## Information for users

The following document: NR/L3/CIV/006/1A Issue 3 has had changes made to it, most recently, with effect from 20 June 2011.

## 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/167 | Issue 3 | Expired September 2012 | Proceed to letter ▶ |
| NR/L3/CIV/006/1A | Issue 3 | 05 June 2010 | Proceed to standard ▶ |

For further information, please contact:

**IHS Customer Support**

Please click here to proceed to the Network Rail Standards' 'Support Contacts' for their latest contact details.

Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS
Full document details: NR NR-L3-CIV-006-01A ISSUE 3 2010

Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/27/2016 21:19:03 MDT

| | |
|---|---|
| Reference | **NR/L1/CIV/006/1A** |
| Issue | 3 |
| Publication date | 5th June 2010 |
| Compliance date | 4th September 2010 |

# Level 3

# Handbook for the examination of Structures Part 1A: Purpose, scope and definitions

Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS
Full document details: NR NR-L3-CIV-006-01A ISSUE 3 2010

Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/27/2016 21:19:03 MDT

| | |
|---|---|
| Reference | **NR/L3/CIV/006/1A** |
| Issue | 3 |
| Publication date | 5th June 2010 |
| Compliance date | 4th September 2010 |

This page is intentionally blank.



Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS
Full document details: NR NR-L3-CIV-006-01A ISSUE 3 2010

Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/27/2016 21:19:03 MDT

## Contents


| | | |
|---|---|---|
| 1 | Purpose | 4 |
| 2 | Scope | 4 |
| 3 | Definitions | 4 |




Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS

Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/27/2016 21:19:03 MDT

Full document details: NR NR-L3-CIV-006-01A ISSUE 3 2010

## 1 Purpose

The purpose of this handbook is to define the requirements and provide recommendations for:

- examination of Structures;
- recording and reporting the findings of an examination;
- identifying actions and remedial works that need to be undertaken so that there is no unacceptable risk to the safety or performance of a Structure as a result of its condition.

This handbook contains requirements supplementary to those given in NR/L1/CIV/032: *Managing existing Structures*[1].

## 2 Scope

This handbook applies to Network Rail owned or managed Structures, Outside Party Structures and Shared Structures.

This handbook does not apply to:

1. reservoirs that can retain greater than 25,000 cubic metres of water, and which are examined in accordance with the Reservoir Act (1975);
2. Undertrack Crossings.

A management strategy for a Major Structure should adhere to the principles of this handbook.

This handbook shall apply to Structures within freight depots when an examination is specifically required by the Structure Manager.

Health and safety requirements applicable to operational and occupational safety and emergency evacuation requirements are outside the scope of this handbook.

This handbook does not define the organisational and commercial responsibilities for delivering the requirements and recommendations of this handbook.

## 3 Definitions

**Accommodation Bridge**
A Bridge provided to maintain access to lands that were severed by the construction of the railway and which can legally be only used by the successor to the original landowner whose land was severed; however, subsequent public footpath and bridle rights may have been acquired by others.

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



Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS
Full document details: NR NR-L3-CIV-006-01A ISSUE 3 2010

Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/27/2016 21:19:03 MDT

**Additional Examination**
An inspection, appraisal or monitoring of a specific part, component or defect, or of the condition or movement of a Structure, that is supplementary to the programmed Visual and Detailed Examinations for the Structure.

This includes Rapid Response Examinations and Unlined Tunnel Geotechnical Risk Assessments.

**Adit**
An opening from the Tunnel to the ground surface that is either horizontal or on an incline which was constructed to permit access by walking.

**Ancillary Structure**
A Structure whose form of construction is categorised within Structure Category G (See NR/L1/CIV/032).

The term includes Equipment Support Structures.

**Approach Earthwork**
An Earthwork in the ownership of Network Rail, which allow roads, footpaths, canals, railways or other transport routes, to pass over or beneath the railway.

**ARMS**
Asbestos Risk Management System.

ARMS is a database in which asbestos surveys for Operational Property are recorded.

**Assessed Category**
The categorisation of load capacity utilisation of the critical element of a Structure.

**Assessment**
The determination or confirmation of the safe load-bearing capacity of a Structure.

The term excludes the assessment of Earthworks.

**BCMI**
Bridge Condition Marking Index (previously SCMI: Structure Condition Marking Index)

**Blind Shaft**
A Shaft that has been sealed, capped or filled in such a way as to render the position of the Shaft discernible from the ground surface or from within the Bore.

**Bore (of a Tunnel)**
The part of the Tunnel between the Portals. The term includes refuges and the voússoirs of any Cross Passage, Adits or Headings that originate from the Bore. A Bore may contain one or more tracks.



Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS
Full document details: NR NR-L3-CIV-006-01A ISSUE 3 2010

Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/27/2016 21:19:03 MDT

Each Bore has a unique examination identification number in CARRS.

A Bore is subdivided into elements termed Tunnel sections whose dimensions are delineated by section markers (normally at 20 metres or 1 chain centres).

**Bridge**
A Structure of one or more Spans greater than or equal to 1800mm, whose prime purpose is usually to carry traffic or services over an obstruction or gap.

The term includes overline Bridges, underline Bridges and Footbridges, but excludes Culverts.

**Bridge Strike**
An Incident in which a road vehicle or its load, or a waterborne vessel or its load, impacts with the fabric of a Bridge.

**Bridge Strike Examiner (BSE)**
A person who is competent in accordance with the relevant requirements of NR/L2/CTM/017: *Competence and training in Civil Engineering* unit BSE to authorise the movement of trains following a Bridge Strike when the damage exceeds the defined limits applicable to a Bridge Strike Nominee.

**Bridge Strike Nominee (BSN)**
A person who is competent in accordance with the relevant requirements of NR/L2/CTM/017: *Competence and training in Civil Engineering* unit BSN to authorise the movement of trains following a Bridge Strike when the damage is within defined limits.

**Building**
A permanent fixed roofed manned or unmanned construction other than a Train Shed or Canopy, into which people can go and within which goods may be stored or within which plant or equipment may be installed.

The term includes station accommodation and facilities, operational control rooms, signal boxes, electrical control rooms, integrated electrical control centres (IECCs), relay rooms, sub-stations, gate boxes/houses, and relocatable equipment buildings (REBs).

**Building Inspector**
The person responsible for carrying out an inspection of a Building.

**Building Manager**
The person appointed by Network Rail responsible for the safe management of a Building or a group of Buildings.

**Building Surveyor**
The person responsible for managing the inspection process for a Building.



Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS
Full document details: NR NR-L3-CIV-006-01A ISSUE 3 2010

Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/27/2016 21:19:03 MDT

**Canopy**
A roof-like cover that provides shelter, under which people can go or goods may be stored. A Canopy may be free standing or supported by an adjacent Structure. The term does not include Train Sheds.

**CARRS**
Civil's Asset Register and electronic Reporting System

**Catch Wall**
A Free standing wall or fence constructed at the toe of a Cutting to prevent debris falling onto the track(s).

**Coastal, Estuarine and River Defence**
A Structure that protects railway infrastructure against erosion or flooding by tidal waters or non tidal waters.

The term includes protection works (such as training walls), which protect land against erosion and encroachment by such waters and which perform no flood defence role; and defences, which protect against flooding or attack by such waters.

'Coastal' and 'Estuarine' are terms defined by Ordnance Survey grid references in the Coastal Protection Act (1949).

**Controlling Signaller**
A person appointed by Network Rail with responsibility for controlling train movements over or under a Bridge following a Bridge Strike.

**Cross Passage**
An opening between Tunnel Bores.

**Culvert**
A Structure with a Span or diameter greater than 450mm but less than 1800mm whose primary purpose is usually to permit a Watercourse, open channel drainage system or services to pass under or adjacent to a railway, road or other Network Rail infrastructure.

**Cutting**
An excavation that allows railway lines to pass through the surrounding ground at an acceptable level and gradient. For a rock Cutting the term includes local support, such as dentition, bolting, and netting.

The height of a Cutting, at a particular section, shall be taken to be the difference in level of its crest and the lowest level of the cess.



--`,,,,,,`,,,,,,`,,`,,,,,,,,`-`-`,,`,,`,`,,`---

Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS
Full document details: NR NR-L3-CIV-006-01A ISSUE 3 2010

Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/27/2016 21:19:03 MDT

**Detailed Examination**
A close examination of all accessible parts of a Structure of sufficient quality to produce a report that includes a record of the condition of all parts of the Structure and recommendations for remedial action and other information that when evaluated will permit Network Rail to be able to maintain the safety and performance of the Structure.

**DOO**
Driver only operation

**Earthwork**
A Cutting, Embankment, or Natural Slope.

The term excludes the track formation, blanketing and ballast etc. and also geosynthetics that form an integral part of the track supporting system. Generally an Earthwork comprises either the Up or Down side of the railway, with the two sides being separated by an imaginary line along the centre of the track(s).

**ELR**
Engineer's Line Reference

**Embankment**
A construction that allows railway lines to pass at an acceptable level and gradient over low-lying ground or ground that is susceptible to flooding.

The height of an Embankment, at a particular section, shall be taken to be the difference in level of its toe and the top of a sleeper.

**EMGTPA**
Equivalent Million Gross Tonnes Per Annum,

**Enhanced Permissible Speed**
The permitted speed (higher than the Permissible Speed) over a section of line that applies to a specific type of train operating at cant deficiencies in excess of those permitted at the Permissible Speed as shown in the Sectional Appendix.



Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS
Full document details: NR NR-L3-CIV-006-01A ISSUE 3 2010

Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/27/2016 21:19:03 MDT

**ESS**
Equipment Support Structure

A post, pole, stanchion, mast, tower, cantilever, portal, gantry, or platform, which supports equipment such as signals, overhead line electrification equipment (OLE), CCTV and DOO cameras or screens, radio, telecommunications, hoists or drives, lighting, cameras, mirrors, location boxes, feeder stations or equipment boxes. The term generally excludes posts or poles less than 1 metre high, but includes posts less that 1 metre long fixed to the crown of Tunnels which support OLE or GSM-R aerials at Tunnel Portals[2].

**Evaluation**
An appraisal of all relevant information regarding the stability, condition, use and location of a Structure to determine the actions required to maintain acceptable levels of safety, serviceability and performance.

**Examination Group**
A Structure or part of a Structure or a series of Structures subject to a single Examination Request.

**Examination Request**
Notification of when an examination of an Examination Group is required, and the type of examination required.

**Examination Summary**
Key data from each examination report submitted against an Examination Request.

**Examiner**
The person responsible for carrying out an examination of a Structure or Earthwork.

**Examining Engineer**
The person responsible for managing the examination process for a Structure.

**Factor Values**
A set of digits used in OPAS to state the remaining life, fabric and railway effect, risk priority and risk effect for Operational Property assets.

**Failure**
An unplanned situation that arises when a system or process, item of equipment, asset (or an element of one) is no longer capable of performing one or more of its intended functions.

**Footbridge**
A Structure used to give pedestrians access by crossing over tracks, a concourse or a road, and includes any associated steps, stairs or ramps. Footbridges include high level walkways between Buildings.

---

[2] For OLE, the ESS is the main steelwork as defined in Network Rail Standard NR/L2/ELP/21087: *Specification of maintenance frequency and defect prioritisation of 25kV overhead line electrification equipment*.



Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS
Full document details: NR NR-L3-CIV-006-01A ISSUE 3 2010

Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/27/2016 21:19:03 MDT

**FTN**
Fixed Telecom Network

**Generic Questions Sets (GQS)**
Within OPAS a series of data questions that are required to be answered to enable examination to be uploaded.

**GPS**
Global Positioning System

The GPS coordinates in CARRS is recorded using 12 figures.

**GSM-R**
Global System for Mobile Communication – Railway

**Hazard**
The potential to do harm: this includes ill health and injury; damage to property, plant, products or the environment; production losses; and increased liability.

**Heading**
An underground Structure, usually horizontal, connected to a Tunnel which is not directly associated with the railway operations within the Tunnel that has been constructed for a secondary purpose which contributes to maintaining operations within the Tunnel.

Each Heading has a unique examination identification number in CARRS.

**Hidden Shaft**
A Shaft that has been sealed, capped or filled in such a way as to render the position of the Shaft indiscernible, and the position of which has been proven.

**Highway Authority**
The organisation responsible for the maintenance of public highways and the provision of road traffic signs in a geographical area in England or Wales.

**Incident**
An unplanned, uncontrolled event that causes an accident or increases the likelihood of one occurring.

**Inspection for Assessment**
An examination and survey of a Structure to determine data (form and details of construction, changes in section properties, damage, use and applied loading etc.) or confirm the validity of information in existing records to be used in an Assessment.

**Inspection Pit**
A sub surface Structure with step or ladder access in LMDs or MDUs which provides safe access to allow staff to work beneath rail or road vehicles while standing.

This is not a basement or sub basement or sub floor of a Building.



Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS
Full document details: NR NR-L3-CIV-006-01A ISSUE 3 2010

Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/27/2016 21:19:03 MDT

**Lead Examiner**
The person responsible for directing on site and reporting an examination of a Tunnel.

**Line of Route**
One or more tracks on a single ELR between defined mileages. This includes stations and depots in Operational Property.

**Lineside Building**
A Building not associated with a station, LMD, MDU: e.g. signal boxes, relay rooms and prefabricated relocatable equipment buildings (REBs) etc.

**Location Reference Drawing (LRD)**
A drawing or diagram outlining the Site with the correct Location reference number attached to the relevant shaded areas. The codes and shading which must be used have been predefined.

**Longitudinal Timber**
A timber bearer that lies parallel to and supports a rail, base plates and chairs.

**LMD**
Light Maintenance Depot

Train maintenance facilities leased by Network Rail to depot facility owners for fixed periods and for which responsibility for maintenance of the assets are detailed in lease documents.

**Low Headroom Bridge**
An underline Bridge over a road that may have road traffic signs defining the permitted vehicle height (nominally headroom of 5.03 metres (16'-6") or less).

**Major Structure**
A Structure for which a bespoke Management Strategy[3] is necessary.

Structures covered by this term may include Bridges with unique forms of construction or large numbers of Spans, Tunnels, Train Sheds and Coastal, Estuarine and River Defences.

**MDU**
Maintenance Delivery Unit

The group of Buildings used by Network Rail's maintenance staff.

**Minor Retaining Wall**
A Retaining Wall that does not support vehicular loading and that retains material either to a height of 600 mm or less or to a height of 1 metre or less provided that it is less than 5 metres long.

[3] This need may arise from the size, complexity, location, design, construction or use of the structure, or because a particular regime, technique, knowledge or competency is required to examine or maintain the structure, or for its Assessment.



Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS
Full document details: NR NR-L3-CIV-006-01A ISSUE 3 2010

Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/27/2016 21:19:03 MDT

**Natural Slope**
Sloping ground that has been formed by natural processes.

**Next Compliance Date**
The date of the next Detailed Examination recorded in CARRS based on the date of the last Detailed Examination plus the examination interval.

**Obstruction**
Cladding, lining, screening, advertising hoarding, fixtures, fittings, grilles, netting, furnishings, plant, machinery, equipment, services or other attachments, etc. that may obstruct an examination of a Structure.

The term includes water management sheeting in Tunnels.

**Occupation Bridge**
A Bridge carrying a private road which generally pre-existed the railway and which can only be used by authorised users – typically the successors of the original users of the road and their invitees, although subsequent public footpath and bridleway rights may have been acquired by other users.

**OLE**
Overhead Line (Electrification) Equipment.

**OPAS**
Operational Property Asset System

**Open Shaft**
A Shaft that has not been sealed, capped or filled.

**Operational Property**
Structures and Buildings within the limits of a station lease area, LMD lease area, MDU property boundary and Lineside Buildings. The term excludes Retail Units.

**Operational Property Structure**
A Structure located within Operational Property.

The term includes but is not limited to:

- Platform Canopies and supporting elements;
- Footbridges;
- multi-storey and sub-surface Car Parks;
- Platforms;
- Retaining Walls;



Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS
Full document details: NR NR-L3-CIV-006-01A ISSUE 3 2010

Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/27/2016 21:19:03 MDT