

## Commentary for Standard:

# ESD-05-03 Train Braking Application Design and Instruction ESI-05-12 STOPDIST User Guide

ESD-05-03C and ESI-05-12

## 1 Acknowledgment

Signal Designers, Signal Design Engineers, Signal Project Engineers and Design Contractor employees are required to sign a briefing form to acknowledge they have read this commentary and received a briefing from their Signal Design Managers or Project Team Leaders and they understand the implications the standard has on their duties.

## 2 Operable Dates

### 2.1 Operable Date

The Operable Date is 15 July 2017.

### 2.2 Design Operable Date and Retrospective Requirements

The Operable Date is 15 July 2017. Any existing design which is being updated for other reasons shall be reviewed against this standard and ESI-05-13 Signal Design and Standards Applicability.

Current new signal designs that are being constructed but not yet commissioned shall be reviewed against this standard in accordance with ESI-05-13.

## 3 Briefing Process

The following are to be briefed by their Signal Design Managers or Project Team Leaders:

- ARTC Signal Designers, Signal Design Engineers
- ARTC Signal Project Engineers and Signal Project Managers
- External Signal Design Contractors who undertake work for ARTC

ARTC Signal Project Managers and Signal Project Engineers shall ensure that all signalling contractors are made aware of this new standard and this Commentary.

The briefing is to be carried out via a tool box meeting or team briefing. This commentary shall be printed and distributed to all staff attending the briefing. Attendees must sign to acknowledge that

they have read this commentary, received a briefing and that they understand the new work instruction.

Feedback shall be provided to Manager/Project Manager or Signal Design Manager demonstrating the completion and implementation of the briefing. Signal Design Managers or Project Team Leaders shall keep the records of all staff signing acknowledgement of the commentary and briefing. This information shall be available for quality auditing.

## 4 Outline of Standard

The ESD-05-03 standard specifies requirements for train braking used in the design of signalling and specifies the various standard types of train classes that operate on the ARTC network. It specifically identifies the types of trains, which section of the ARTC network they operate on and the nominal train braking distances for those trains.

These are the default reference values used by the STOPDIST calculation tool, which is to be used for all future design of signalling. Engineering Instruction ESI-05-12 provides guidance to using the Train Braking Distance Calculation Tool STOPDIST.

## 5 Key Changes/Updates to Standard

### 5.1 New to NSW / QLD Jurisdiction

ESD-05-03 has been updated and supersedes SDS03. The following are the key changes to the standard:

New Section 1 Introduction has been added and reference to ESD-05-01 Common Signal Design Principles: S1 - Signalling Locking and Train Dynamics Section 5

Old Section 1 braking Distance has become a new section 2.

It includes Table 1 for establishing which Brake Table applies to which rollingstock type. Table 1 also includes new Brake Tables MSP120 and GW50.

Train lengths shall be derived from table 2.3.1 of the Route Access Standards <https://www.artc.com.au/customers/standards/route/access/>.

It also stipulates that the STOPDIST tool is to be used for calculating the braking distances to determine the correct signal spacing for all future signalling design.

New Section 2.3 titled Further Considerations when determining Braking Distances, details how to calculate for:

- Multiple types of trains on a section of line,
- Multiple gradients and
- Braking distance calculations for long trains.

Section 3 describes records and design verification.

Sections 4 covers compliance indicators and section 5 competency requirements.

Appendix A added, containing the actual Brake Tables which include a signalling design allowance of 15% added to the braking distances.

### 5.2 New to VIC Jurisdiction

This standard is new to Victoria. It replaces any past practices regarding the requirements for Train Braking Distances.

### **5.3 New to SA / WA Jurisdiction**

This standard is new to South and Western Australian jurisdictions it replaces any past practices regarding the requirements for Train Braking Distances.

## **6 Determining the gradients to be used in the calculator**

### **6.1 Obtaining gradient data**

Check on the signalling design documents, however the designer needs to confirm this information is correct. The information shall be recorded on the Signal Arrangement Plan.

For NSW reference the information form the ARTC Engineering Extranet Network Configuration.

For Victoria reference the information form the ARTC Engineering Extranet Network Configuration.

For SA – reference the information form the ARTC Engineering Extranet Network Configuration.

Alternatively, data from the AK Car reports can be used and filtered to be in the form for change of gradient and length of gradient. This will cover situations where there have been track changes form the historical data or the data does not have sufficient detail or resolution. Transitions between changes of gradient can be ignored.

## **7 Forms**

### **7.1 Superseded Forms**

There are no superseded forms.

### **7.2 New Forms**

There are no new forms.

## **8 Special Tool Requirements**

### **8.1 Hardware**

There are no new special tool requirements.

### **8.2 Software**

There is a new software tool STOP-DIST version 2.1 calculator for train stopping distance. This includes the capability to determine the braking distance for a specific gradient and for multiple gradients. ESI-05-12 Stop-Dist User Manual details how this calculator is to be used. It also details what design records are to be documented.

## **9 Changed Management Systems**

### **9.1 Ellipse**

There are no changes to the Ellipse system.

### **9.2 Reports**

There are no new reports

**9.3 WHS**

There is no WHS issue from the implementation of this standard or software tool.

**10 Exemptions and Exclusions**

Nil.

**11 Implementation Review**

Standards shall conduct a review within twelve months of implementation date as to completion of the implementation processes detailed in this Commentary.

Approved By:	Signature on file	John Furness Manager Standards	Date: 12 / 07 /2017
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