International Standard

ISO 18379-1

First edition
2026-05

Railway infrastructure — Ballastless track —

Part 1: General requirements

Infrastructure ferroviaire — Voies sans ballast —

Partie 1: Exigences générales

Reference number
ISO 18379-1:2026(en)

© ISO 2026



COPYRIGHT PROTECTED DOCUMENT

© ISO 2026

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ..... **v**
Introduction ..... **vi**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Configuration of ballastless track **2**
4.1 General 2
4.2 Ballastless track system, subsystems and components 2
5 External actions **3**
5.1 Types of actions 3
5.2 Railway traffic loading 3
5.2.1 General 3
5.2.2 Vertical loads 3
5.2.3 Lateral loads 4
5.2.4 Longitudinal loads 4
5.3 Indirect actions and conditions imposed by the substructure 5
5.3.1 General 5
5.3.2 Indirect actions 5
5.3.3 Earthworks 6
5.3.4 Bridges 6
5.3.5 Tunnels 7
5.4 Environmental actions 7
5.4.1 General 7
5.4.2 Temperature 7
5.4.3 Earthquake 7
6 System requirements **8**
6.1 Track design geometry 8
6.2 Track stability 8
6.3 Structure gauge 8
6.4 Design life 8
6.5 Maintainability 8
6.6 Environmental sustainability 8
6.7 Noise and vibration 8
6.8 Derailment 9
6.9 Electrical interfaces 9
6.9.1 General 9
6.9.2 Rail-to-rail electrical resistance 9
6.9.3 Electrical interfaces with traction power supply systems 9
6.9.4 Electrical interfaces with signalling systems 10
6.9.5 Track circuit 10
6.9.6 Electromagnetic compatibility (EMC) with signalling systems 10
6.10 Fixing of equipment 10
6.11 Requirements related to the substructure 10
6.11.1 General 10
6.11.2 Earthworks 10
6.11.3 Bridges 11
6.11.4 Tunnels 12
6.12 Transitions 12
6.13 Requirements related to the environment 12
6.13.1 General 12
6.13.2 Water 13
6.13.3 Drainage 13
6.13.4 Temperature 13

© ISO 2026 – All rights reserved

6.13.5 Earthquakes 13
6.13.6 Chemical exposure, UV exposure and pollution 13
6.13.7 Fire implications of trackform 14

Annex A (informative) **System configuration of ballastless track systems** **15**

Annex B (informative) **Railway traffic loading of specific regions or nations** **18**

Annex C (informative) **Rail temperature increase by using eddy current brake** **24**

Annex D (informative) **Examples of loop-free and zones with limited metal content to ensure EMC** **27**

Annex E (informative) **Example of beacon mounting system** **29**

Annex F (informative) **Correlation between relevant regional or national standards** **30**

Bibliography **32**

© ISO 2026 – All rights reserved

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 269, *Railway applications*, Subcommittee SC 01, *Infrastructure*.

A list of all parts in the ISO 18379 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

© ISO 2026 – All rights reserved

Introduction

This document is intended to be used by customers, designers and specifiers of ballastless track systems as well as for reference and development by suppliers and construction contractors.

© ISO 2026 – All rights reserved

Railway infrastructure — Ballastless track —

Part 1: General requirements

1 Scope

This document specifies the general requirements relating to the design of ballastless track systems, including configuration of ballastless track system, subsystems and components requirements, and other related interfaces.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62128-1:2013, *Railway applications — Fixed installations — Electrical safety, earthing and the return circuit — Part 1: Protective provisions against electric shock*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
design life
specified period for which a ballastless track system is planned to be used for its intended purpose

3.2
electromagnetic compatibility
EMC
ability of equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment

3.3
floating slab
ballastless track system where a resilient element is introduced between the load-resisting element (typically a slab) and the *substructure* (3.4) which is one kind of mass-spring system

3.4
substructure
earthworks (embankment, cutting or at-grade) or bridges (or similar civil structures) or tunnel floor which provides support to the ballastless track system

3.5
static load
action that does not cause significant acceleration of the structure or structural members

© ISO 2026 – All rights reserved