CLOSER LOOK: Sizing Supply-Side Bonding Jumpers

Similar to the way that the main bonding jumper is sized per 250.28(D), supply-side bonding jumpers are sized based on the size of the ungrounded conductors of which they are associated. If the ungrounded conductors are 1100 kcmil copper or 1750 kcmil aluminum or smaller, the supply-side bonding jumper is selected from Table 250.102(C)(1) based on the size of the largest ungrounded supply conductor. If the ungrounded conductors are larger than 1100 kcmil copper or 1750 kcmil aluminum, the size of the supply-side bonding jumper(s) is calculated based on 12.5 percent of the area of the largest ungrounded supply conductor, or the equivalent area of the parallel supply conductors. Where an installation consists of multiple raceways for parallel conductors, an individual supply-side bonding jumper can be installed for each raceway, and this jumper is sized based on the size of the ungrounded conductors in that raceway.

Application Example

A 3-phase, 1600-A service is supplied using five 350 kcmil THWN conductors per phase. The parallel conductors are installed in five separate runs of rigid metal conduit. In accordance with 300.12, Exception No. 2, a supply-side bonding jumper is needed for each raceway at the point it enters the open-bottom switchboard. Using 250.102(C)(2), determine the size of the supply-side bonding jumper.

Multiple supply-side bonding jumpers

Step 1. Determine the size of the largest ungrounded conductor in each raceway.

Step 2. Determine the size of the supply-side bonding jumper for each raceway using Table 250.102(C)(1).

Solution

For 350 kcmil supply conductors, use the "over 3/0 through 350" row of Table 250.102(C)(1). This results in a 2 AWG copper or 1/0 AWG aluminum supply-side bonding jumper.

Single supply-side bonding jumper

Step 1. Determine the equivalent area of parallel supply conductors.

Step 2. Determine the size of the supply-side bonding jumper using Table 250.102(C)(1), Note 1.

Solution

5 parallel 350 kcmil conductors:

$$\text{Total equivalent area} = 5 \times 350 = 1750 \text{ kcmil}$$

This total exceeds 1100 kcmil; therefore, the total is multiplied by 0.125 (12.5 percent)

$$1750 \text{ kcmil} \times 0.125 = 218.75 \text{ kcmil}$$

From Table 8 of Chapter 9, the next standard conductor size is 250 kcmil copper.