the Merge Data process.

- **Photos**

Check this box if you want Photos exported. This will create a subfolder containing all your projects photos prefixed by their pole Reference (example: ‘Pole 1_North.jpg’).

Photo Resolution

The resolution of the photos created is much higher than that of the photos embedded in the kmz file, but they can be scaled down to save on space and transfer time.

Choose 90%, 60% or 0% file compression for all photos other than ID category photos. The default setting is 60%.

Choose 90%, 60% or 0% file compression for ID category photos. The default setting is 90%.

Press the ‘Export’ button when all parameters are set as desired. ‘Export’ can only run when the device is on and ambrePole is the focused app.

Post Export

After the Export process is complete, depending on the Export parameters you set, you will gain access buttons to the data files you just created.

- **Send project for CAD processing**

Press this button to send data files directly to ambrePole via FTP for Extended Processing. See ambreComm.com for processing costs.

Pressing any of the other new buttons will allow you to share these files (by email or AirDrop for example) or, you can open them in another app that you may have on your device.

- **Share .kmz file (Google Earth)**

Send or open in 'Google Earth' (if you have 'Google Earth' on your device).

- **Share .csv file (used for CAD processing)**

Send or open with any spread sheet application you have on your device.

- **Share .ap data file (export / import)**

Send or import later with ambrePole.

- **Transferring Files / Folders**

There are a few procedures during the use of ambrePole where you will need to exchange files.

- When you finish a project, you will need to get all your files to your engineering team and, if you are using Extended Processing, you will need to send data files to ambrePole.
- If you split a survey between two surveyors, the surveyor with the subordinate survey will need to send their data file or whole project to the surveyor with the master survey.
- If you want to send your data file or whole project to a supervisor or other surveyor to examine or continue the survey.

Sending data files to ambreComm for processing is pretty easy. After Export, simply press the '**Send project for CAD processing**' button (see Exporting).

For the other instances, you have three choices.

1. If you don't need to include photos, you can email data files. Options to send the different data files present themselves after Exporting.
2. For larger file sets (your whole project including all the photos) you can plug your device into a Mac or PC and transfer the files to your computer or directly to a company server if you have such access. If the computer you connect to is a PC or

a Mac that uses an OS **prior** to macOS Catalina (version 10.15.0), use iTunes.
Steps to transferring files to your computer using iTunes.

If you are connecting to a Mac using macOS Catalina or **later**, use the Mac 'Finder' to transfer the files. Steps to transferring files using the Mac Finder.

With either iTunes or the Mac Finder, once open to your apps, you can simply drag and drop your file(s) directly into the AmbrePole app root directory.

3. For transferring files between devices such as when you are merging a project with another surveyor, or if you just want to send a project to another iOS device or Mac wirelessly, you can use AirDrop in combination with your device's 'Folder' app (found with iOS 11 or later).



First, open the 'Folders' app on your device. The Folders app is a browser similar to Windows Explorer. If you haven't added AmbrePole to your Folders app Favourites, under 'Locations' tap 'On My iPhone (or iPad).' You will see the AmbrePole app along with any other app you have that takes advantage of the Folders app. Tap 'AmbrePole,' and there you will see all of your exported Projects along with a folder entitled 'Files to Merge' (the folder where you put projects that are to be merged into your device's projects).



Next, tap 'Select' in the upper right corner of your screen, and then select any or all projects that you want to send to the other device.

Then, tap the 'Share' icon in the bottom left corner of your screen.

Select 'AirDrop' and wait for icons for nearby users to appear. (If the user you want does not appear, they may have their bluetooth off or are set to be 'undiscoverable.'). If the transfer doesn't happen automatically, tap the Transfer icon.

Once the project file(s) or folder(s) have transferred, if the receiving device is an iOS device, the user will be prompted for a method or application to transfer to. Choose 'Open with Files.' Then, in the 'Files' browser, browse and save to 'On My iPhone > AmbrePole.' Or, if they are accepting your project(s) to merge into their own, save to 'On My iPhone > AmbrePole > Files to Merge.'

- **Importing**

You can import projects previously saved or passed on to you from another team member. Before you can import a project the file or project folder needs to be placed in your ambrePole root directory.

To place projects into ambrePole, see Transferring Files / Folders above.

Once the project is in the ambrePole root directory, from the Home tab in ambrePole, tap 'Imp/Merge' in the upper left corner of your screen. Because we are 'Importing' (not 'Merging'), choose 'Import Project' from the pop up menu.

Then, in the list that appears, choose the project folder or project 'ap' file that you want to import. If you choose a folder, it will expand to reveal the 'ap' file within. Once you select an 'ap' file, you can then tap 'Import' from the upper right corner of your screen.

If you choose from a folder, you will have the option of importing the photos that should exist in the project's '...Pics' subfolder. You must include the photos if you plan to export the project later as a whole project. Choose not to include photos, if you are just importing for reference or examination and don't need them.

The newly imported project will always drop to the bottom of your project list on the Home tab. To make the imported project the 'Current Project,' long press on its cell, or tap the cell, and inside the Project Details form that appears, tap 'Make Current' and then save. The current project moves up to the top of the list.

- **Import CSV (Comma Separated Value)**

You can now import Pole Data from CSV files. Note: Pole data can first be exported from such sources as Google Maps or other similar data sources, then imported into ambrePole.

For now, data is limited to Pole coordinates, ID1 (Barcode for example), Class and Height. Data columns must be arranged in that order. The only mandatory data required for this feature are the Latitude and Longitude values. If you wanted to import just the coordinate and 'Class' information, for example, you would layout your file with a blank column for the ID1.

You can include a header column or omit it; the same results will occur.

In a future release, more pole data options will be available as well as being able to organize your data at will. The process will parse the header data itself to determine where to place your data.

Also, for now, pole data can only be imported into an existing file. A future release will provide the option of creating a new file with the same project name as your CSV file name.

- **Merging (Multiple Surveyors)**

'Merging' is a feature of ambrePole that allows you to split the survey process between two surveyors. This adoption is an excellent method of training a new surveyor by first giving he or she the subordinate roll. Once the surveyor is trained on the subordinate process, they have the option of moving on to surveys by themselves.

The subordinate roll typically includes taking the pole photos, and entering the pole ID data. This seemingly easy task can have its learning curve as a new surveyor rarely knows the difference between the Comm, Guy, Secondary and Primary lines. Learning to take photos focused on these zones, is a good method for familiarizing them with the different components.

You can extend the subordinate roll further by having them gather the pole's elevation (if required for non-linear survey) or by having them place the pole in its exact position.

Then, in the settings that appear during the Merge process, check the checkboxes for those corresponding position values.

Other Merge attributes may be made available in future ambrePole updates.

Merging projects involves merging a 'Subordinate' survey into the a 'Master' survey. First, export the Subordinate survey and transfer it to the device of the Master survey (see [Transferring Files / Folders](#) above).

Although Merging can be a powerful feature, it is critical that you know what you are doing as you can overwrite data that you intended to keep. So it is a good idea to first back-up the Master project by exporting with a temporary name such as with a '-bm' (Before Merge) suffix extension.

Follow the same procedure as Importing (above) to specify the project to be merged, only choose 'Merge Project' instead of 'Import Project.'

Once you select your project 'ap' file, tap 'Merge' in the upper right corner of your screen. A 'Merge' settings form will appear. All the settings that you set here will remain as default settings going forward, so unless the scope of work that the subordinate surveyor performs - changes, you won't have to examine these settings after your first use the feature.

The project to be merged in will always merge in with the 'Current Project,' so ensure that the corresponding project is made current before you begin.

- **Master / Subordinate**

Choose which project type you are merging data into. Currently only the 'Master' option exists; therefore, you can only merge the 'Subordinate' information INTO the 'Master' project on the master survey's device. At this time, the toggle will not allow selection of the Subordinate roll.

Below the 'Master / Subordinate' toggle you will see project cells for the Master and Subordinate projects. Verify that you have the two versions of the desired project before proceeding.

- **Proximity**

Check the Proximity checkbox to use this feature.

'Proximity Settings' are your biggest protection against accidentally merging data between the wrong poles. Poles will merge data according to their Reference ID. So, in the event that one surveyor listed their poles in a different order in a given location - from the other surveyor, the Proximity setting will usually identify the issue.

The subordinate surveyor typically places their poles arbitrarily by imagery or GPS but does not need to place precisely. This is true, unless the Subordinate surveyor is performing the detailed feature placement part of the survey, in which case, the Master surveyor can place with less accuracy.

Set your proximity to whatever distance accuracy you assume exists in the survey containing position precision of the lessor amount. The default value is 5.0 meters. So,

if using the default value of 5.0m, if the poles in the Subordinate survey are more than 5.0m from where they sit in the Master survey, those poles will be flagged for the opportunity to abort before merging. A list of these deviations will appear showing the pole reference and the distance between the two instances. If a list appears, you can look at the survey on the Subordinate surveyor's device and determine if those particular poles were ordered differently or if they were just placed away from their proper position. If you notice an error, abort here, fix and re-export.

Best practise, is of course, quickly examining the references with devices side by side before exporting the Subordinate survey.

- **Select / Deselect All**

You can quickly Select or Deselect all of the attributes available for data merging with these checkboxes. Be careful, however, if you don't want to include Elevation or Offset information (for example). That is, if the Master Surveyor took care of these sections during the survey, don't choose to use these values. The Lat/Long category will not automatically check when you check 'Select All'; you must check this category separately.

- **Select instance to keep if 'values conflict'**

For all the data categories you check to merge, you can choose which version of the information to keep when there is a value in both instances. Most often, however, you would choose 'Master' over 'Sub' for all categories except those offering to combine both together (Comments and Surveyor Tools).

- **Categories**

Check the corresponding checkbox to all the categories of data you want merged. Categories are as follows:

- Photos
- Tag Info (includes all ID, switch & TX tag values)
- Category Info (Pole Type information - often left unchecked)
- Address Info
- Stamp Info
- Pole Condition
- Comments (option to combine notes from both surveys up to 3)
- Surveyor Tools (option to combine)
- Pole Offsets (offset values found on the 'Topo' tab in the pole form)
- Elevation (Altitude Information)
- Lat / Long (if checked, poles will move to locations set by Subordinate surveyor)

When you are satisfied with your Merge settings, tap the Merge button below the data categories or the Merge button at the top right of your screen.

All poles (if any) in the Subordinate project that are placed outside the proximity allowance will be listed with their deviation distances. If a list exists, you will be given the opportunity to choose to 'Merge all poles within proximity,' 'Merge all poles with common references (which includes poles failing proximity settings)' or to 'Cancel.'

If you proceed, only poles with common Refs will merge.

- **Setting the CRS (Coordinate Reference System)**

If you never intend on sending the project out for extended processing you won't need to worry about this feature. But if you do, you will want to make sure that the 'projection,' or CRS matches that of the base map files that your engineering team plan to use with your exported files. When your CRS matches that of your team's base maps; the products that AmbrePole exports will line up and be scaled exactly where your team wants them.

The specific CRS is not something a typical surveyor, or even many of the in-house engineering staff usually know off hand. If all of your survey work is in the same general vicinity, it is possible that you can get away with only ever having to figure this out once. Often, however, your engineering team get map information from different sources and so the base maps or final client map database may exist in different projections.

If you tap the currently assigned CRS cell, you will be presented with many possible options to change to. AmbrePole comes preloaded with 'NAD27,' 'NAD 83' & 'WGS 84' UTM projections. These are the most popularly used projections for Canada and much of the United States. To use a different one, select the 'Add' (+) button. For this, you will need to know (or find out from your team) what the AutoCAD & EPSG reference is. If you determine one of them, we may be able to help with the other. Contact us at ambreComm.com/Support to get help if you get stuck here.

Any used or created CRS becomes a favourite (which can be reversed) and loads at the top of the list going forward. And the last CRS selected will remain the default CRS until made otherwise.

- **Extended Processing**

When you export your project you get a set of valuable files that meet the needs of many AmbrePole users, but for those using AmbrePole to its full potential, additional files can be generated at a low cost per pole.

The additional processing includes files required to construct aerial pole permits including all the 2D drafted profiles for you to position on your final drawings.

See Deliverables for details and go to ambrecomm.com/deliverables to see actual Samples.

To access this feature, after exporting your project, simply press the '**Send project for CAD processing**' button that presents itself.

You will be notified that your data files have been received, and you will receive your returned processed files within 24 hours.

The delivery return method is defined in the Credentials form that you pass by during Export. You can choose to either have your files sent to you by email or via FTP. An invoice will accompany each set of files. See ambrecomm.com/pricing for pricing.

You can [email](#) or [phone](#) ambrePole first if you would like to discuss particulars.

- **Deliverables**

For Samples of the Deliverables please go to ambrecomm.com/deliverables

Exported Directly from App Deliverables

- **kmz file**

A 3D Google Overlay containing a full survey photo set and pole attribute rake off. The only surveyed element not included is pole attachment data.

- **csv file**

A Comma Separated Value data base file. Can be used with scripts to transpose pole data to downstream engineering process software.

- **ap data file**

The data file used to import onto another iOS device or Mac Computer. It is also used for the [Merge](#) feature. This file is lightweight and can be emailed to other personal.

- **Photo Set**

A sub folder is created containing all the projects' camera shots - named with a convenient sorting nomenclature (eg: 'Pole 1 - Anchor Detail-A'). These photos can be exported at a choice of 3 resolutions so that file delivery and storage can be considered.

Extended Processing Deliverables

- **Detailed Pole Profiles**

The profiles come in three dimensional CAD drawings and in PDF form

Unless the projects are of maximum size, each project or set of poles comes in one file for CAD and one PDF file.

Each pole profile consists of a two page rake off.

Page one includes a pole info rake off, a large 3D drawing and 4 smaller profile drawings (with attachment height call outs) oriented relative to the street.

Page two includes a list of detailed attachment call outs, a Dips overview and a Top Angles overview.

- **CAD Topo**

The Topo is a project overview containing a GIS oriented pole network converted to the Coordinate Reference System that the surveyor chooses during export. See [Setting the CRS](#), or for more help with this action, [contact us](#).

This drawing includes angle dimensions, span information, clearances, and a full set of 2D drafted profiles (each in block form) for you to position on your final drawings. You only need to add the New Construction portion to the profile.

- **Devices**

AmbrePole can be installed on any iOS device such as an iPhone or iPad for mobile survey. The iPhone (specifically the large size iPhone) is recommended over the iPad, since a surveyor very often surveys in rough terrain and has to jump over ditches and duck under thick brush. Therefore, the capturing device is in and out of a surveyors pocket all day long.

It will soon also be able to be installed on any Mac laptop or desktop computer, as Apple is in the process of making iOS apps work on their macOS platform. This will be convenient for survey preparation (rough network layout by imagery for example) or for managers or next step project evaluation.

The more recent the edition of iPhone the better, as Apple increases the durability, battery life and camera quality with each release. The latest iPhone release (iPhone 11 Pro Max) at the time of this manual edition, has a battery life that shatters that of former releases. It is the first iPhone that can perform an 8 hour ambrePole survey without any recharging or extra bulky battery case.

- **Change Log**

Version 1.0

1. First submission available for purchase

Version 1.0.1

1. Updated app to accommodate textfield opacity due to change in iOS 14

Version 1.0.3

1. Fixed a bug that was causing problems updating CRS (Coordinate Reference System)
2. Added additional 2 default CRS options for Quebec Canada region
3. Corrected incorrectly paired default selections for Strand and Down Guy gauges when using both Metric AND Imperial paired entries.

For items 2 & 3, to get updated defaults for ambrePole instances downloaded before this update, you will need to update to the latest edition and then 'Load Default Settings Set' (from the Settings tab).

Version 1.0.4

1. Support for iOS 15.5
2. Added new fields for 'Anchor' data collection, such as 'Length of Rod above grade (if not nominal)' and 'Rod angle (with 'in-line' option)'

Version 1.0.6

1. Fixed a bug that was causing crashes when trying to save Quality Control Settings
2. Added the ability to import GIS CSV (Comma Separated Value) data to projects. For now, you must construct CSV data columns in the following order: Latitude, Longitude, ID1/Barcode, Class, Height. Line one may be data or headers. More intelligence, options and control will be added later. See '[Import CVS](#)' for more detail.

Version 1.0.8

1. Fixed a bug that was causing crashes when trying to update settings after expired Subscription.
2. Added Anchor information option to the 'Merge' feature.