

## AUSTRALIAN RAIL TRACK CORPORATION LTD

**Ref No:** 08-08-11-031

# New Equipment & Systems Approval -Protection Ramps for Wayside Equipment Mounted Near and Between Track

#### 1. Determination of Need

ARTC, in conjunction with the rolling stock operators, is undertaking the installation of rolling stock wayside monitoring equipment at a number of sites in NSW, Vic and SA.

A number of pieces of equipment such as surge diverters, junction boxes, low profile tag readers and equipment sensors etc, need to be mounted in close proximity between each of the four tracks at the NSW Metford site.

A mechanism is required to protect this equipment from damage from ARTC track maintenance activities, such as grinding and tamping etc, and any equipment that is dragged past the site by passing rolling stock.

Such protection will minimise downtime for site equipment and assist in ensuring the accurate and comprehensive gathering of performance data from rolling stock passing the site.

#### 2. Significant Change or Not

This change in equipment is assessed as MINOR

#### 3. Review Panel

- John Cowie Manager, ISP, Standards and Systems
- Tim Calver Standards and Technical Services Engineer
- Ian Domleo Senior Track and Civil Consultant

### 4. Equipment Suitability

The proposed equipment protection system entails the installation of four ramps, two on either side of the equipment, over which the potentially damaging medium will pass.

The installation layout and design of these ramps will provide the required protection for the equipment as well as warn ARTC maintenance staff that they have entered an instrumented area.

Attachments to this document are:

- 1. TEKNIS discussion paper dated 15 May 2006;
- 2. TEKNIS drawing 15044-122 Ramp with Surge Diverter Mount;



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- 3. TEKNIS drawing 15044-123 Track Side Equipment Positioning; and
- 4. TEKNIS drawing 15044-124 Sprung Ramp.

#### 5. Approval

Approval is granted at any suitable location where wayside equipment is required across the ARTC network.

#### 6. Conditions of Approval

- 1. Minimum horizontal clearance to any equipment including sprung ramp 1800mm.
- 2. Maximum height of any equipment above rail 600mm.

#### 7. Sign off

#### **Review Panel:**

John Cowie	Abom i	Date	23.5.06
Tim Calver	S.S. Gel	Date	30/5/66
Ian Domleo	1. S. Doula	Date	23.5.06

End of document.





To: Peter O'Byrne

CC: Tim Morland, Worley Parsons CC: Mark Gray, Worley Parsons CC: Keith Searle, Teknis Electronics

From: Keith Bladon

May 15, 2006

Subject: ARTC Metford Site Upgrade - Site design, safety ramps and mounting poles.

The equipment that is mounted trackside at Metford is proposed to be protected by rigid angled ramps. ARTC have expressed safety concerns related to maintenance equipment that might foul on these ramps if the maintenance equipment operator does not see the warning signs at each end of the site.

ARTC have requested that a sprung ramp be used so that maintenance equipment entering the zone in error can ride through the ramps without risk.

The problem that this poses is that the sprung ramp will not provide protection and the equipment that is being protected is rigidly mounted, very expensive and likely to create the same or worse safety hazard to maintenance equipment and operators that a rigid ramp would present.

I have researched various methods used by other railroads and propose a compromise solution. The proposed solution is as follows:

- 1. To improve the visibility of all obstructions by marking all ramps and equipment with nonreflective yellow marking tape.
- 2. To use the sprung ramp design but to place this at the entry to the instrumented section as a warning to equipment operators. The placement of these ramps is proposed to be about 10 metres inside the sign-posted section.
- 3. To use the rigid ramps as currently specified in the site drawings.

The illustration below outlines this alternative.





The disadvantages of this method include the cost of the additional ramps as well as the difficulty in mounting the ramps as they are currently designed by clamping the ramp to posts that have been driven into the sub-grade.

An advantage of this proposed alternative is that it does not affect the civil works that are in progress at this time if the mounting of the sprung ramp is modified.

I propose that the design of the sprung safety mounts be changed to enable them to be installed without mounting posts. This method is currently used by Amtrak and has proven to be effective. The revised mount is also somewhat compliant in that it will move if seriously hit by maintenance equipment. The revised mount that is proposed is illustrated below.



The burial method used by Amtrak is shown below. Each corner of the ramp has angle iron legs about 200mm long. A steel plate is welded to the bottom of the legs. The steel plate is then buried in the ballast. The photo below shows a solid ramp buried using a steel plate under the ballast.

The large silver cabinet that is protected by the ramps is actually mounted on poles that are driven into the sub-grade in the same way that is defined in the current drawings. A picture of these mounting pole is shown on the next page.





Mounting poles for WID equipment are shown above. These are heavy gauge 40mm steel tube with machined stainless steel points welded to the ends.

Alternatives to using this type of mounting pole is either of the following two options.

- 1. Galvanised pickets welded to pipes. Pickets must be driven at least 1 metre into the subgrade. The welds must be protected against corrosion.
- 2. Pinched pipes as shown below.



I emphasise that this proposal is to have the existing equipment still protected with the same rigid ramps, mounted to poles driven into the sub-grade. These ramps house the rail suppression units and the poles act as ground rods. This proposal simply adds sprung ramps buried at each end of the instrumented section to act as warning in the event that the maintenance operator does not see the warning signs.





# TRACKSIDE EQUIPMENT POSITIONING Α4 SHT: 1 OF 2

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SIDE EQUIPMENT POSITIONS AS SEEN FROM EQUIPMENT HUTS



