

Stray Voltage in Street Lights Can Affect Pedestrians and Pets

A recent news item on The Today Show called attention to the issue of stray voltage in the public right-of-way. The concern for the effect of stray voltage is not new to utility companies, public works departments or electrical inspectors.

Stray voltage is often caused by cracks or wearing away of the insulation layers around an electrical source cable at a street light or at a traffic signal. If the electrical line is contained in a non-metallic conduit, this effect can be minimized. But conduits do break and there are some electrical lines that have not been properly installed. On older wires, the insulation may have also eroded away.

These lines are often referred to as “low voltage lines” because they are in the neighborhood of 120 volts. These distribution or service lines are different than “high voltage lines” that are used for transmission. High voltage lines are well-governed by federal regulations and state codes.

The news broadcast discussed the 2006 case of a softball player who was electrocuted when she came in contact with a metal fence in Baltimore, MD. It also discussed the 2010 case of a dog being walked in a Seattle, WA, neighborhood. The dog was electrocuted as it crossed a metal plate near a lamp post.

The issue has previously been brought up by the International Association of Electrical Inspectors (IAEI). IAEI Magazine of November 2011 had an article discussing the electrocution of pedestrians near a streetlight that had no equipment grounding conductor connection. The article noted that the rules of the National Electrical Safety Code cover utility installations on the public right-of-way or in easements. It also noted that a municipality often adopts the National Electrical Code to cover those locations on property other than the public right-of-way. The IAEI article is on their website at:

<http://iaeimagazine.org/magazine/2011/11/16/are-your-streetlights-grounded/>

The TV news broadcast also covered work being done by a firm based in Kearney, NJ, to head off these problem areas. The Power Survey Company demonstrated a search for stray voltage in a Washington, DC, neighborhood. Sources were found in many public areas. Some voltages at metal street light poles were strong enough to illuminate a light bulb. The coverage also noted that pedestrians are frequently protected by the insulation value of their shoes, but animals or barefooted persons do not have such protection. This broadcast can be viewed at:

<http://www.today.com/news/stray-voltage-hidden-danger-can-strike-everyday-objects-1D80279142>

According to more information on the Internet, the Electric Power Research Institute and the Institute of Electrical and Electronics Engineers are also working on ways to prevent, detect and solve stray voltage occurrences. Pedestrians, pets and other roadway users could come into contact with these stray voltages at fences, metal streetlight supports, traffic signal controller cabinets, utility access covers, and even concrete surfaces of sidewalks or driveways.

Public works departments and utility providers each have ways of preventing or minimizing stray voltage. When a traffic signal is upgraded or the load increased, a common practice is to rewire the circuits from the controller. If it is an old intersection, the conduits may also need to be replaced. Utility companies follow a similar practice. When making storm repairs, it is common to replace old distribution wires that have been stressed and vibrated with new wires that will improve insulation.

(Prepared by John R McCarthy, PE, Traffic Engineer III, City of Montgomery, AL)