Wiring systems associated with safety services

Clause 7.2 AS/NZS 3000:2018

Guideline

This document aims to provide clarification to clause 7.2 of AS/NZS 3000:2018 (incorporating amendment 1) regarding wiring systems[1] associated with safety services being able to maintain supply when exposed to fire.

Safety services include but are not limited to the following:

- fire pumps and automatic sprinkler systems
- fire and smoke detection equipment and fire alarm systems
- air-handling systems
- evacuation equipment
- emergency lifts.

Wiring systems associated with the supply to safety services may include of any of the following:

- consumer's mains
- generator supplies
- normal supplies
- alternate supplies
- supplies to outbuildings
- supplies to fire isolated portions of buildings
- sub mains
- final sub circuit wiring.

Where a safety service **has** a Standard specific to the installation of that safety service equipment, and that Standard requires the wiring system to be a WS classified wiring system complying with AS/NZS 3013, then the wiring system (including all parts) must be WS classified to the level required by that Standard.

Note: Appendix H (H2.2) of AS/NZS 3000:2018 details relevant equipment installation Standards.

Parts of a WS Classified Wiring System

A wiring system that is WS classified and complies with AS/NZS 3013 includes all the:

- conductors, cabling or busbar, including the enclosure / mechanical protection; and
- their supports such as saddles, cable trays, cable ladders, brackets, cable ties; and
- their fixings such as screws, bolts and anchors used to fix the supports to the building or structure.

WS Classified Wiring Systems

For a wiring system to be provided a WS classification, all the above mentioned parts of the wiring system must be tested to AS/NZS 3013, together as a complete system. The wiring system is classified in accordance with the ability of the complete system to maintain circuit integrity under fire conditions for a specified period, and integrity against mechanical damage of a specified severity.

[1] AS/NZS 3000 (1.4.133) defines Wiring systems as - An assembly made up of one or more conductors, cables or busbars and the parts that secure their fixing and, if necessary, their mechanical protection.

To achieve the necessary rating, when you install a WS classified wiring system, you will need to comply with the manufacturer's instructions to ensure that the system meets the rating assigned to it (as when it was tested).

A manufacturer who has conducted the relevant testing should be able to provide certification documentation stating the Standard the product has been tested to, as well as what parts or components and accessories are to be used for its support and fixing to ensure compliance.

Alternatively you may have the wiring system including all components, parts and accessories tested and certified to meet the requirements outlined in AS/NZS 3013.

WS Classification Not Provided

Where a safety service does not have a standard specific to its installation, which provides specification on a required WS classification, the wiring system must be capable of maintaining supply to the safety service when exposed to either fire or mechanical damage.

Clause 7.2.2.2.2 of AS/NZS 3000:2018 outlines further requirements and methods to achieve this.

The Building Code

The Building Code of Australia (NCC Volume 1) requires wiring systems supplying a substation or main switchboard, that supplies equipment required to operate in an emergency mode, to have a wiring system rating of—

a) WS53W, if located in a position subject to damage by motor vehicles;
b) WS52W, elsewhere; or
c) otherwise enclosed or protected by construction having a fire-resistance level of not less than 120/120/120.

Note:

The addition of the supplementary letter W to a wiring system designation means that the wiring system is able to maintain circuit integrity when—

a) tested for protection against exposure to fire for the period specified by the first characteristic numeral; and
b) then hosed with water.