

WITHDRAWAL Standards Briefing Note

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Title: Examination of Tunnels (formerly RT/CE/C/026)							
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Purpose: The purpose of this Code of Practice is to provide guidance on the systems, methods and measures for examining the condition of Tunnels.		Scope: The Code of Practice applies to Tunnels (including their parts and components) owned and/or managed by Network Rail.					
What's New/ What's Changed and Why: The guidance provided in this Code of Practice has been subsumed within NR/L3/CIV/006: <i>Handbook for the Examination of Structures</i>							
Affected documents: <table style="width: 100%; border: none;"> <tr> <td style="width: 30%;"><i>Reference</i></td> <td style="width: 70%;"><i>Impact</i></td> </tr> <tr> <td>NR/GN/CIV/026 ISSUE 1</td> <td>Withdrawn</td> </tr> </table>				<i>Reference</i>	<i>Impact</i>	NR/GN/CIV/026 ISSUE 1	Withdrawn
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Briefing requirements: Where Technical briefing (T) is required, the specific Post title is indicated. These posts have specific responsibilities within this standard and receive briefing as part of the Implementation Programme. For Awareness briefing (A) the Post title is not mandatory. Please see http://ccms2.hiav.networkrail.co.uk/webtop/drl/objectId/09013b5b804504da for guidance.							
Briefing (A-Awareness/ T-Technical)	Post	Team	Function				
A	Senior Technology Engineer (Tunnels)		Engineering (B&C)				
A	Senior Project Engineer (SEFA)		Asset Management (B&C)				
A	Acting Asset Head - Structures		Asset Management (B&C)				

**NOTE: Contractors are responsible for arranging and undertaking their own Technical and Awareness Briefings in accordance with their own processes and procedure*

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Issue	I
Date	January 1996

Examination of Tunnels (formerly RT/CE/C/026)

This temporary front sheet facilitates change to the new Network Rail Standards referencing nomenclature.

The Ref above will be formally allocated to this standard when it is next changed in the meantime the contents, date and issue number of this Network Rail Standard are **UNCHANGED and with immediate effect it should be referred to as “(new ref) formerly (old ref)”.**

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RAILTRACK LINE

CODE OF PRACTICE

EXAMINATION OF TUNNELS

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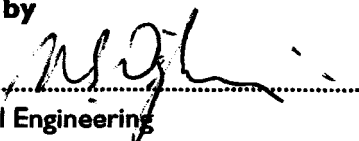
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EXAMINATION OF TUNNELS

Summary

This code of practice gives guidance on the techniques for examining tunnels, the frequency of examination, the competency of the Examiners, and the recording and processing of the findings.

Issue record

This document will be updated when necessary by distribution of a complete replacement. Amended or additional parts of revised pages will be marked by a vertical black line in the margin.

Issue: 1 **Date:** January 1996 **Comments:** Original document

Responsibilities

This code of practice should be complied with by all personnel who are responsible for examining Railtrack's tunnels and by those responsible for managing the examination of these tunnels by other parties.

Implementation

This code of practice shall be used from the date of receipt.

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I PURPOSE

This code of practice gives guidance on the systems, methods and measures to be adopted for the examination of tunnels which will enable them to be managed in a cost effective and safe manner, and enable compliance with Railway Group Standards GC/RT5121 *Examination of Structures* and GC/RT5180 *Safe Asset Management of Infrastructure - Tunnels*.

2 SCOPE

This code of practice applies to all tunnels or parts of tunnels owned by Railtrack and to all persons responsible for their upkeep.

EXAMINATION OF TUNNELS

3 DEFINITIONS

Tunnel

A structure provided to allow a railway line to pass under higher ground, and which has been excavated without disturbing the surface of that ground. For the purpose of this standard, the term also includes those structures built by other means for the same purpose (and usually exceeding 50 metres in length) which, in the opinion of the Engineer, need to be examined as tunnels. Associated shafts adits and portals are included.

Lining

The material used to face the inside of the tunnel and any shafts. It may be brick, concrete or stone masonry; cast iron, concrete or steel segments; or other materials; or the exposed rock face where no other facing is provided.

Shaft

An opening between the tunnel and ground level usually provided to ventilate or to give access during construction or afterwards. The term excludes shallow openings in covered ways which can be examined as part of the tunnel.

The Engineer

The Railtrack manager having appropriate qualifications and experience and with delegated responsibility for ensuring the safety and fitness for purpose of tunnels within a defined area. (This person would normally be the RDN as defined in Group Standard GC/RT5121).

The Examiner

The person charged with being present during the examination, to observe the structure personally, to oversee the testing and the recording of defects, and to certify that the examination has been completely and conscientiously carried out.

4 GENERAL ASPECTS

The examination of tunnels differs considerably from other structures in that:-

- access and visibility is restricted unless special arrangements are made and this usually requires the priority and extent of remedial work to be decided during the detailed examination.
- they are not usually subject to live loading, unless they have shallow cover, and thus their fitness for purpose is strongly reflected by their condition.
- they are affected by geological ground movement (often at some depth), and this is not easily detected on the surface.
- as it is not usually practicable to calculate the stresses in the lining nor the surrounding ground, condition assumes a greater importance.

The frequency of examination and the competence of the Examiner are modified to suit these differences.

EXAMINATION OF TUNNELS

5 REGISTER OF TUNNELS

Each Engineer must maintain a register of the tunnels for which he is responsible. The register must contain the following details:-

- the location and name of the tunnel
- the mileage of all ends
- the frequency of examination
- the dates when detailed and visual examinations have occurred
- whether the tunnel is of “special” or “sensitive structure” status
- location of all known or suspected shafts whether open or filled

6 FREQUENCY OF EXAMINATION

6.1 Examinations must be carried out at the following maximum intervals:-

- Routine observation - weekly. Where track inspections are carried out at greater intervals, this may be extended to a maximum interval of three weeks with the Engineer's agreement.
- Visual examinations - One year for special structures and shafts. Where the track is closed, disused or removed and routine observation does not take place, a visual examination must be done at six month intervals. Particular care must be taken with closed tunnels which run alongside, over or under operational tunnels.
- Detailed examinations - One year except for:-
 - tunnels designated as “special structures” for which see section 6.2
 - shafts where the maximum interval must not exceed 6 years.

6.2 Special Structures

The decision to designate a tunnel as a special structure must be approved in writing by the Engineer, who must record this fact together with his reasons, the frequencies of examination and the period for which the designation is valid. In making the decision, he must ensure the following conditions are met:-

- the tunnel must be: through ground which is known to be stable; lined with sound material which has not shown significant deterioration between examinations; and free from running water as defined in section 9.4. and unlikely to be subject to frost action on the lining.
- The interval between detailed examinations must not exceed two years.
- A visual examination must be done midway between detailed examinations.
- A Railtrack Civil Engineer should be present during the detailed examination if deterioration is suspected which may affect the special structure status.
- Tunnel shafts must not be designated as special structures.

6.3 Sensitive Structures

These are structures where the rate of deterioration is unpredictable or exceptionally rapid. So far as tunnels are concerned this status is likely to be needed where:-