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Dropwires in Line of Route (DILOR)

Revised rules

About this document ...

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Content approval

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Version History

Version No.	Date	Author	Comments
Issue 2	02-Dec-2020	Wesley Grantham	New section 5 added- Dropwires and Aerial cables
Issue 1	28-Nov-2019	Martin Nottage	Revised rules for DILOR

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1 *Introduction*

This Document introduces revised rules for Dropwires in Line of Route (DILOR), which are intended to provide additional operational flexibility and reduced need for pole staying / upgrades.

The information in this document supersedes that shown in a previous Document on this subject (AEI/AEC/B315).

Existing ISIS Documentation, will be updated in due course.

2 *Dropwires in line of route*

Where Dropwires are run together in line of route, they begin to act together and can apply a more significant, combined load onto Poles which left unchecked, may threaten the stability of a Pole. Because of this, we limit the number of wires running in line using the DILOR rule.

Previous DILOR rules assumed wires were loaded on Un-stayed Poles. However, the new rules detailed below, allow for more wires to be run in line, providing that Stays, or a countering wire load is present. See sections 3 and 4 below for full details.

3 *Un-Stayed Poles / Poles with no opposing wire load*

Where multiple wires are running to an un-stayed Pole, or the Pole has no wires opposing that load, then the DILOR consideration applies. See illustration below.

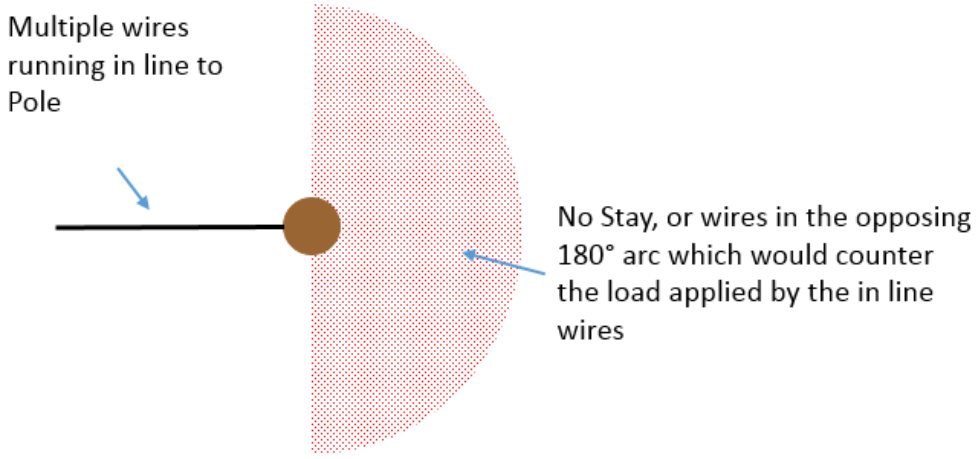

Figure 1 – Pole with no opposing load

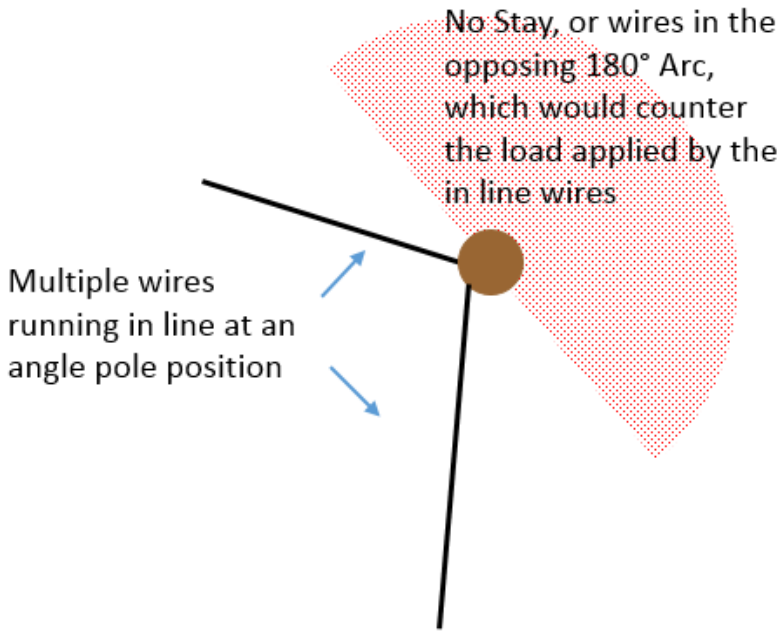

Figure 2 – Angle Pole with no opposing load

3.1.1 Intermediate / In line Poles.

In general, In Line Pole poles need not be considered for DILOR, except where there is a deviation in the route. In such cases, DILOR should then be considered and an illustrative indication of the maximum permitted angles before such consideration applies are shown below.

Where the angle is tighter than that shown by the blue lines i.e. For example, those shown in dotted red, then DILOR applies

Trigger Angle for Light Class Poles:

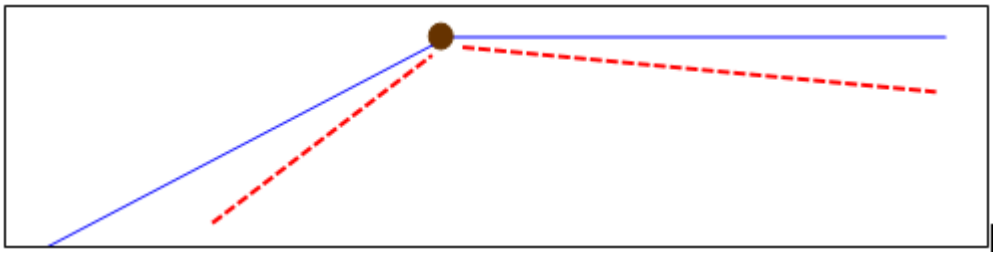

Figure 3 – Angle, Light Pole

Trigger angle for Medium Class Poles:

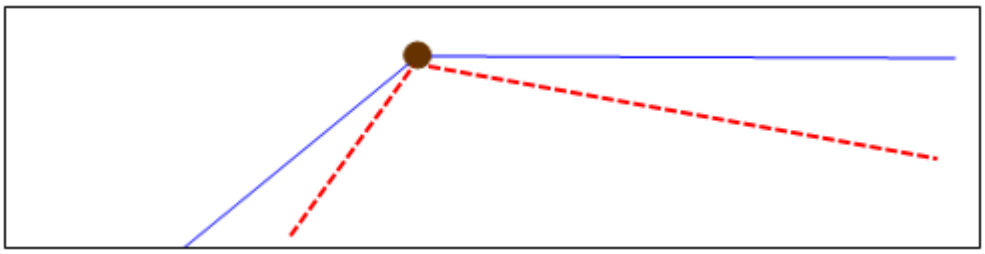

Figure 4 – Angle, Med Pole

3.1.2 Loading limits

Where a pole has no Stay or wires in an opposing arc and it has been determined that DILOR applies, the maximum number of Dropwires permitted in line of route is shown in Table 1 (below).

NB: These limits apply to Copper, Fibre wires, or a mixture of both types.

	Wires crossing carriageway	**Wires not crossing carriageway**

	One or both poles are Light class	Both Poles are Medium class	Both Poles are Stout Class	One or both poles are Light class	Both Poles are Medium class	Both Poles are Stout Class
Max permitted wires	3	4	5	4	5	6

Table 1 – Maximum wires in line of route

Note:

These standards do not apply to poles classified SC, or any pole with a planting depth less than 1.2m, which is waiting an SC assessment –*The limit for these Poles is 2 wires.*

The rules also apply on Joint Use (JU) poles. NB: All JU poles will be a minimum of **MEDIUM** gauge.

The A1024 process *cannot be* used to report the provision of an additional wire in excess of the limit.

4 *Stayed Poles, or poles with an opposing wire load*

The DILOR wire limits in Table 1 above assume that poles are un-stayed, or have no wires opposing the load applied by the in line wires.

Where Stays can be provided, or there are one or more wires present which oppose the in line wire load, a higher number of wires are permitted in line of route. See illustrations and Table 5 below.

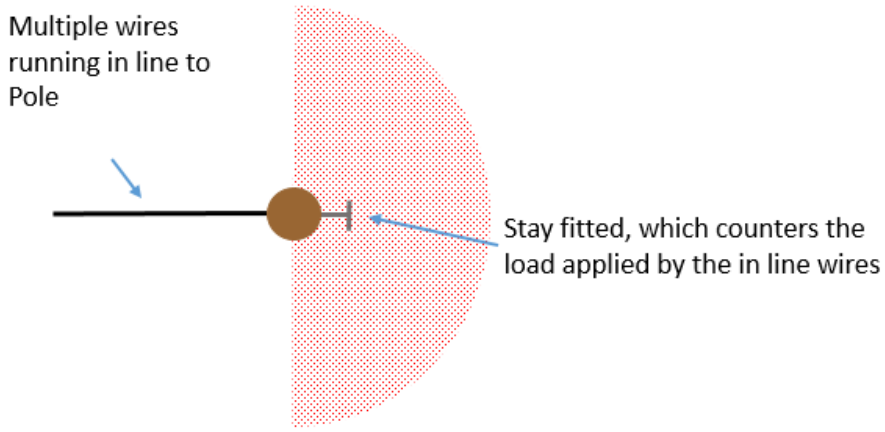

Figure 5 – Stayed Pole

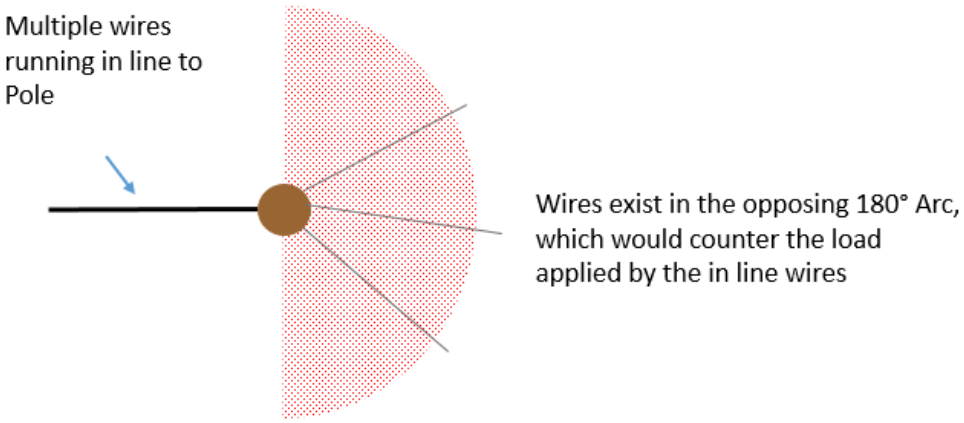

Figure 6 – Pole with opposing wires

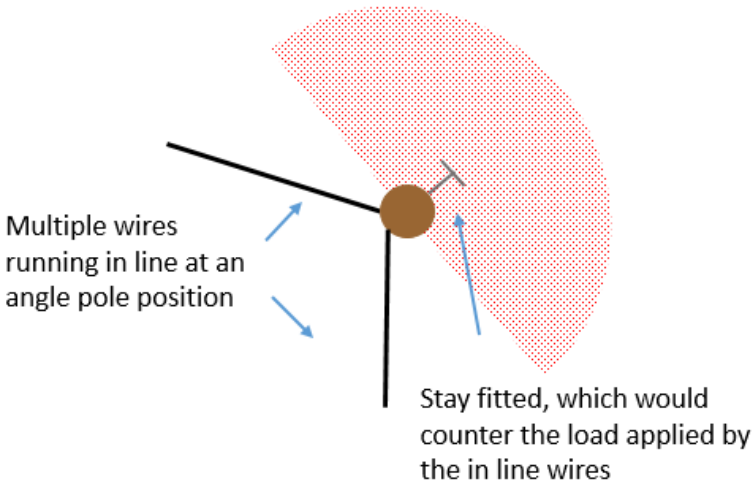

Figure 7 – Angle Pole stayed

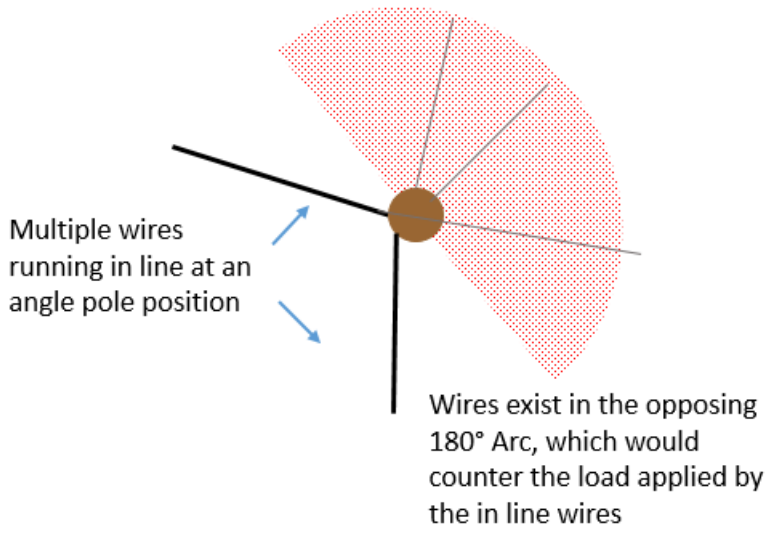

Figure 8 – Angle Pole with opposing wires

4.1 Loading limits (Stayed Poles / Poles with opposing load

Where the Pole has a Stay fitted, or wires applying an opposing load, the following loading limits apply.

NB: These limits apply to Copper, Fibre wires, or a mixture of both types.

	Where one or both poles are Light Class	Where both Poles are Medium or Stout Class
Maximum wires	8	12

Table 2 – Max wires - Stayed Poles / Poles with opposing load

5 *Dropwires in line of route with existing Aerial Cables*

Standard design and construction practices for Aerial Cable require a loading assessment and (where required), provision of suitable route strengthening prior to deployment of the Cable. As such, in most situations where Aerial Cable exists, poles in key positions (Terminal and Angle) will already be stayed, as per EPT/ANS/A014.

There are some exceptions to the rules that may be encountered in the network, which allow for a limited element of un-stayed construction. See section 10 (10.2.1 & 10.2.3) of EPT/ANS/A014 for details. These permitted un-stayed construction rules provide for a single Lightweight Aerial Cable only.

There may also be instances of un-stayed Aerial cable encountered which are beyond the limits described in the ISIS. i.e. The Aerial Cable has been deployed without due regard for the construction rules.

Regardless of the scenario, where additional Dropwires are to be added alongside an un-stayed Aerial, the loading will be beyond permitted limits and so an evaluation should be carried out to ascertain the provisions required to strengthen the route in order to accommodate the new loading. That assessment should ideally be carried out by a Planner / Surveyor who is suitably trained in route stability, but will typically result in Stays being provided at the Terminal Poles and on any Angle Poles where there is a significant deviation of the cable route. The Route Stability training is covered in the Planning Overhead course- ORWOH004.

Where the site circumstances are such that there is a limited ground footprint for a normal Stay, the Vertical Stay option may provide a solution as it enables the Anchor position to be as close as 600mm to the pole. See ISIS EPT/ANS/A014 section 10.4 for details.

One alternative to providing route strengthening, is to de-load the route by replacing the Aerial Cable with Dropwire 15.

6 *Options to mitigate DILOR problems*

(a) Remove any redundant Copper Wires (particularly one's you may make redundant by installing a Fibre / Copper Hybrid Drop)

(b) Rationalise any existing Copper wires that are feeding/ beyond the DP using DW15.

(c) Install an Aerial Cable to replace Dropwires

These standards are designed to offer flexibility, as well as matching the standards to pole capacity. However, where an aerial cable can be erected / installed, this should be the preferred solution.

(d) Fit Stays to counter the load applied by Dropwires

7 *DILOR Q&A:*

Q: Does the number of Stays required vary according to the number of Dropwires?

A: *No, single Stays are ok, regardless of the number of wires (within the limits shown in Table 2)*

Q: Is there a standard Base to Height (B:H) ratio required for the Stays?

A: *A Base / Height ratio of 1:2 is preferred. Where that can't be provided due to limited ground space, the Vertical Stay Bracket can be deployed, which allows the anchor position to be located as little as 600mm from the Pole.*

Q: If Aerial Cables exist on the route and Stays are in place (at the relevant positions) are they acceptable, or will more stays be required?

A: *Where Stays are already provided at a Pole, then there is no need to provide anything additional for DILOR.*

END OF DOCUMENT