

Stations and Buildings Technical Note

BTN 10/01

29/11/2010

Expires

25/11/2011

Installation of vending machines

1 Purpose

The purpose of this Technical Note is to outline the installation requirements for vending machines.

2 Application for connection

In accordance with the *NSW Service and Installation Rules (2007)*, before committing to time and expenditure, "application for supply" must be made to the local Electricity Distributor, to check that there is sufficient spare electrical supply capacity to permit the connection of the vending machine.

DO NOT assume that there will be sufficient spare electrical supply capacity to allow the vending machine to be connected as on a number of stations the local Electricity Distributor (RailCorp) has advised that no additional load can be connected. At other stations the situation could change at any time.

A new application must be submitted each time a vending machine is proposed to be installed.

The local Electricity Distributor on railway property in the electrified area (currently bounded by Newcastle, Bowenfels, Glenlee and Kiama) is RailCorp.

3 Installing information

For further details and assistance regarding power issues, infrastructure, design or search related matter the following may be contacted.

For Applications / Power Supplies, the District Installation Inspectors' as per page two of the *Application for Connection*.

Audience

- Commercial Manager
- Project Managers
- Designers
- Vending Machine Contractors
- Electrical Maintainers

Main Points

- Outlines installation requirements
- Details fixing requirements
- Specifies electrical requirements
- Outlines safety issues

Contact

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For Station Electrical Infrastructure, the Infrastructure Facilities - Maintenance Team Managers Electrical, for the CBD 9379 4052, Metropolitan 9752 8742

For Design matters e.g. changing a Switchboard and other issues, Service Searches on Platforms etc, will need to be discussed with the project manager Roger Johnston.

All information provided by RailCorp is for assistance only and cannot be classified as being definitive in nature. Contractors are required to inform themselves of the true nature of site conditions and act accordingly.

4 Vending machine location restrictions

In addition to obtaining approval for the proposed location from the Station Master, the following clearances for electrical requirements must be achieved:

- a) 2 metres from Overhead Wiring Stanchion (required due to electric shock risk from 1500V DC touch and step potential under fault conditions).
- b) 2 metres from a water tap (required as leaking or left on then the pool of water increases the risk of electric shock if an electric fault occurs within the vending machine). For exemptions, e.g. for vending machines requiring water connection, please discuss specifics with RailCorp.

5 Source distribution board

The vending machine shall be connected to a nominated distribution board (DB).

Under no circumstances is a vending machine circuit to be connected to a distribution board which is connected to an "Essential Supply".

Should a DB be fully loaded or have no spare spaces, then the switchboard would need to be replaced with a new DB incorporating a 30% spare capacity. A replacement switchboard would be required to incorporate circuit breakers with RCDs.

All circuits would require verification.

6 Separate circuit required

A dedicated circuit shall be provided to each vending machine, or a group of no more than three (3) vending machines which are co-located (i.e. virtually touching). Note that for vending machines with heavy electrical load, this may not be feasible.

If additional vending machines are added to an existing vending machine circuit, the circuit must be upgraded to comply with the requirements contained herein.

7 Circuit breakers

Vending machines shall be protected by combination RCD circuit breakers (30mA type).

Ensure that the RCD circuit breaker is appropriately rated for the fault level at the distribution board.

"Duplex" type circuit breakers are not permitted.

8 Cables

All cables shall have stranded copper conductors.

Minimum cable size shall be 2.5mm².

Where any part of the cable run is in cable tray/ladder, steel conduit or metallic trunking (duct), the cable shall be double insulated. For underground or built over stations, concourses and subways where fumes and smoke from burning PVC will not be readily dispersed, the cable insulation and sheath shall be of the low smoke, low toxicity and halogen free type. The cable sheath shall also be fire retardant.

9 Cable support system

Mechanical protection (i.e. steel or rigid HFT conduit) is required below 2.5 metres.

The use of non-steel flexible conduit is not permitted.

The use of corrugated PVC conduit is restricted for use only above 2.5metres; elsewhere it requires specific approval from RailCorp on a case by case basis.

Where the cable support system is a duct running along the platform, the vertical drop to the key switch shall be by conduit exiting the **side** of the duct (using a RailCorp approved gland if in flexible steel conduit). An exception is where directly above the vending machine, and steel square column vertical dropper can be used as an alternative, if required to also support the key switch. The vertical dropper shall be securely fixed at the top and at the platform surface in a highly vandal resistant manner.

Any proposed change by the electrical contractor must be approved by RailCorp.

For rigid screwed steel conduit, all sharp edges, burs etc shall be removed and the conduit ends painted with a rust-inhibiting metallic paint which maintains conductivity, prior to being screwed together.

Rigid PVC conduit (above 2.5m) shall be grey in colour.

When using cable trunking (duct) the duct shall be galvanised steel, minimum 1.2mm thick with screwed on type lid. Minimum duct size is 50x50mm.

The fixing of the cable support system shall be highly vandal and vibration resistant.

Conduits shall be fixed by means of double-sided, galvanised steel saddles. The exception to this may be in the use of a single-sided saddle for the first saddle at the very top of a tight bend, for the vertical drop to the vending machine key switch.

Saddles shall be spaced 1 metre apart for runs along the platform etc, 1 metre apart for runs across the platform, and 300mm apart for vertical drops.

For ductwork, RailCorp to approve the proposed fixing system, including spacing of fixings.

Obtain RailCorp approval to drill steel and concrete members, for reasons of structural integrity.

Penetrations through walls, floors and ceilings shall be sealed with fire resistant material to provide a fire rating not less than the wall, floor or ceiling being penetrated. The penetration seal should also prevent the ingress of smoke and also prevent the entry of rodents and insects.

10 Key switch

Each individual vending machine shall be provided with its own key switch.

The key switch shall be located adjacent to the vending machine.

If mounting on a platform column, mount the key switch on the non-track side of the column.

Obtain RailCorp approval via the project manager (who will liaise internally with suitable structural engineers) to drill steel and concrete members for reasons of structural integrity.

Key switches shall be labelled as follows:

DB X CB Y, by means of engraved "Traffolyte" labels, with black lettering on a white background.

Vending machines are to be numbered on a per platform basis (including island platforms as the one platform). Starting at the City end of the platform and facing the City numbering left to right progressing down the platform away from the City.

11 Connection from key switch to vending machine

The vending machine shall be connected to the key switch using black or grey sheathed flexible steel conduit.

For underground or built over stations, concourses and subways where fumes and smoke from burning PVC will not be readily dispersed, the cable insulation and sheath shall be of the low smoke, low toxicity and halogen free type. The cable sheath shall also be fire retardant.

The conduit shall be connected into the bottom of the key switch using an approved threaded gland with suitable nut on the inside of the key switch housing.

Ensure that the steel conduit is effectively earthed.

The conduit shall be secured to the platform column etc and to the back of the vending machine using double sided galvanised saddles spaced 300mm apart.

Obtain RailCorp approval to drill steel and concrete members for reasons of structural integrity.

12 Disconnection of vending machines

When disconnecting and removing a vending machine, the conduit from the vending machine to the key switch shall be removed from the bottom of the key switch and a threaded cap installed to seal the resultant hole in the bottom of the key switch.

If there is only the one vending machine on a circuit then the circuit breaker shall be turned off and suitably tagged to RailCorp approval.

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