SAFETY IN THE FIELD TRAM TRACK

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1 PERFORMANCE OBJECTIVE

1.1 Performance

Upon the successful completion of this module, the trainee will be able to correctly identify and demonstrate practices for working safely in the Tram Track environment.

1.2 Condition

Given the correct safety equipment, examine their knowledge and skill in a simulated road environment.

1.3 Standard

The trainee must respond correctly to situations as specified within the relevant PTC and OH&S standards and procedures.

2 OVERVIEW

Construction and maintenance activities on tram assets on public roads requires workers to be aware of their environment. Working on or near tram track and public roads requires knowledge of:

Basic road law
Basic tram terminology
Dangers associated with the operating on the road.
Dangers associated with the operating on tram track.
Dangers associated with tram overhead equipment, tram power feeders and negative returns.
Safety procedures.
Emergency procedures.
Safety clothing (personal protective equipment, PPE).
Dangers to the public and fellow employees.
Dangers associated with automatic point equipment and power feed cables.

3 ROAD RULES

Road laws apply to all persons. The road law provides a framework to provide a safe road environment for both road user and pedestrian. It is the responsibility of each employee to comply with all road laws.

When walking to and from work sites located on major roads where possible use footpaths and pedestrian crossings points provided.

Road traffic must obey traffic signs ,traffic controllers and stay within designated road boundaries.

The PTC, under the requirements of the OCCUPATIONAL, HEALTH & SAFETY ACT must provide a safe environment for employees and road users, when undertaking works on public roads. This is provided through the use of temporary road work signs, road and lane closures.
The boundaries of the work site on a road are marked through the use of traffic cones and barricades
(refer figure 1).
Worksite Traffic management schemes and signage must comply with Australian Standards (AS 17423-1985) and be provided by staff qualified in Worksite Traffic Management and may use qualified traffic controllers to direct traffic through the work site.

NOTE: Traffic Managers refers to employees who have been trained in safe and accepted traffic deviation and control procedures. (Completed a Basic Worksite Traffic Managment Course)

NOTE: Traffic controllers are employees who have been trained in the correct procedures for directing vehicle and/or pedestrian traffic. (Comleted a Woksite Traffic Managment Controllers Course)

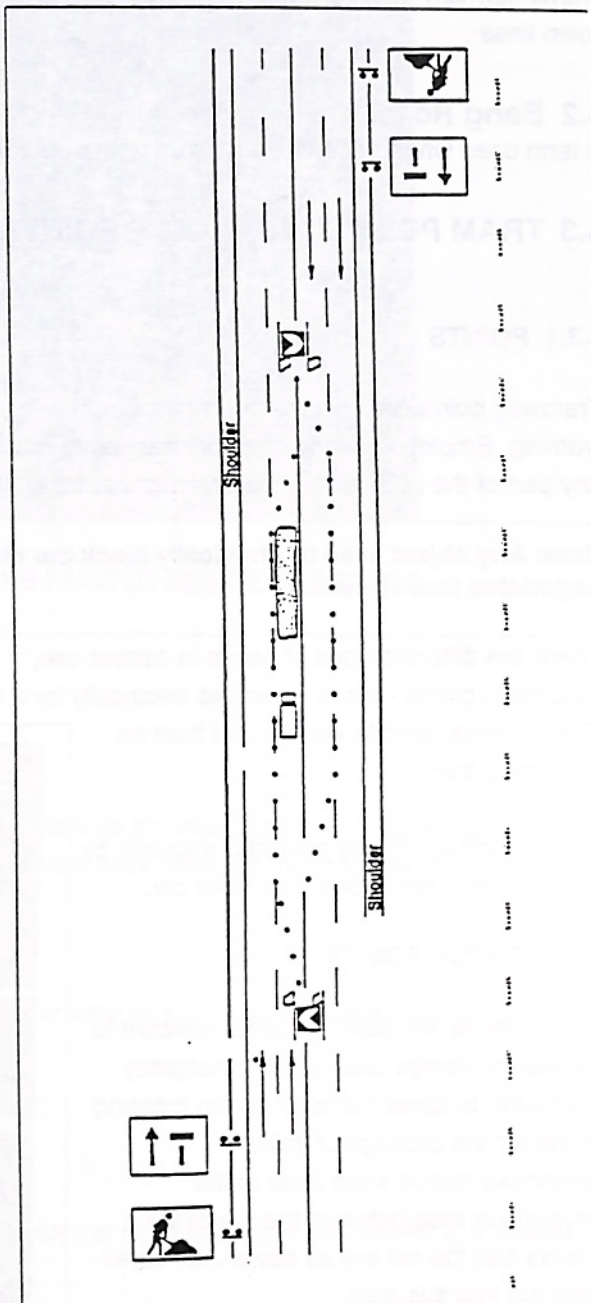


Figure 1
EXAMPLE OF A SHORT TERM MAINTENANCE LANE CLOSURE - WORK IN THE CENTRAL LANE ON A MULTILANE ROAD.

4 SAFETY ON OR NEAR TRAM LINES

4.1 UP AND DOWN LINES

An up tram travels to Melbourne.
A down tram travels away from Melbourne.
Trams normally travel on lines devoted to one direction, up trams travel on up lines and down trams travel on down lines .

4.2 Bang Road.

A term used when a "down tram" is using the up track or vice versa.

4.3 TRAM POINTS AND CATCH POINTS.

4.3.1 POINTS

Tramway points are used to divert trams from one line to another, these points may move quickly without any warning. Employees working on or near points must ensure that the points are restricted from operation before any part of the body enters the area between the blades and the stock rail .

Note: Any object used to physically block the movement of points must be removed before traffic negotiates these points.

There are different types of points in current use,
Automatic points - points operated electrically by a motor.
These points operate via a signal from an oncoming tram.

Manual points - Points operated manually by a short metal rod known as a point bar.

4.3.2 CATCH POINTS.

Catch points are points located adjacent to railway crossings used as an emergency measure to derail trams when the crossing is set for the passage of trains employee should keep clear of the immediate area between the toe of the points and the rail line as trams may derail and run into this area.

NOTE :- Trams derailing are not under control.

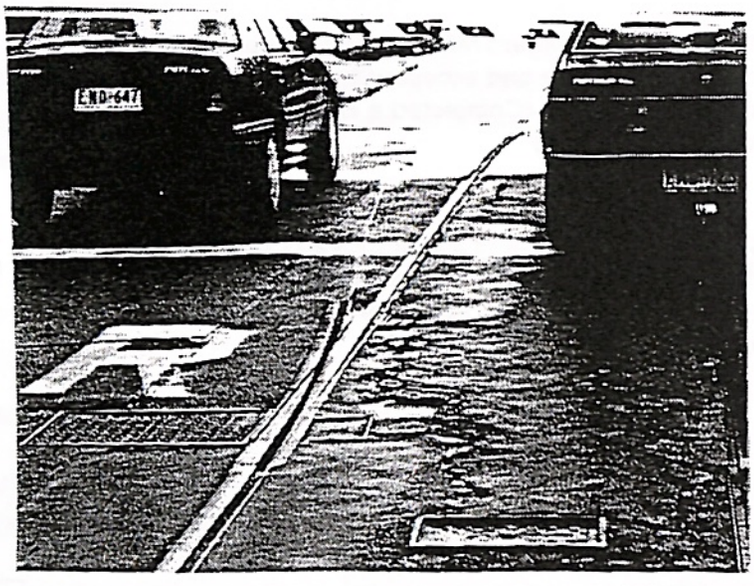


Figure 2
CATCH POINTS AT RAILWAY CROSSING SHOWING AREA OF DERAILMENT IN THE BACKGROUND BETWEEN THE TWO CARS

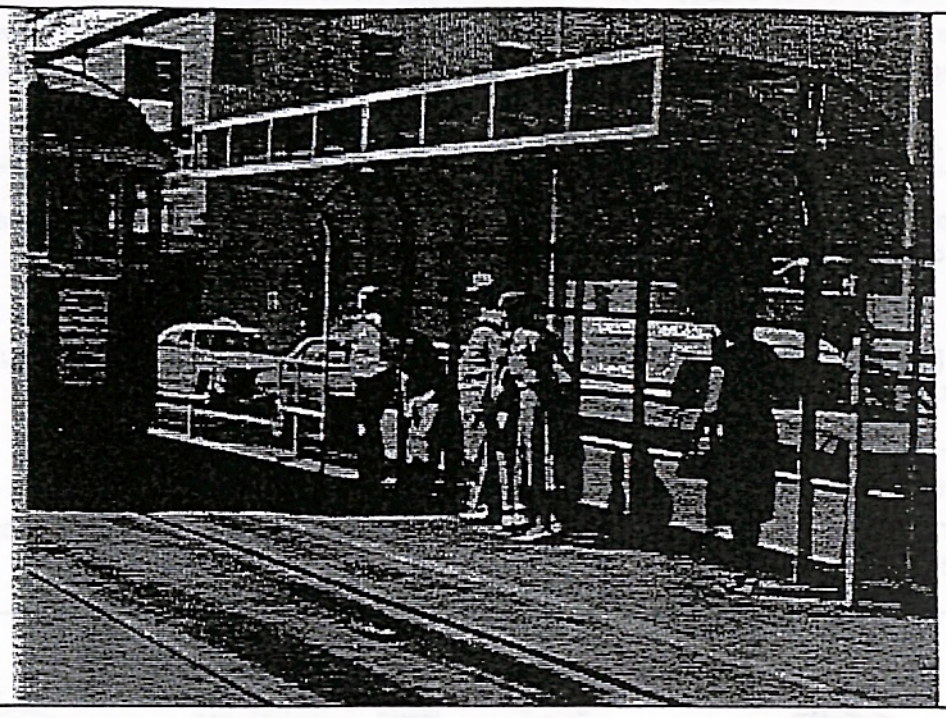


FIGURE3
TRAM TRACK SHOWING CLEARANCE LINE PAINTED BESIDE THE TRACK

5 CLEARANCES

5.1 Trams and Road users/workers

Tram lines have a yellow line marked beside them to indicate clearance for other road users(figure 3). Employees should keep the area between these marks and the tram track clear, so the progress of trams is not impeded and employees do not place themselves at risk.

For unmarked areas employees should keep a minimum clearance of 900 mm. from the track closest to the kerb.

5.2 Clearance Between Passing Trams.

When trams pass each other there is limited clearance and employees must not place themselves in a situation where they may caught between passing trams.

5.3 Clearance On Curves.

On curves clearance is greater than for straight running, due to tram swinging as it rounds the curve.

6 TRAM OVERHEAD

Trams are powered by electrical power (600volts d.c.). Trams pick up electrical power from the overhead via a pole or pantograph .

All the common overhead apparatus is labeled in figure 4.

NOTE: Non approved (unqualified) employees are not permitted approach closer than 2 metres from any bare electrical conductor.

Non approved (unqualified) employees approaching closer than 2 metres of bare electrical conductor put their life at risk.

6.0.1 Positive Cables

Positive cables carry the electricity to the overhead system and are live at 600 volts d.c. Positive cables may be aerial conductors, found buried under the roadway and under the track margin, and if struck or damaged they have the potential to kill.

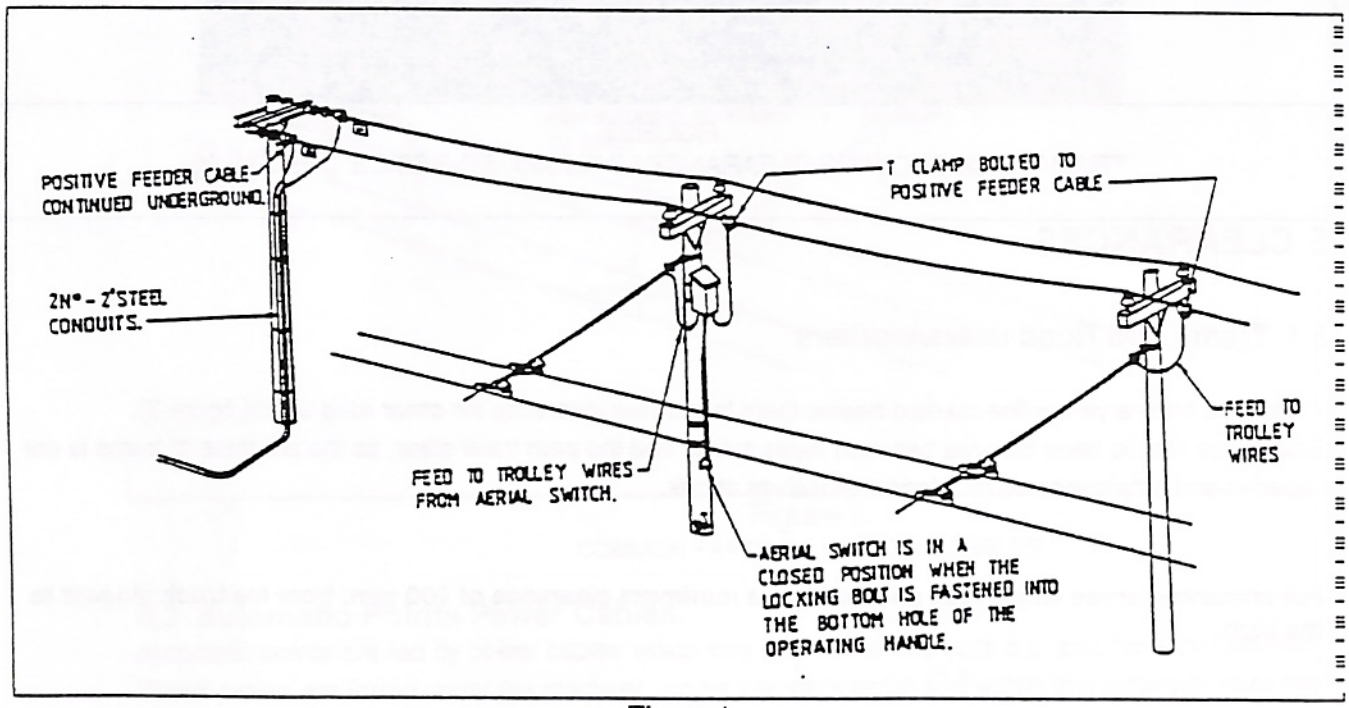


Figure4
COMMON PARTS OF POSITIVE CABLES

6.1 Negative Cables

Negative cables provide the return path for electricity to the power source. Negative cables are connected to the rails and are buried in the region of the track work, they may also run as aerials.(Figure 5.)
Negative cables which are accidentally cut have the potential to kill.

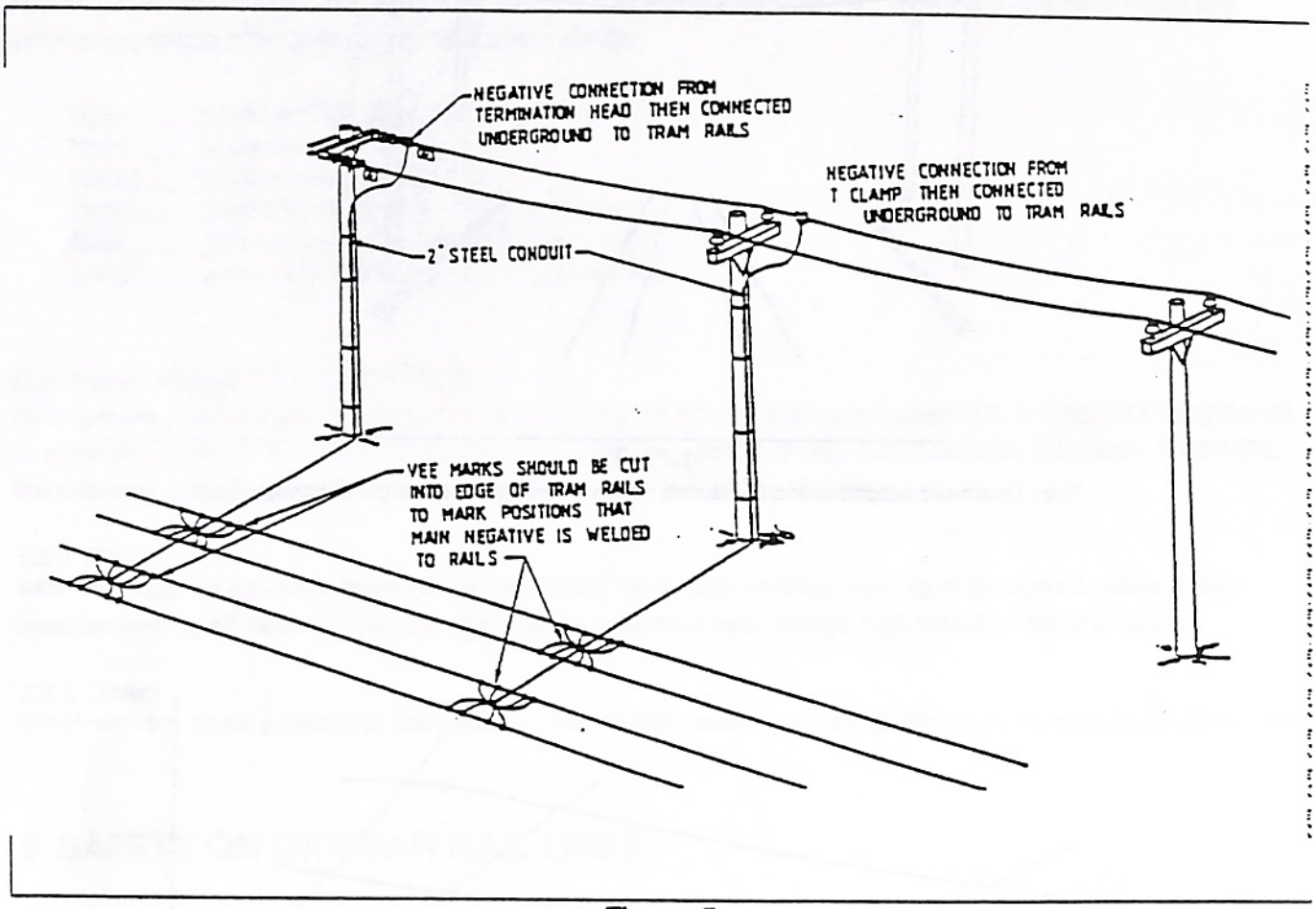


Figure 5
COMMON PARTS OF NEGATIVE CABLES

6.2 Automatic Points Power Cables.

Automatic points are fed by power cables which may be alive at 600 volts d.c. and have the potential to kill.
These cables are found under the roadway , under the track apron and within the automatic point box.

7 Tram Overhead Configurations

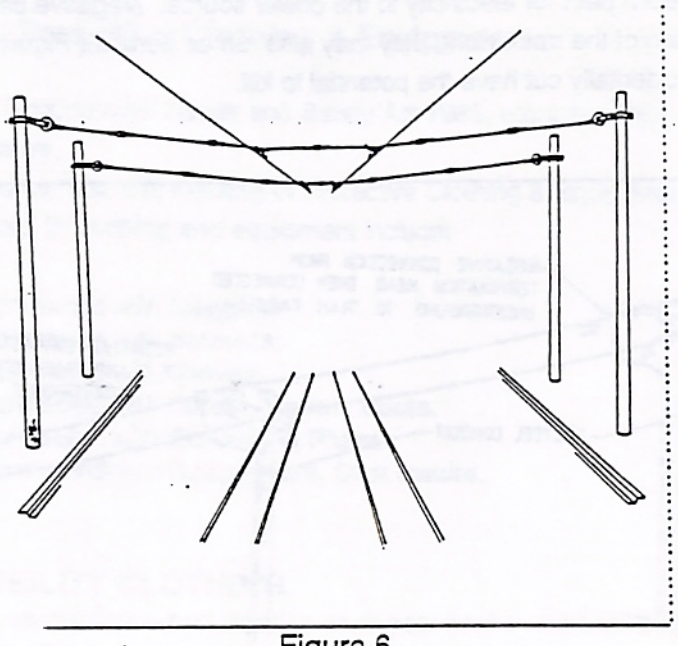


Figure 6
Tram Overhead support spans & Traction Trolley wires above a straight roadway.

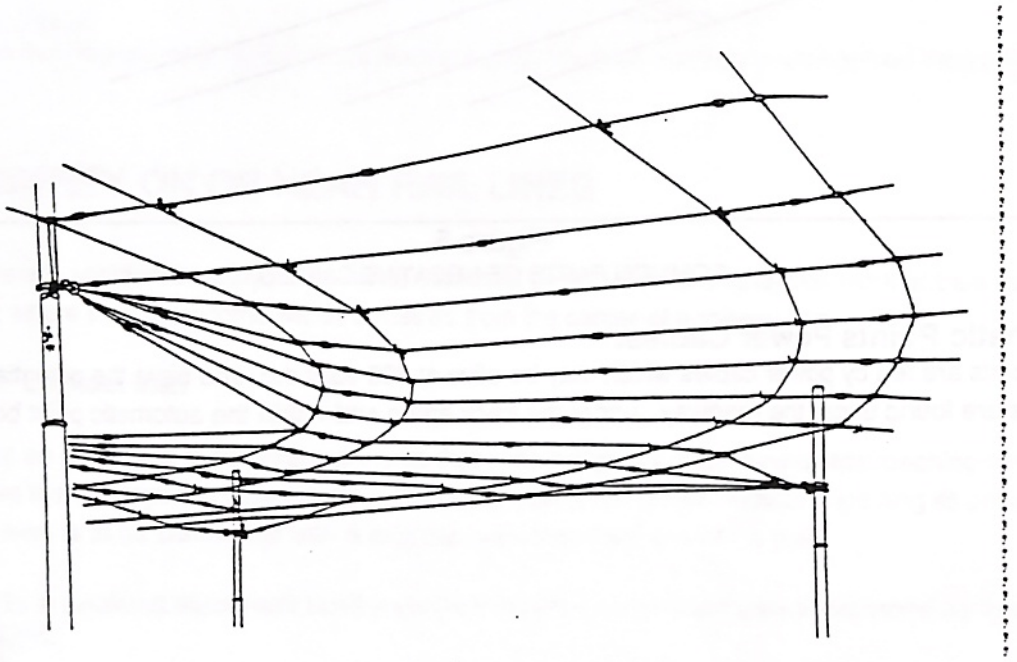


Figure 7
Overhead curve network supporting traction trolley wires as viewed from the tram track

8 Safety Clothing

8.1 Personnel Protective Clothing & Equipment

Section 25 of the Occupational health and Safety Act 1985, requires employees to take reasonable care for their own health and safety.
This would include the use and wearing of Protective Clothing & Equipment. The parts of the body which are commonly protected by clothing and equipment include:

Eyes ___ protected with **Goggles.**
Head ___ protected with **Helmets.**
Hands __ protected with **Gloves.**
Feet____ protected with **Safety Shoes, Boots.**
Ears____ protected with **Ear muffs, Plugs.**
Lungs __ protected with **Respirators, Dust masks.**

8.2 HIGH VISIBILITY CLOTHING.

All employee and contractors when working on or near tram or rail lines ,shall wear HIGH VISIBILITY CLOTHING. In accordance with PTC. rules and regulations No. 24, Corporation Policy and Australian Standards 1742-1975, the following procedure must be followed in relation to High Visibility Clothing.

8.2.1 Rail :
When working on /or within three metres of rail track work, high visibility clothing of the agreed yellow colour must be worn by all personnel, except the flagman who must wear orange high visibility vest or overalls.

8.2.2 Tram:
When working on /or adjacent to the roadway, high visibility clothing of orange/red must be worn by all personnel.

9 SAFETY ON OR NEAR RAIL LINES

There are additional safety precautions that must be adhered to employees work at tram train crossings or any area where they may come within 3 metres from the center of a railway line

9.0.1 Lookout Man

When an employee is carrying out works that does not give a clear view of approaching trains, and such work allows the employee to move clear of the of the approaching train without impeding its progress,
The work is to be carried out with a look out man appointed and at his post.

NOTE: A Lookout Man must hold a current Flagmans Certificate as prescribed by the PTC Infrastructure Division.

9.0.2 Flagman

When the works obstruct/may obstruct the progress of trains or may come within 3 Metres of the center of the track.

Protection is is to be provided by the use of employees with current Flagman and/or Safeworking Certificate as prescribed by the PTC Infrastructure Division.

Note: No person or employee is to undertake rail protection duties without the successful completion of a Rail Safe Working course.

10 SAFETY WITH MECHANICAL PLANT NEAR OVERHEAD WIRING

Any plant operator intending to use equipment near the PTCs. electrical apparatus must notify the PTCs relevant electrical section of the work to be carried out. The PTCs electrical section will determine the most appropriate protection for equipment and operator.

Carlton Control should be contacted for further details, on the relevant electrical section .(24 hour contact numbers are 610 3394 610 3395)

11 PROCEDURES WHEN ENTERING TRAM DEPOTS.

Before any works are commenced in depots the "Depot Starter" is to be informed as to the nature of works to carried out.

NOTE: Tram depots are a hazardous area empoylees must be alert and be on the lookout for open pits and trams shunting.

12 EMERGENCY SITUATIONS.

12.1 For Tram Track

If an emergency arises such as finding a broken rail or some obstruction on the track, ideally you would try to give the tram driver adequate warning time to stop the tram.

Facing oncoming traffic you can indicate to the tram driver to stop the tram by displaying a red flag/light or by raising both hands above your head. At night, exhibit a red light if available, or if not available, any light moved rapidly.

12.2 For Rail Lines

If an emergency arises such as finding a broken rail or some obstruction on the track, ideally you would try to give the train driver adequate warning time to stop the train. To facilitate an adequate warning time:walk towards the oncoming traffic to a minimum distance of 1200 metres (



Figure8
Emergency stop signal

You can indicate to the train driver to stop the train by displaying a red flag/light or by raising both hands above your head. At night, exhibit a red light if available, or if not available, any light moved rapidly.

12.3 GENERAL RULES ON SAFETY

Your supervisor's are required to do all that is practicable to ensure that your work place is safe and without risk to health.

You must do your best to understand and familiarize yourself with your work place.

Identify escape routes in the case of an emergency.

Personnel working on the road are required to wear red vests with reflective stripes.

Be vigilant at all times, although you may be working within traffic cones and traffic barricades, an absolute safe work site is not ensured.

13 EMERGENCY POWER OFF

In the event of a serious accident or incident where electrical power may have to be isolated, or for any other concerns with the electrical supply to the tram system contact Carlton Control on the following numbers:

610 3394 610 3395 (24hrs.)