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About This Standard

This Principle addresses the requirements for the provision of trainstops at signals, fixed trainstops at specific locations, intermediate trainstops and their identification.

Document History

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List of Amendments –

ISSUE	DATE	CLAUSE	DESCRIPTION
1.1	01/09/2004		▪ Reformatting to ARTC Standard
1.2	14/03/2005	Disclaimer	▪ Minor editorial change ▪ Footer reformatted

Contents

15 Trainstops

15.1 Principle No. 15.1 - Provision And Identification Of Trainstops

15.1.1 Introduction

This Principle addresses the requirements for the provision of trainstops at signals, fixed trainstops at specific locations, intermediate trainstops and their identification.

15.1.2 Requirements - Provision of Trainstops

If a running signal is located on a designated suburban passenger carrying line in DC electrified territory and controls the passage of electric multiple unit passenger trains then it shall be provided with a trainstop.

The designated passenger lines are those within the CityRail area bounded by Fassifern and Newcastle on the main North and the area around Sydney bounded by Hawkesbury River on the main North, Emu Plains and Richmond on the main West, Macarthur on the main South, the Carlingford line and Helensburgh on the Illawarra.

Running signals located outside the above areas but within the area bounded by Fassifern on the Main North, Lithgow on the Main West, and Kiama on the Illawarra may also be fitted with train stops where it is considered that a train over-running a signal would be at serious risk of a collision with another train. E.g. at the approach to crossovers leading to or from areas of bi-directional running. Signals within this area are risk assessed on an individual basis to determine whether trainstops are to be installed.

If a running signal is located on a designated freight line then it need not be provided with a trainstop.

15.1.3 Requirements - Provision of Intermediate Trainstops

Where it is necessary to provide low speed and conditional caution aspects with reduced overlaps then one or more intermediate trainstops may be provided to check the speed of a train as it approaches the reduced overlap.

Intermediate trainstops may also be provided to check the speed of trains approaching a stop signal immediately in the rear of open catchpoints where there is little or no overlap between the signal and catchpoints. The requirement for intermediate trainstops in these circumstances shall be assessed for each location.

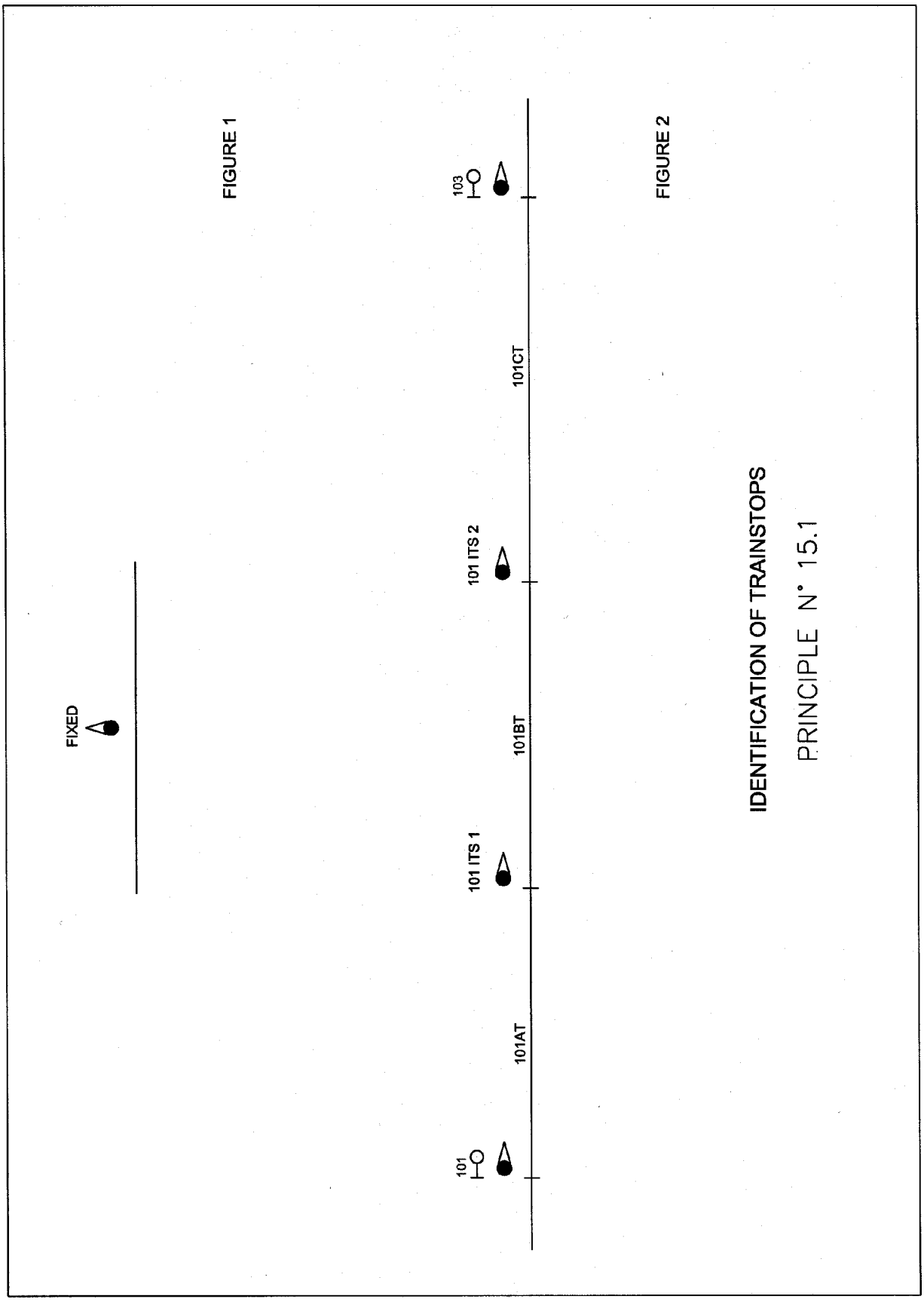
15.1.4 Requirements - Identification of Trainstops

Trainstops provided at running signals shall be given an identification number, which is exactly the same as the identification number of the signals to which they apply.

Fixed trainstops shall be identified on track plans only by the word “FIXED” against the trainstop symbol. Refer to figure 1. Intermediate trainstops provided in advance of running signals shall be given an identification number, which is exactly the same as the identification number of the signal to which it applies. In addition it shall be suffixed by the acronym ITS (Intermediate Trainstop). If more than one ITS is provided past a running signal the ITS

immediately in advance of the signal

shall additionally be suffixed by the number 1 and the next in advance by the number 2, e.g. ITS 1 and ITS 2 respectively. Refer to figure 2.



15.2 Principle No.15.2 - Control And Operation Of Trainstops

15.2.1 Introduction

This Principle addresses the requirements for controlling the operation of trainstops and proving the trainstop position correct for the safe and proper operation of the signalling system.

15.2.2 Requirements - Control of Trainstops

If a running signal is displaying a stop aspect then the trip arm on the trainstop at the signal shall be in the raised position.

If a running signal is displaying a proceed aspect then the trip arm on the trainstop shall be in the lowered position.

The raising of the trip arm shall occur as a result of the occupation of the first track circuit past the running signal.

15.2.3 Requirements - Proving of Trainstops

If a running signal is to display a proceed aspect requiring a trainstop reverse but the trip arm on a trainstop associated with the signal fails to lower (reverse) as required then the signal shall display an enforced stop aspect.

If a particular running signal is to display a stop aspect but the trip arm on the trainstop associated with the signal fails to rise (normal) following the passage of a train then any running signals immediately in rear shall be maintained at stop until enabled to reclear by the particular running signal reclearing.

If the running signal associated with the trainstop is a controlled signal then the failure of the trip arm to rise shall inhibit the normalisation of the locking.

The normal and reverse positions of the trainstop shall be proved in the signal normal indicating relay and signal reverse repeaters respectively.

Higher aspects of signals are to prove that the trainstop at the signal in advance is reverse.

15.2.4 Exceptions in Designated Areas

In the City Underground and the Eastern Suburbs railway the lowering of the trip arm of the trainstop shall be on the timed approach of the train after the clearing of the signal to Low Speed or Caution.

Trainstops shall be proved reverse before the associated signal displays a proceed aspect that requires the trainstop reverse.

15.3 Principle No.15.3 - Suppression Of Trainstops

15.3.1 Introduction

This Principle addresses the requirements for providing suppression on trainstops to facilitate the movement of trains in the wrong direction or over bi-directional lines without initiating an unnecessary brake application or damaging the trainstop equipment.

15.3.2 Requirements - Suppression of Trainstops

If a trainstop associated with a running signal is located in a situation where train movements from other running signals or subsidiary signals or shunt signals pass over it in the opposite direction of running, then the trainstop shall be suppressed (lowered) for the opposite direction movement. Refer to figure 1.

If an opposing direction signal displays a proceed aspect then the trip arm of the trainstop to be suppressed shall be lowered and maintained lowered by the occupation of any of the track circuits between the initiating opposing direction signal and the suppressed trainstop.

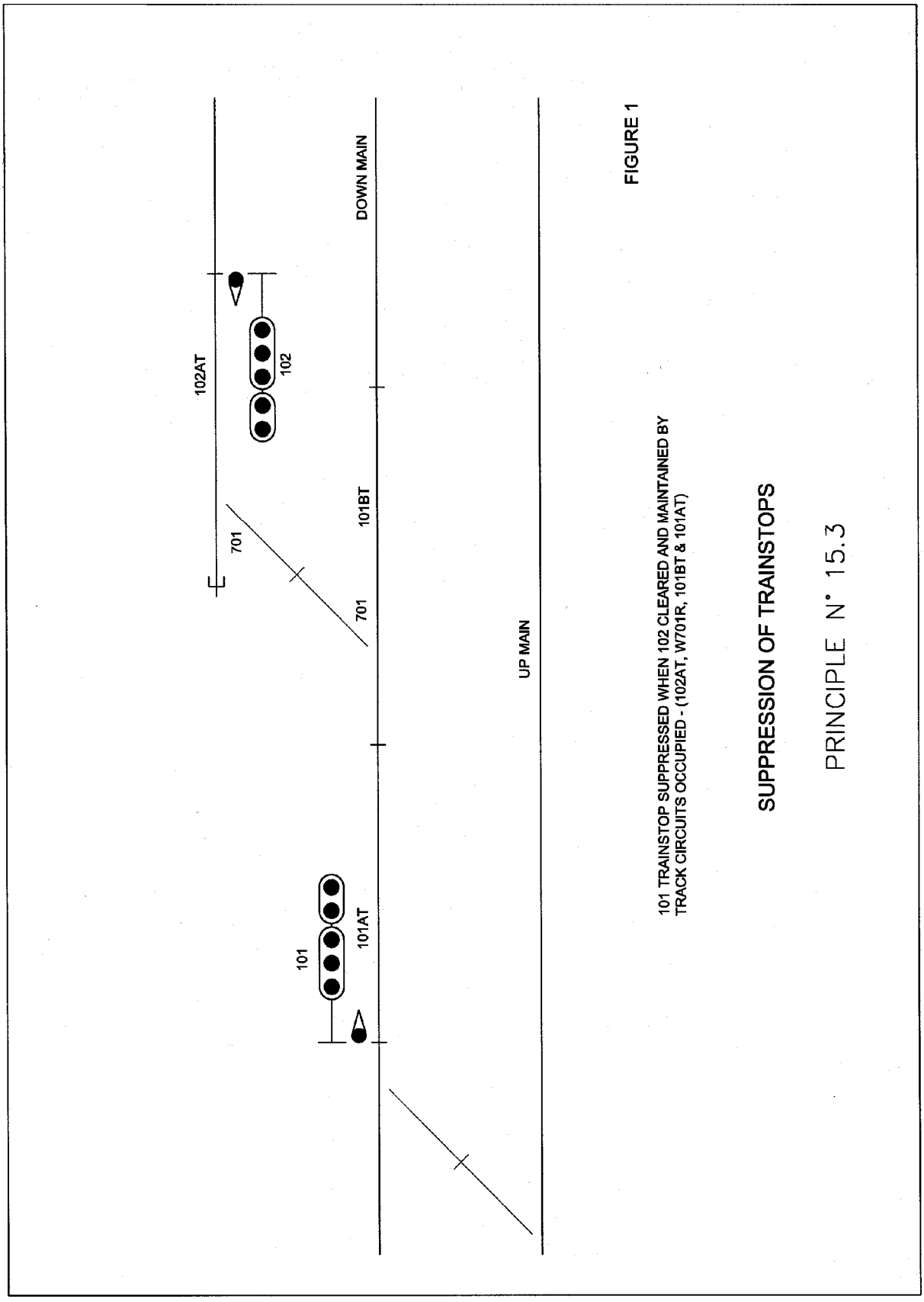
The trip arm of the suppressed trainstop shall rise when the opposing direction train movement has cleared all these controlling track circuits.

If the trip arm of the suppressed trainstop fails to rise after the opposite direction movement is clear then the running signal with which it is associated shall be maintained at stop.

15.3.3 Proving of Suppressed Trainstops

The trainstops shall be proved normal when required in signalled movements leading up to them in the applicable direction.

Suppressed trainstops shall not be proved reverse, when cleared for train movements in the other direction, in circuits that prevent clearing of the signal. They shall be proved reverse in the higher aspects whenever possible.



15.4 Principle No.15.4 - Control Of Intermediate Trainstops

15.4.1 Introduction

This Principle addresses the method of control of intermediate trainstops provided where no overlap or reduced overlap conditions apply. It should be noted that this Principle does not apply to the City underground.

15.4.2 Requirement - Control of Intermediate Trainstops where Minimal Overlap is Available

If it is necessary to close trains up under minimal overlap conditions then an intermediate trainstop will be required in accordance with Principle No. 15.1.

If a running signal route is set with minimal overlap available then the running signal shall display a conditional low speed aspect and the trainstop associated with the running signal and the intermediate trainstop shall remain raised.

As the train approaches the intermediate trainstop its speed shall be determined during a time expiry period.

If the average speed of the approaching train is in excess of low speed then it will engage the raised trip arm of the intermediate trainstop and be subject to a brake application.

If the speed of the approaching train is satisfactory then the trip arm of the intermediate trainstop shall be lowered allowing the train to continue up to the running signal in advance at low speed.

If it is necessary to close up trains and the overlap conditions improve then the trip arm of the intermediate trainstop provided to facilitate minimal overlap conditions shall be lowered when the improved overlap is available.

The intermediate trainstop shall be proved to return normal, before a signal leading to it that requires it normal, is cleared.

Intermediate trainstops shall be proved reverse before the associated signal displays a proceed aspect that requires the intermediate train stop reverse.

15.4.3 Requirement – Control of Intermediate Trainstops in the Rear of Catchpoints

Where there is minimal or no overlap between a set of catchpoints and the signal protecting the catchpoints then one or more intermediate trainstops shall be provided to ensure that the speed of an approaching train is such that it will stop at the signal (or, at worst, be travelling at very low speed) when the catchpoints are open.

As the train approaches each intermediate trainstop its speed shall be determined during a time expiry period.

The location of the intermediate trainstops shall be determined from consideration of:

- Previously checked speed

- GE52A trip braking curve

The timing of the intermediate trainstops may be determined using the GE63 braking curve rather than assuming a constant speed over the timing track, where the timing distance is long enough that a constant speed is not operationally practical.

Where appropriate, intermediate train stop advisory speed boards may be installed to assist train drivers.