

Your attention is drawn to Interim Advice Notes 7 and 8, which have been issued by the Highways Agency for use on trunk roads and motorways in England. Click on the relevant number to view that Interim Advice Note.

**VOLUME 3 HIGHWAY
STRUCTURES:
INSPECTION AND
MAINTENANCE**

SECTION 1 INSPECTION

PART 4

BD 63/94

**INSPECTION OF HIGHWAY
STRUCTURES**

SUMMARY

This Standard sets out the Overseeing Organisations requirements for inspection of its Highway Structures

INSTRUCTIONS FOR USE

This is a new document to be incorporated into the Manual.

1. Insert BD 63/94 into Volume 3 Section 1.
2. Remove contents page dated November 1994 and insert page dated December 1994.
3. Archive this sheet as appropriate.



THE HIGHWAYS AGENCY

BD 63/94



THE SCOTTISH OFFICE INDUSTRY DEPARTMENT



THE WELSH OFFICE
Y SWYDDFA GYMREIG



THE DEPARTMENT OF THE ENVIRONMENT FOR
NORTHERN IRELAND

Inspection of Highway Structures

Summary: This Standard sets out the Overseeing Organisations requirements for inspection of its Highway Structures.

REGISTRATION OF AMENDMENTS

Amend No	Page No	Signature & Date of incorporation of amendments	Amend No	Page No	Signature & Date of incorporation of amendments

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VOLUME 3	HIGHWAY STRUCTURES: INSPECTION AND MAINTENANCE
SECTION 1	INSPECTION

PART 4

BD 63/94

INSPECTION OF HIGHWAY STRUCTURES

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1. INTRODUCTION

1.1 This Standard shall be read in conjunction with Advice Note BA 63 (DMRB 3.1.5) - Inspection of Highway Structures and Standard BD 62 (DMRB 3.2.1) - As Built, Operational and Maintenance Records for Highway Structures.

1.2 This Standard, together with BA 63 (DMRB 3.1.5) and BD 62 (DMRB 3.2.1) supersede TRMM 2/88 in England, SB 1/78 in Scotland and WOTRMM 2/88 in Wales. For use in Northern Ireland, this Standard should be read in conjunction with the Bridge Inspection Manual which forms part of the Bridge Management and Maintenance I.T. System.

1.3 This Standard describes the inspection and reporting requirements for the Overseeing Organisations' Highway Structures, other than Road Tunnels. For use of this Standard in Wales the term Overseeing Organisation should be replaced with Welsh Office Highways Directorate.

1.4 For use of this Standard in Northern Ireland the terms Overseeing Organisation and Maintaining Agent (MA) should be replaced by Roads Service Headquarters and Roads Service Divisional Offices respectively.

Implementation

1.5 This Standard shall be used forthwith for the inspection of Highway Structures. The programme for inspection of structures shall be agreed between MA's and Overseeing Organisations.

Inspection Requirements

1.6 Specific inspection requirements for the four Overseeing Organisations of England, Scotland, Wales, and Northern Ireland are given in Appendices A to D respectively of this Standard.

Scope

1.7 This Standard applies to the following structures over, under or alongside the Overseeing Organisation's roads (this includes footbridges and underpasses), except Road Tunnels or privately owned structures

- a. All structures greater than or equal to 3 metres span.
- b. Culverts 1.8 to 3 metres span, or multi-cell culverts where the cumulative span is greater than or equal to 5 metres, if their cover to road surface is less than 1 metre. In Scotland the minimum culvert size is 2 metres.
- c. Corrugated metal culverts 0.9 metres or more in span.
- d. Pedestrian subways.
- e. Retaining walls where the level of the fill at the back of the wall is greater than 1.5 metres above the finished ground level in front of the wall.
- f. High masts ($\geq 20\text{m}$) for lighting, masts for television cameras, catenary lighting systems and supporting structures for electrical equipment.
- g. Structural aspects of sign/signal gantries.

Note: Structures which are marginally outside these dimensions and especially those which are subject to hydraulic action may be included within the scope of this document by agreement between the MA and the Overseeing Organisation.

2. MAINTENANCE INSPECTIONS

Introduction

2.1 Inspections are to be carried out by the MA to safeguard the public and to enable the maintenance of the stock of structures to be planned on a rational basis in a systematic manner.

2.2 There are four main categories of maintenance inspection which are described in para 2.3 to 2.10 below.

Superficial Inspection

2.3 A cursory check for obvious deficiencies which might lead to accidents or high maintenance costs. MA's shall encourage their staff to be vigilant at all times and report anything needing urgent attention in any highway structure, e.g. impact damage to superstructures, bridge supports or parapets, flood damage, insecure expansion joint plates, etc.

Should any Superficial Inspection by the MA reveal a possible defect, or should a hazard to road, rail or other users as a result of damage to the structure be noted, the MA should immediately take such action as is required to safeguard the Public. The Overseeing Organisation and the owner of the structure shall be informed without delay. Privately owned structures are outside the scope in this document. See paragraph 1.7.

General Inspection

2.4 A visual examination of representative parts of the structure.

2.5 The inspection shall also include any adjacent earthworks or waterways, damage or other changes to which could affect the stability of the structure. River banks in the vicinity of the structure shall be examined for evidence of scour or for conditions, such as the deposition of debris, which could lead to scour.

2.6 Inspections are required not more than two years after the last General or Principal Inspection.

Principal Inspection

2.7 A close examination of all inspectable parts of the structure and adjacent earthworks or waterways as described in 2.5 above.

2.8 Principal Inspections shall be carried out at intervals as agreed with the Overseeing Organisation which would normally not exceed six years, but exceptionally may be up to ten years. See also paragraph 3.7 in this document.

Special Inspection

2.9 A close examination of the particular area or defect causing concern. It may be necessary to employ specialist inspection firms and equipment.

2.10 A Special Inspection shall be carried out:

- a. To investigate a specific problem, either found during inspection or already discovered on other similar structures which is felt to need further detailed examination.
- b. For cast iron structures at intervals not exceeding six months.
- c. For structures strengthened by the use of bonded plates, at intervals of 6 months for the first 2 years and thereafter in accordance with the intervals prescribed in the maintenance manual.
- d. For structures which have weight restrictions, or other forms of restriction to reduce traffic loading, at intervals not exceeding six months.
- e. When a structure has to carry an abnormal heavy load before, during and after the passage of the load if either:

an assessment has indicated that the margin of safety is below that which would be provided for a design to current standards, or, similar loads are not known to have been carried.
- f. In areas of mineral extraction, when subsidence occurs.
- g. If settlement is observed greater than that allowed for in the design, its

- cause shall be identified and steps taken to monitor the rate of settlement and to assess the urgency of remedial measures.
- h. To river bridge foundations after flooding. Where probing indicates the possibility of scour, further underwater inspection shall be carried out.
 - j. After a major accident, chemical spillage or fire adjacent to a structure, to investigate possible structural damage.
 - k. For permanent access gantries prior to use and at intervals in accordance with Mechanical, Electrical and Structural Statutory requirements. Specialist firms may be needed for this purpose.
 - l. Hoists, winches and associated cables should be inspected in accordance with the relevant chapters of the Factories Act.
 - m. To Post Tensioned Concrete bridges as described in BA 50 (DRMB 3.1.3):
Post Tensioned Concrete Bridges:
Planning, Organisation and Methods
for carrying out Special Inspections.

Underwater Inspections

2.11 In addition to 2.10 h., a programme of inspections of structures where the foundations and parts of the structures are below water level is to be undertaken to record the condition below water level, the existing stream bed profiles and any evidence of scour. (The programme for inspections shall be agreed with the Overseeing Organisation).

Assessment

2.12 If, as a result of any inspection, the load carrying capacity of the bridge is in question, the bridge is to be assessed in accordance with the appropriate assessment standard.

3. ACCEPTANCE INSPECTIONS

New Structures

3.1 The representatives of the MA, the Engineer and the Overseeing Organisation shall carry out a Joint Inspection of a new structure about one month before the issue of the Certificate of Completion or opening of the structure to traffic. The purpose of this inspection will be to identify and record the work that is still outstanding under the Contract and to agree which items of outstanding work need to be completed before the MA takes over maintenance responsibility.

3.2 It is essential that any permanent access provisions and features affecting general safety and security of the structure are discussed in the greatest possible detail at handover and all the necessary records, maintenance and operating manuals are supplied to the MA before the MA takes over responsibility for the maintenance of a structure.

3.3 The date on which the MA takes over responsibility for the maintenance of the structure shall be agreed (and recorded in the Structure File), between the MA and Overseeing Organisation.

3.4 During the Period of Maintenance the MA will not be responsible for the repair of defects which are the Contractor's responsibility under the Contract, but shall report defects to the Overseeing Organisation.

3.5 The Representatives of the MA, the Engineer and the Overseeing Organisation shall attend a further Joint Inspection about one month before the end of the Period of Maintenance to record whether all the outstanding work previously identified has been completed.

3.6 Unless otherwise agreed by the Overseeing Organisation, new structures shall have an initial Principal Inspection by the MA's making use (where possible) of the same access and traffic management provisions for the Joint Inspection at the end of the Maintenance Period. In Scotland a Joint Inspection is required only at the end of the Maintenance Period, which with records, shall constitute the equivalent of an initial Principal Inspection.

3.7 A Principal Inspection shall be undertaken four to five years after the issuing of the Maintenance Certificate to ensure that latent defects are recorded and

appropriate action is taken within the period of Limited Liability. (In Scotland, within the Prescriptive Period.)

Existing Structures

3.8 A Principal Inspection shall be carried out before a MA takes responsibility for a structure already in service, unless there are suitable records already available.

3.9 The requirements of 3.2 and 3.3 are also applicable to taking over existing structures.

4. SAFETY

Introduction

4.1 The provisions of the general statutory safety requirements and those of the relevant Authorities must be observed at all times. These include the Health and Safety at Work etc Act 1974 and the Factories Act 1961, with its associated Regulations. The Overseeing Organisations requirements for work on their properties are described in the Department of Transport Traffic Signs Manual. British Rail also has special requirements for work on or near running lines.

Hoists, winches and associated cables shall be inspected in accordance with the requirements of the relevant orders under the Factories Act.

It is also a legal requirement that the provisions of the Approved Codes of Practice be observed:

- a. Management of Health and Safety at Work Regulations 1992
- b. Personal Protective Equipment at Work Regulations 1992 shall be observed.

Confined Spaces

4.2 Procedures for Inspection are as follows:

- a. MA's shall carry out a risk assessment and agree with the Overseeing Organisation which structures constitute confined space hazards.
- b. A list shall be compiled of the agreed structures, by the MAs together with method statements for entry into each structure (including emergency procedures), and all parties shall be made aware of these requirements.
- c. Appropriate Personal Protective Equipment and Safety Equipment shall be provided for staff to suit the problems of each structure; including communication equipment to be provided where necessary. Method statements shall be prepared describing procedures. Staff shall

familiarise themselves with this equipment prior to carrying out an inspection. Periodic checks shall be made to ensure the equipment is functioning correctly.

- d. Where permits to work are required by the MA and the Overseeing Organisation, only those staff with permits to work shall be allowed to enter the structure.
- e. Training shall be provided for staff who will enter confined spaces.
- f. All staff who will enter confined spaces (especially long culverts) shall be issued with Leptospirosis (Weils Disease) Card or to be issued with HSE Leaflet IND(6)84L, 7/91C300.

Toxic Mould

4.3 Wherever mould growth is encountered in a box girder, it shall be treated as toxic, and all inspection work shall cease until the level of toxicity has been established as being within safe limits. Advice on safety shall be sought from the appropriate Health and Safety Executive (see Appendices). The Overseeing Organisation shall be kept informed. Until it has been confirmed that no toxic spores are present, only work that is essential for the safety of the structure shall be undertaken in the vicinity of the mould, and suitable respirators shall be worn.

Railway

4.4 Railway Authorities impose strict safety standards for all persons working on or near railway tracks. Inspection Personnel shall only enter on to Railway property when accompanied by a Railway Official. General Inspections may only require a lookoutman, but for Principal Inspections where ladders or hoists are to be used, a possession of the line and an electrical isolation where applicable, will be required with all necessary railway staff in attendance. Inspection shall be arranged as far in advance as possible, so as to comply with Railway Authorities notice requirements and preferably to coincide with their own work. All staff to comply with BR Requirements which for England are given in "SITE

ACCESS AUTHORITY GUIDELINES". APRIL 1992.

Diving Operations for Underwater Inspections

4.5 All diving operations in the UK are covered by the 1974 Health and Safety at Work etc. Act (HASAWA) and SI 399 Diving Operations at Work Act 1981. All divers involved in commercial operations are required to hold valid medical certificates, a completed log book and a Health and Safety approved diving qualification. The Statutory Instrument lays down four main categories of diver qualifications.

WITHDRAWN

5. REFERENCES

1. Health and Safety at Work Act etc. 1974.
2. Management of Health and Safety at Work Regulations 1992.
3. Personal Protective Equipment at Work Regulations 1992.
4. SI 399 Diving Operations at Work Act 1991.
5. HSE Leaflet IND(6)84L, 7/91C 300.
6. Traffic Signs Manual (HMSO).
7. Factories Act 1961.
8. BR Document - Site Access Authority Guidelines. April 1992.
9. Design Manual for Roads and Bridges Vol 3: Section 1 Inspection.

BA 63 - Inspection of Highway Structures.
(DMRB 3.1.5).

BA 50 - Post Tensioned Concrete Bridges,
Planning, Organisation and Methods for carrying
out Special Inspections. (DMRB 3.1.3).

Volume 3 Section 2 - Maintenance
BD 62 - As Built, Operational and Maintenance
Records for Highway Structures.
(DMRB 3.2.1).

6. ENQUIRIES

All technical enquiries or comments on this Standard should be sent in writing as appropriate to:

The Chief Highway Engineer
The Highways Agency
St Christopher House
Southwark Street
London SE1 0TE

T A ROCHESTER
Chief Highway Engineer

The Deputy Chief Engineer
The Scottish Office Industry Department
Roads Directorate
New St Andrew's House
Edinburgh EH1 3TG

J INNES
Deputy Chief Engineer

The Director of Highways
Welsh Office
Y Swyddfa Gymreig
Government Buildings
Ty Glas Road
Llanishen
Cardiff CF4 5PL

K J THOMAS
Director of Highways

Chief Engineer - Roads Service
Department of the Environment for
Northern Ireland
Roads Service Headquarters
Clarence Court
10-18 Adelaide Street
Belfast BT2 8GB

W J MCCOUBREY
Chief Engineer - Roads Service

SPECIAL REQUIREMENTS : ENGLAND

A1 Introduction

A1.1 This Standard, together with BA 63 (DMRB 3.1.5) and BD 62 (DMRB 3.2.1) supersede TRMM2/88 in England.

A1.2 The requirements for Maintaining Agents (MA's) to keep and update records for all Highway Structures for which they are responsible and a list of the records with their distribution is given in BD 62 (DMRB 3.2.1).

A2 Inspection Reports

A2.1 General Inspection

A summary of the findings of a general inspection shall be reported on Form BE11/94.

A2.2 Principal Inspection

The report shall include a Form ROADS 277 (Rev. 4/94) giving all details required of the structure, together with a completed database input sheet Form BE 13/94. A written report of the observations, findings, causes and recommended remedies shall be submitted to the Regional Office (RO) and summarised on Form BE 11/94.

A2.3 Special Inspections

Where possible, findings summarised on Form BE 11/94.

A2.4 Safety

The appropriate Health and Safety Executive in ENGLAND is:

The Health and Safety Executive
Broad Lane
Sheffield
S3 7HQ

Telephone Number: 0742 892000

SPECIAL REQUIREMENTS : SCOTLAND

B1 Introduction

The appropriate Health and Safety Executive offices in SCOTLAND are:-

1. Scotland East Area
Belford House
59 Belford Road
Edinburgh
EH4 3UE

Telephone Number: 031-247 2000
2. Scotland West Area
375 West George Street
Glasgow
G2 4LW

Telephone Number: 041 - 275 3000

B.2 SPECIAL REQUIREMENTS IN SCOTLAND

1. Safety

Any instances of structural deterioration or behaviour likely to indicate a reduction in carrying capacity or safety shall be reported at once to Bridges Section of the Roads Directorate in The Scottish Office Industry Department.

2. General Inspections

The Maintaining Agent (MA) shall ensure that the date of the last general inspection is recorded in the Trunk Road Bridges Database (TRBDB).

3. Principal Inspections

3.1 When carrying out a principal inspection the MA shall check the information held in TRBDB. Input of missing data and correction of errors in the Department's TRBDB should be carried out during principal inspections. By this means a complete and reliable record of all structures will be ensured over future years. Assistance with this task is provided within TRBDB by the provision of a facility to print a full text inventory report on any structure. These reports should be called up and studied prior to and during principal inspections so that errors and

omissions can be spotted and rectified. Confidence in TRBDB relies on full and accurate date and responsibility for achieving this rests with personnel carrying out principal inspections.

3.2 The scope of principal inspections shall be extended to include concrete investigations for which Notes for Guidance are available from Bridges Section on request. The findings of concrete investigations shall be submitted with principal inspection reports to Bridges Section. The year of an initial concrete investigation or the year of the most recent concrete monitoring investigation shall be recorded in TRBDB by the MA when principal inspections are carried out.

3.3 The 6 year cyclic programme for principal inspections is held in TRBDB in which the MA shall record the date on which the last principal inspection was carried out. TRBDB provides reports on annual programmes, showing any backlog from previous years.

3.4 Bridges Section is developing new procedures for principal inspections which will allow MA's to report defects in structures by description and location, and give severity rankings with recommendations and estimates of repair costs for using TRBDB. Prioritisation reports will then be available, for any year's principal inspections, on which maintenance expenditure will be based. Work on these systems is progressing and their issue will implement the new techniques for principal inspections.

3.5 MA's will be directly reimbursed for costs incurred in carrying out principal and special inspections.

3.6 As Built records, maintenance records, Maintenance Manuals and safety Manuals, where these exist, are relevant documents which shall be referred to for information prior to carrying out principal inspections.

4. Special Inspections

These are related to specific problems. The extent of the detailed investigations, the methods to be used and the reporting requirements shall be agreed with Bridges Section.

SPECIAL REQUIREMENTS : WALES

C1 Introduction

REPORTING OF INSPECTIONS; WALES

C1 Introduction

C1.1 This Standard supersedes WOTRMM 2/88

C1.2 This gives requirements for Maintaining Agents (MA's) to keep and update records for all Highway Structures for which they are responsible and list of the records with their distribution is given in BD 62 (DMRB 3.2.1)

C2 Inspection Reports

C2.1 General Inspection

A summary of the findings of a General Inspection shall be reported on Form BE 11/94.

C2.2 Principal Inspection

The Report shall include an updated Form ROADS 277 together with appropriate structure database data as distributed by the Welsh Office.

A written Report of the observations, findings, causes and any recommended remedies shall be submitted to the Welsh Office and summarised on Form BE 11/94.

C2.3 Special Inspections

Findings summarised on Form BE 11/94

C2.4 The appropriate Health and Safety Executive in Wales is:

Health and Safety Executive
Brunel House
Fitzalan Road
Cardiff CF2 1SH
Telephone: 0222 473777

SPECIAL REQUIREMENTS : NORTHERN IRELAND

D1 Introduction

D1.1 Introduction

D1.2 References in this standard to organisations, and legislation etc shall be deemed to refer to the Northern Ireland equivalent where appropriate.

D2 Inspection Records

D2.1 The reporting and recording of the inspections of highway structures shall be in accordance with the requirements set out in the Bridge Inspection Manual which forms part of the Bridge Management and Maintenance I.T. System for Northern Ireland.

The appropriate Health and Safety Executive offices in NORTHERN IRELAND are:-

Department of Economic Development
Health and Safety Inspectorate
83 Ladas Drive
Belfast
BT9 9FJ

Tel: 0232 701444