

3-Phase, 3-Wire, Solidly-Grounded Wye Customer Services

Introduction

ESA is issuing additional information which is designed to assist Electrical Distributors implement their Corrective Action Plans with respect to all 3-Phase, 3-Wire, Solidly-Grounded Wye Customer Services. This is often associated with, but not limited to, delta-wye conversions.

Any low impedance paths (e.g. neutral conductor or bonding conductor) that serve as a low impedance fault current return path between the Electrical Distributor's transformer and the customer's service box will be deemed to have addressed the safety concern of this program.

Without the low impedance path in this configuration (see Figures below) creates an undue hazard of fire and shock.

ESA Recommendation

ESA it is recommending that Electrical Distributors do not remove the connections to the customer's service box made by existing low impedance fault current return paths, on currently solidly-grounded systems, because they are not neutral conductors. An example demonstrating the use of a bonding conductor is shown in Figures #1 & #2 below. The bonding conductors provide a dedicated return path for fault current and address the safety concern of this program.

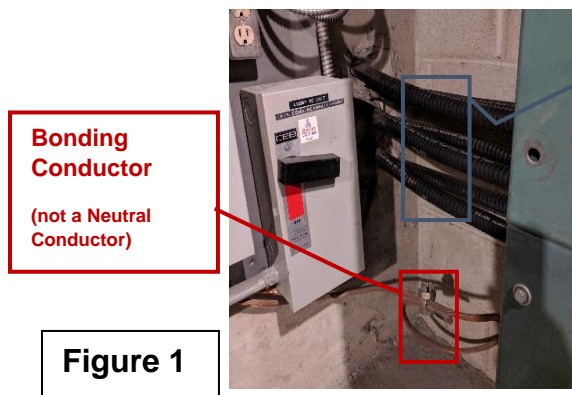


Figure 1

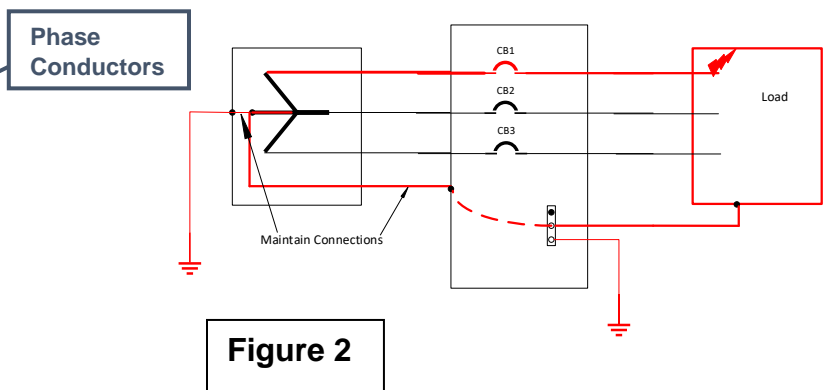


Figure 2

If the bonding conductor is removed and an ungrounded system is created (Figure #2 – Maintain Connections), this will introduce hazards and/or OESC defects, such as with 10-400(1) (Ungrounded Systems under OESC 27th Edition), which requires that wiring systems supplied by an ungrounded supply shall be equipped with suitable ground fault detection to indicate the presence of a ground fault.

ESA Direction

If ESA identifies an installation where the low impedance path has been removed, ESA may undertake a compliance review, with respect to Regulation 22/04. In the event that the safety standards of the Regulation have not been met, the Electrical Distributor may be issued a non-compliance. The Electrical Distributor's system is to meet the Safety Standards of Regulation 22/04 which includes being compatible with the customer's system when used. Section 4 of Regulation 22/04 details the requirements of reducing the probability of exposure to electrical safety hazards.

Public Safety Concern Process

If ESA identifies an installation where the low impedance path has been removed, ESA may issue the Electrical Distributor a Public Safety Concern (PSC) letter. In the event that the Safety Standards of Regulation 22/04 are met, however Ontario Electrical Safety Code violations have been introduced, the Public Safety Concern letter will state that a response is required. This would typically be due to the system's conversion to an ungrounded system.

Additional Information

For additional information regarding delta-wye conversions please see the latest version of the Ontario Electrical Safety Code's Bulletin 10-22-* (<https://esasafe.com/electrical-products/bulletins/>).