

Technical Bulletin

TB 0303 – Substation Access Roads & Driveway Design Review

Purpose

This Technical Bulletin is to update Endeavour Energy's design standard for access roads and driveways, SDI 514.

Background

As part of Project IKEA, a critical review has been initiated into Endeavour Energy's approach to substation design and construction. One component incorporated in this review is substation driveways, which have a primary purpose of allowing for the easy access of construction and maintenance vehicles to service the substation at all times.

Access Roads and Driveways

Substation driveways are designed to support day to day substation vehicle activities and the movement of power transformers. The traditional substation driveways constructed across the Endeavour Energy network consist of a very heavy concrete pavement due to the heavy concentrated loads imposed by low loaders when installing transformers. The traditional substation driveways incur a high construction cost and are only exposed to the rated design a handful of times throughout the life of the substation.

Several alternative designs have been assessed to determine the optimum balance between function and cost, while also incorporating lessons learned from recent substation projects. The functional criteria included:

- The ability to manage vehicle and transformer movements without permanent disfiguration
- The ability to minimise dust to high voltage equipment; and
- The ability to limit slips, trips and falls.

The whole of life costing was assessed to determine the cost-effectiveness of the design.

New Driveway Design

Concrete will be retained for the section of driveway between the public road and the zone substation security fence (the crossover). The concrete pavement will extend approximately 3m inside the substation security fence.

Where the driveway is subjected to high traffic movements, the construction will be asphaltic concrete (bitumen). This includes the area adjacent to the substation entry gate and substation buildings. The new design includes an asphalt landing pad (approximately 8m x 12m) adjacent to the substation entry gate to allow for vehicle parking and an equipment set-down area.

Where the driveway extends further into the substation yard and won't be subjected to high traffic movements, the driveway construction will be 20mm diameter single aggregate laid to a depth of 100mm over a specified base course and sub-base. The aggregate driveway construction is not appropriate for high traffic movement areas as the gravel may become displaced. Asphaltic concrete should be used in locations where high traffic movements are expected.

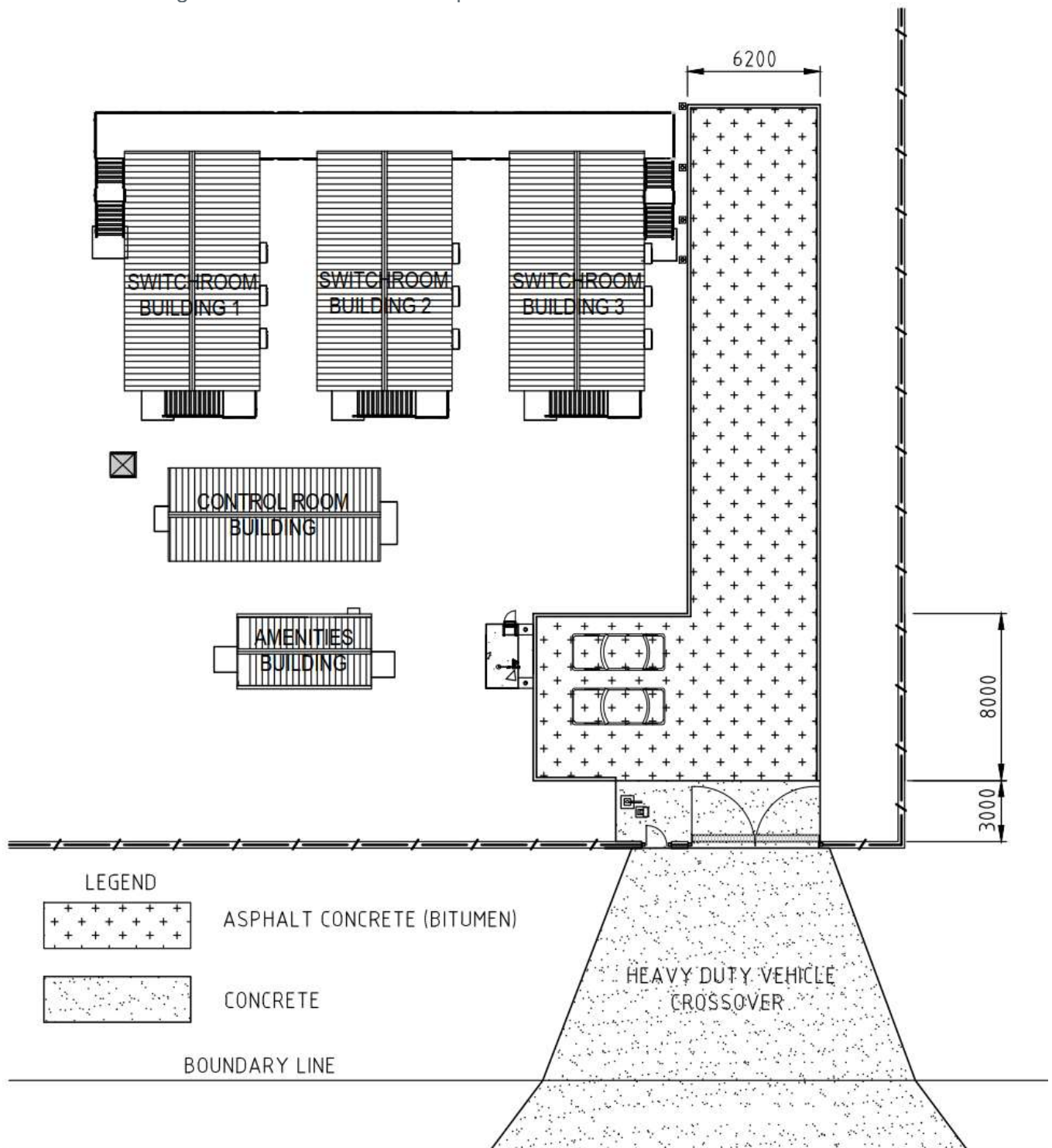


Figure 1 - A typical zone substation entry access road

Impacted Standards

The contents of this technical bulletin will be included in the next update of the following standard(s):

- SDI 514 – Access Roads and Driveways

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