



Downer Zero Harm Bulletin - Live Strand Wire

Live Network during an Aerial Installation



Figure 1 and 2. Power cable removed from dwelling and coiled onto adjacent Power Pole

What happened?

While carrying aerial installation work on the project, power cables have been found to be in contact with the strand wire, inadvertently livening up the network.

A Downer Construction Partner accessed an Energex Pole and when testing of the strand wire was carried out it was found to be live. When fault finding was conducted an Energex (LV) cable was found coiled on a Pole further down the line which still had the fuse attached.

Local Power authority Energex were called to site to remove the fuse and make the site safe.

Key Points and Required Actions

- The Downer Construction Partner involved followed key power awareness steps including testing of the strand wire prior to commencing work.
- Correct PPE was used including Gloves and a volt stick.
- Works were stopped immediately and the Power Pole was barricaded while waiting for Energex.
- Power Cables can be removed incorrectly causing it to Liven up the network without any visible indicators.
- Immediate notification to Downer and Energex was carried out ensuring that the hazard was removed in the quickest and safest possible time.
- **Ensure** when working on any part of the Network, that a complete visual check of the pole is carried out for any obvious visual hazards
- **Ensure** that all workers have the correct power awareness training prior to accessing any Energex assets
- **Ensure** that correct testing of the network is carried out prior to commencing work
- **Ensure** that correct PPE is used including Gloves, Climbers Helmet, volts sticks and multi meters
- **Ensure** any hazards or incidents are reported immediately

Further Actions

When pulling out, hauling or erecting a strand wire, do not flick or pull hard on it to free it if it becomes snagged. Lift the strand free from the obstruction with an insulated wire lifting tool, in a gentle, controlled manner.

- **Electrical insulated gloves must be worn by all personnel on the ground and when working from EPVs or ladders during strand construction activities**

Adjacent Aerial Communication Networks

Where there is risk of a simultaneous body contact between conductive elements of Telstra network and another aerial communications network on the pole, a temporary equipotential bonding cable is to be installed between the networks.

Strand Voltage Test

- Prior to the commencement of work, an electrical test must be carried out to determine the voltage difference between the strands. Electrically insulated gloves must be worn when performing this test. Avoid simultaneous contact between the strands other than with the test probes.
- Using a voltage meter, connect one lead of the meter to one strand and the other lead to the second strand.
- Where the test is conducted prior to installing the second strand, test between the travelling ground (after it has been set up with strand wire threaded and the earth connected) and the existing strand.
- If the voltage test reading is in excess of 32 volts AC, no work is to be carried out. The test result is to be referred to the worksite team leader or supervisor for further action.
- If the voltage test reading is less than 32 volts AC, a temporary bond is to be installed between the strands prior to the commencement of work.

The Equipotential Bond

- The equipotential bond, as shown in **Figure 3**, consists of a length of copper conductor (typically 1m) fitted with clamps. The bonds used by Telstra staff will have black insulation on the clamps. The bonds used by Optus Vision will have red insulation on the clamps.



Figure 3

Installation during Strand Construction

- The equipotential bond is to be installed between the travelling ground and the adjacent strand. The travelling ground must also be connected to earth (Telstra) or power neutral (Optus Vision). A second travelling ground may be used to accommodate both connections, i.e. one travelling ground connected to earth (Telstra) or power neutral (Optus Vision) and a second travelling ground connected to the adjacent strand using the equipotential bond. Electrically insulated gloves must be worn when installing and disconnecting the equipotential bond.

Installation Where Both Carriers Strands Exist

- The equipotential bond is to be placed on the strand above cable loops, adjacent to equipment housings, or expansion loops, so that cable damage is avoided **Figure 4**. Electrically insulated gloves must be worn when installing and removing the equipotential bond.

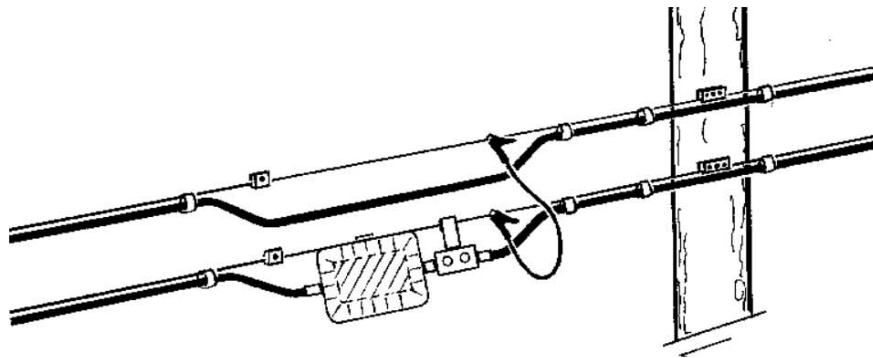


Figure 4

Installing the Bond

- Place both clamps on the lower strand or Travelling Ground
- Grasp one clamp firmly in one hand and with a positive action clamp it to the upper strand.

It is important that:

1. Contact is not made simultaneously between the different communications strands or equipment before or when the temporary bond is being fitted.
2. The equipotential bond is only to be in place when the network is being worked on. It is not to be left connected either overnight or permanently.

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