Letter of instruction

Information for users

The following document: NR/L3/CIV/006/4B Issue 1 has had changes made to it, most recently, with effect from 23 February 2015.

Instructions for use

It is essential that you first read and understand each letter of instruction pertaining to the standard before proceeding to use the standard. You must then apply the requirements of each letter to the standard.

NR/BS/LI/348	Issue 1	23 February 2015	Proceed to letter ▶
NR/L3/CIV/006/4B	Issue 1	05 September 2009	Proceed to standard ▶

For further information, please contact:

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Reference	**NR/L3/CIV/0006/4B**
Issue	1
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Level 3

Handbook for the examination of Structures Part 4B: Unlined Tunnels

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1 Purpose

The purpose of this part of the handbook is to define the particular requirements and recommendations for examination of unlined Tunnels.

2 Scope

This part of the handbook applies to all Network Rail owned or managed and Shared unlined Tunnels that have been assigned to Structure Category C in accordance with NR/L1/CIV/032: *Managing existing Structures*[1].

Non operational Tunnels shall be subject to Visual Examinations only unless otherwise required by the Structure Manager.

3 Competency

In addition to **Part 1B**:

- a person who carries out an UTGRA shall be a competent chartered geotechnical engineer with relevant experience, engineering geologist or rock mechanics engineer;
- the Lead Examiner who carries out an Unlined Tunnel Examination (UTE) shall be a chartered engineer in a relevant discipline, or otherwise subject to the acceptance of the Structure Manager, and shall satisfy the relevant competence requirements of NR/SP/CTM/017: *Competence and training in Civil Engineering*;
- the appointment of an Examining Engineer, Lead Examiner and Examiner for an unlined Tunnel shall be subject to the acceptance of the Structure Manager.

Notwithstanding the above, the observation of the surface ground along the line of the Tunnel may be undertaken by a person who has not been assessed as competent in accordance with NR/SP/CTM/017 or who is not a Chartered Engineer, providing the Structure Manager is satisfied that the person has the necessary skill and experience to undertake the task.

4 Preparations for an examination

Further to the general requirements for preparation for a Detailed Examination in **Part 1D**, information to be obtained to enable each Unlined Tunnel Examination and Unlined Shaft Examination to be completed effectively may include:

[1] This provides information on managing Structures for all Structure Categories.

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- the nature, location and extent of any geotechnical risks identified in the UTGRA;
- the location of any known Shafts;
- details of repairs previously proposed;
- details of any repairs carried out since the previous Detailed Examination;
- the geology of the ground through which the Tunnel passes;
- the location of surface and underground Watercourses;
- the extent and severity of water ingress (see **Part 4D**);
- the method used to mark distances and Shaft locations within the Tunnel.

Requirements for the removal of water management sheeting for the examination and reinstatement including replacement of defective fixings shall be agreed with the Structure Manager.

5 Detailed Examinations

5.1 Scope

Further to the scope of Detailed Examinations specified in **Part 1B**, all Network Rail owned or managed, and Shared operational unlined Tunnels including Shafts shall be subject to Unlined Tunnel Examinations.

Portals shall be examined as part of the Tunnel, unless the Structure Manager has identified that the Portal(s) is(are) to be examined separately.

The Unlined Tunnel Examination of a Tunnel shall include a Visual Examination of a Portal if the Portal is subject to a separate Detailed Examination.

Where practical the direction from which each Unlined Tunnel Examination is undertaken shall vary from examination to examination.

5.2 Unlined Tunnel Examination (UTE)

The purpose of an Unlined Tunnel Examination (UTE) is to monitor and record changes in the geological feature identified in an UTGRA (See Clause **7**).

Unlined Tunnels shall receive an Unlined Tunnel Examination.

UTE's shall comprise an examination generally within touching distance of the exposed rock surfaces including recording of the following changes when applicable:

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