G063A SECTION 7
Design and Layout of Main Switchboards

1. Which two publications determine the position of an electrical switchboard?

AS/NZS 3000, WA Electrical Requirements.

2. What publication and in which section is the physical location of switchboards location determined?

WA Electrical Requirements Section 16.15 or AS/NZS 3000 Clause 2.10.2

3. State the three main considerations when choosing a suitable position for a main switchboard? Give the AS/NZS 3000 Clause number(s)

a. Dry and Well ventilated unless protected against moisture

b. Located so that is not obstructed by the structure or its contents

AS/NZS 3000 Clause 2.10.2.1

4. When determining the requirements for marking an enclosure or door of an electrical switchboard, when would it NOT be necessary to mark the door in a commercial establishment?

When the switch room door or enclosure is within a short distance and clearly visible from the main entrance. AS/NZS 3000 2.10.2.4 Ex 3

5. Is it permissible to install a switchboard in a fire isolated stair well? Give the AS/NZS 3000 Clause number.

No. AS/NZS 3000 2.10.2.5 (h)

6. What is the general requirement of AS/NZS 3000 in relation to the accessibility of switch boards? Give the Clause number.

Adequate space to allow access to all sides where persons are to pass to enable all equipment to be safely and effectively operated and adjusted and to enable ready escape from the vicinity of the switchboard under emergency conditions. AS/NZS 3000 Clause 2.10.2.2

7. What are the three requirements to assist in providing sufficient clearance around a switchboard? Give the AS/NZS 3000 Clause number.

AS/NZS 3000 Clause 2.10.2.2 c (i) (ii) (iii)

- **1.0 m minimum distance from all faces of a closed switchboard that need to be accessible. In a domestic electrical installation this distance may be reduced to 0.6 m from the face of the switchboard.**

- **Unimpeded space of at least 0.6 m around switchboards with switchgear doors in any position and with switchgear in a fully racked- out position (see Figures 2.19 to 2.23).**

- **A minimum of two emergency exit paths, spaced well apart, where a switchboard—is rated as a circuit with a nominal capacity of not less than 800 A per phase; or is more than 3 m in length.**

- **Exception: Where a clear space of at least 3 m is provided in front of the switchboard and its equipment, including switchboard doors, in all normal positions of operating, opening and withdrawal, only one emergency exit path need to be provided. See Figure 2.24.**

- **Openings or doorways that are at least 0.9 m wide by 2.2 m high to allow persons necessary access to the switchboard room or enclosure.**

- **NOTE: Larger openings may be required to enable entry of prefabricated switchboards.**

8. Under emergency evacuation conditions, what is the minimum number of exits that must be provided for a switchboard that is 3.5 metres long? Give the AS/NZS 3000 Clause number.

A Minimum of two emergency exit paths. Clause 2.10.2.2 c (iii)B

9. Sketch the front view of a main switchboard for a typical single phase domestic installation. Label all electrical components.

Diagram – single phase domestic switchboard.

10. Sketch the front view of a typical industrial three phase main switchboard connected for a 300 amp maximum demand with the following loads:

4 Lighting circuits (general purpose)

7 10 amp 240 volt socket outlet circuits

3 15 amps 1 phase socket outlet circuits

6 20 amp 3 phase socket outlet circuits

8 20 amp 3 phase fixed equipment circuits

Diagram – 3 phase industrial switchboard.