THIESS

Infraco

# Tram Safety in the Field

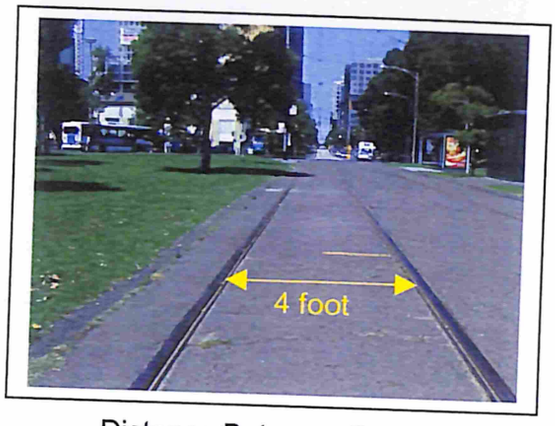
## TRAM OPERATORS


References:
Occupational Health and Safety Act 1985
General Operating Rules and Procedures 2002

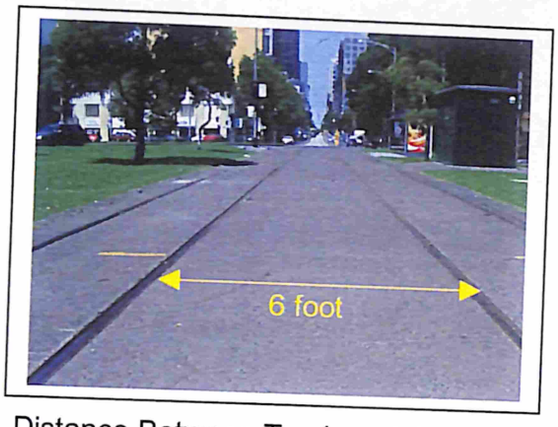
# TABLE OF CONTENTS

## 5 TRACK SYSTEM

The track system consists of rails on which the tram runs and a supporting structure. The distance between the rails (the gauge) is 1436 mm and is known as the '4 foot' The distance between the tracks is greater than 1916 mm and is known as the '6 foot'.




Distance Between Rails – 4 foot

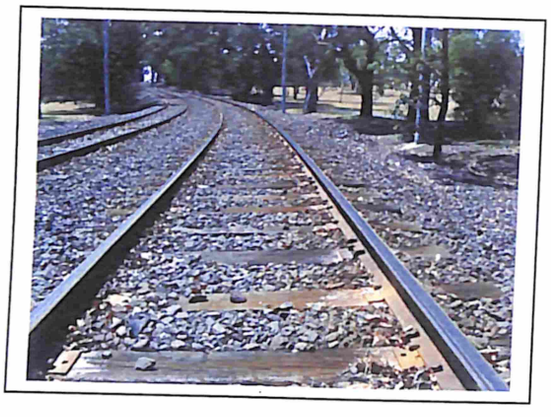



Distance Between Tracks – 6 foot

**Warning**
There is not sufficient room to stand in the 6 foot while trams are passing

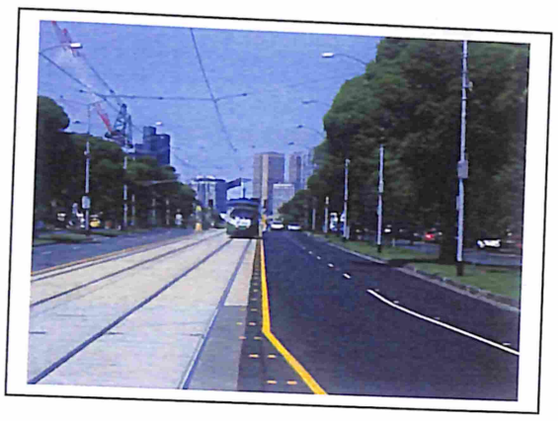
The supporting structure can consist of concrete, asphalt, timber tramway blocks as well as wooden or concrete sleepers with ballast. The track system can be layed in a tram only easement eg. Peel Street or in a public road eg. Epsom Road.

Concrete Track – Tram Only Easement

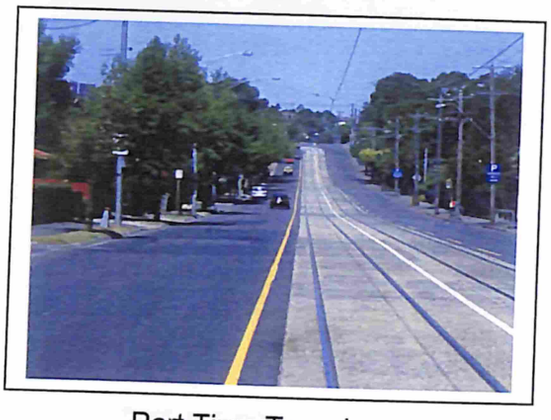


Timber Sleepers – Tram Only Easement

Concrete Sleepers – Tram Only Easement



Permanent Tram Lane



Part Time Tram Lane

Shared Lane - Tram has Priority

Public roads can have marked tram lanes as follows:-
Full time or permanent tram lane - yellow line with reflectors
Part time tram lane - continuous yellow line. Overhead signs indicate the times the tram lanes operate
Shared lane, tram has priority - broken yellow lines

**Warning**
Take extreme care when crossing over ballasted tracks, especially in wet weather, to avoid slipping on the sleepers and to avoid injuries due to the uneven surface.

# 6 TRACK OPERATIONS

## 6.1 Track & Pole Naming Conventions

UP trams travel towards the terminus closest to the Central Business District.
DOWN trams travel towards the terminus further from the CBD.

Tram poles were installed when the various routes were electrified and unfortunately, there was not a uniform numbering system. However, all poles are numbered sequentially along a particular street. Poles are often numbered from the start of the street or corner rather than from the terminus.

The electrical system diagrams provide an overview of pole numbering.


Hint
Pole 2U would be on the UP side of the street adjacent to the UP track. Pole 2D would be on the opposite side of the street, adjacent to the DOWN track.

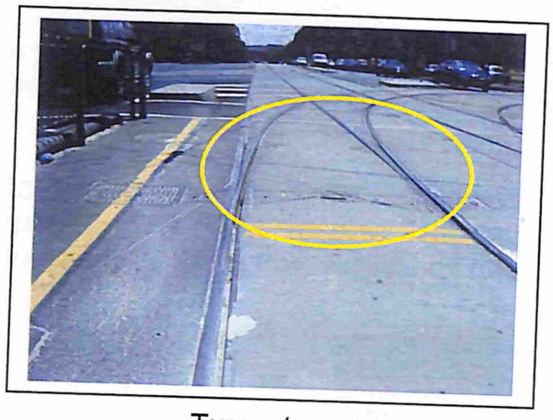
The numbers are normally painted on the pole in a contrasting color.

Distances can be estimated by pole numbers - as a rule of thumb there are approximately 30 poles per kilometre.

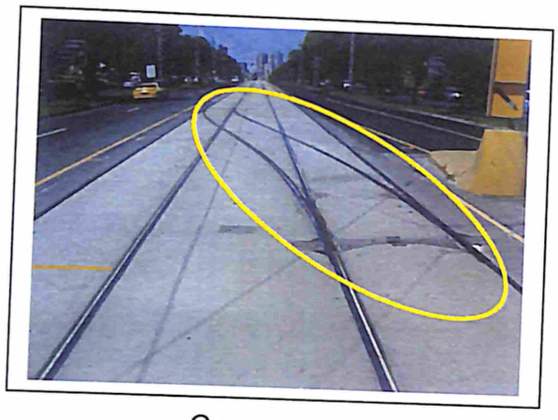
**Warning**
Be careful removing posters to reveal pole numbers. Discarded syringes may be concealed in the layers of posters.

## 6.2 Turnouts and Crossovers

Turnouts allow trams to turnout from one track to another



Turnout



Crossover

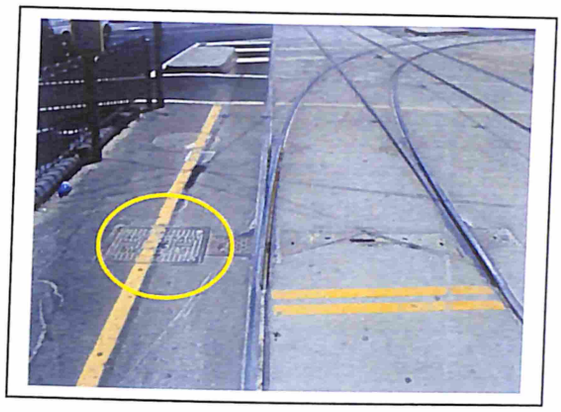
Crossovers are two turnouts linked together to let trams cross from one track to another.

Points are the movable blade that allows the tram to change from one line to another.

Points can be manually operated by using a point bar.

Points can also be operated automatically by the driver as the tram approaches the points.

The automatic points are powered from the 600volt overhead wiring. The cables to the automatic points are buried beneath the roadway.



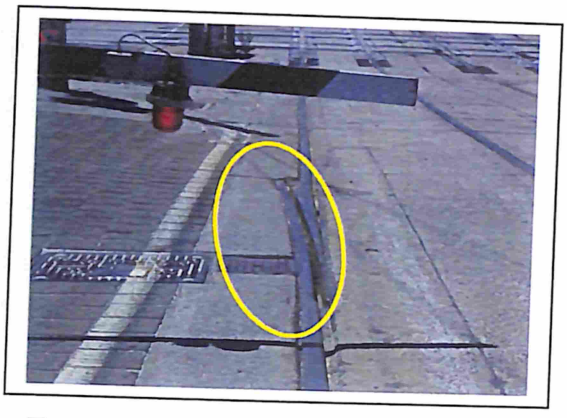
Turnout with Automatic Points

## 6.3 Train – Tram Level Crossing

There are 4 train - tram level crossings:-Glenhuntly, Gardiner, Kooyong and Riversdale.

Work within 3 metres of a railway line is covered by the train Book of Rules and Operation Procedures which take precedence over the tram General Operational Rules and Procedures.

To reduce the risk of a tram colliding with a train, tram catch points are installed on the approach side of the crossing. The catch points are designed to derail the tram to avoid collision. The train signal box has control of the catch points



Tram Catch Points at Level Crossing

**Warning**
Never place fingers, or tools and equipment between the blades of automatic points or catch points as they may operate with out warning.

# 8 AUTOMATIC VEHICLE MONITORING

The Automatic Vehicle Monitoring (AVM) system uses a computer and radio technology to monitor tram operations. The system allows the position of trams across the network to be monitored by Fleet Operations.

Low power radio transmitters called Signposts are located around the metropolitan area. Trams pick up signals as they pass these signposts and automatically relay this information back to the control centre. This information is processed by the central computer and presented to the tram network controllers on a number of computer screens.

With this information, Control Operators know which vehicles are running ahead or behind schedule, or in an emergency can act accordingly. The system also allows the Control Operator to talk to the driver directly or issue a public address announcement to passengers via the mobile radio.

Vehicle location data is collected for all scheduled tram services. This data is then supplied to the Department of Infrastructure to verify service delivery.