Protection of Supply Cables on Riser Poles

Distribution Company Awareness

This Bulletin provides information for Electrical Distributors on the application of protecting riser cables.

CSA Excerpt

CSA C22.3 No. 7-20 clause 4.6.2 states:

> *"Mechanical protection of supply riser cables shall be provided in accordance with Clause 4.2.4.2 of CSA C22.3 No. 1."*

CSA C22.3 No. 1-20 clause 4.2.4.2 states:

> "*Riser cables of supply systems shall be protected by a covering that provides suitable mechanical protection for the full length of the run, starting at least 0.3 m below the surface of the earth."*

OESC Excerpt

Ontario Electrical Safety Code (OESC) 28th Edition, 2021

Rule 12-1152 Restrictions on use states:

> *Rigid Types EB1 and DB2/ES2 conduit and fittings shall not be used above ground except as permitted by Rule 12-1150 b).*

Rule 12-1150 b) Use permitted states:

> *in walls, floors, and ceilings where encased or embedded in at least 50 mm of masonry or poured concrete*.

DB2/ES2 conduit is relatively brittle in comparison with metallic cable guards. Vehicle impacts or any other sharp impacts can cause DB2/ES2 conduit to break and expose the cable to the public. Additionally OESC Rule 12-1100 recognizes the use of rigid PVC conduit to be used for exposed and concealed work above and below ground. However, where exposed to mechanical damage either during installation or afterwards, PVC rigid conduit shall be protected from mechanical damage as per Rule 12-1106.

PVC Power Cable U-Guards

PVC (Polyvinyl Chloride) power cable U-guards are used to provide protection of cables. PVC power cable U-guards are available in different types, including schedules 40, 80, and 120. The different schedules are used to identify the PVC with different dimensions (ex. wall thickness) and strengths (ex. Resistance to crush).

Some Electrical Distributors currently use only schedule 40 PVC power cable U-guards. However, this may not provide sufficient protection in all instances. Vehicles such as cars, plows, shovels, etc. may damage the power cable U-guard thereby risking damage to the cable. The internal diameter between schedule 40 and 80 will differ which creates a ledge when transitioning. This ledge could damage conductors during pulling and may need to be addressed.

ESA Recommends

Electrical Distributors should review their current approved standard designs to ensure suitable mechanical protection in areas such as where the cable is susceptible to vehicular damage.

The installation of metallic cable guards is recommended at all riser poles as:

- Protection in areas where PVC cable U-guards are used that may not meet the impact resistance; or
- Protection over the DB2/ES2 conduit when the conduit transitions from underground to overhead at the base of the pole, from 0.3m below ground level up to a reasonable height (as determined by the Electrical Distributor) and be grounded when the metallic guard is in contact with riser cables.

In addition, ESA recommends that power cables be installed on the pole's side not facing street traffic flow. This allows the pole to act as a barrier in case of a vehicular collision.