

Appendix C
Annotated Bibliography

C.1 Annotated Bibliography

This bibliography contains a brief review of publications not shown within Chapter 4, the Literature Review.

C.2 Professional Institution Publications

Railway Signalling¹⁸⁷

Brief mention of Level Crossing controls within Signalling control panels. The first IRSE 'text' book on signalling and the successor to the 'green' booklets.

Railway Control Systems¹⁸⁸

Chapter 6 of the second IRSE text book gives a very detailed technical description of the current method of control applied to BR level crossings, and includes typical circuitry for various types of level crossing.

European Railway Signalling¹⁸⁹

A technical review of crossing systems in most major European countries. The chapter describes the rail constraints; the types of road signal system; technology used; open times; railway protection; and lists in tabular form, known details of 12 railway organisations.

The Rehabilitation of the Bleach Green - Antrim Railway Line¹⁹⁰

The forthcoming rehabilitation of this railway line will require modernisation of a number of level crossings. The author describes some of the engineering issues associated with this project.

¹⁸⁷ Railway Signalling, Edited, O.S. Nock, Pages 137/8, Institution of Railway Signal Engineers, 1980, ISBN 0 7136 2067 6.

¹⁸⁸ Railway Control Systems, Edited, M.E. Leach, Chapter 6, Institution of Railway Signal Engineers, 1991, ISBN 0 7136 3508 8.

¹⁸⁹ European Railway Signalling, Edited, C. Bailey, Pages 116-117 & 343-355, Institution of Railway Signal Engineers, 1995, ISBN 0 7136 4167 3.

¹⁹⁰ The Rehabilitation of the Bleach Green - Antrim Railway Line, J.H. Tilly, Essay submitted for membership of the Chartered Institute of Transport, 1995.

British Railway Track 1st, 2nd, 3rd, 4th, 5th & 6th Editions¹⁹¹

The Permanent Way Institutions textbook; each edition has a small entry relating to the typical maintenance requirements, from the PW engineer's point of view.

Design of Barriers¹⁹²

In this short paper Packham describes some of the problems experienced with level crossing barriers on BR and outlines changes made to the design to improve boom strength, various contactor changes and bearings.

Road Safety at Level Crossings¹⁹³

Craig has regularly lectured to the Railway Industry Association Signalling and Telecommunications training courses designed for delegates from all over the world. Craig outlines British history and technical practice on BR and this paper forms the course notes.

¹⁹¹ British Railway Track, The Permanent Way Institution. 1st Edition, 1943, page 130; 2nd Edition, 1956, page 215; 3rd Edition, 1964, page 263; 4th Edition, 1971, page 352; 5th Edition, 1979, page 317; 6th Edition, 1993, page 359, ISBN 0 903489 03 1.

¹⁹² The Design of Barriers for Level Crossings, F. Packham, Railway Engineers Forum Meeting, I.Mech.E, 3.4.95.

¹⁹³ Road Safety at Level crossings, T.W. Craig, Third Railway Infrastructure Signal & Telecommunications Course 1993, Railway Industry Association.

C.3 HMRI Publications

Railway Safety¹⁹⁴ 1989-1998

The Chief Inspecting Officer's Annual Report always has a chapter on level crossings in which he reviews the safety record, specific accidents and significant trends and statistics.

¹⁹⁴ Railway Safety, HM Chief Inspecting Officer's Annual Report on the safety record of the Railways of Great Britain, 1997/98, Chapter 6, HSE/HMRI, 1998, ISBN 0 7176 1655 X; 1996/97, Chapter 5, HSE/HMRI, 1997, ISBN 0 7176 1464 6; 1995/96, Chapter 5, HSE/HMRI, 1996, ISBN 0 7176 1131 0; 1994/95, Chapter 4, HSE/HMRI, 1995, ISBN 0 7176 1047 0; 1993/94, Chapter 4, HSE/HMRI, 1994, ISBN 0 7176 0862 X; 1992/93, Chapter 4, HSE/HMRI, 1993, ISBN 0 7176 0651 1; 1991/92, HMSO, 1992, ISBN 0 11 886390 8; 1990/91, HMSO, 1991, ISBN 0 11 885725 8; 1989/90, HMSO, 1990, ISBN 0 11 550991 7; 1988/89, HMSO, 1989, ISBN 0 11 550946 1;

C.4 Legislative Publications

The Queensland Drivers Guide¹⁹⁵

Motor Traffic Handbook¹⁹⁶

Both publications are Highway Code equivalents from Queensland and New South Wales respectively.

Statutory Instrument SI 1995/3188, The Railtrack (Swinedyke Level Crossing) Order 1995¹⁹⁷

This is a typical current level crossing order enacted to allow Railtrack to reduce the status of the existing crossing from a public road to a public footpath crossing with private accommodation road. This crossing was visited during this project.

¹⁹⁵ The Queensland Drivers Guide, 6th edition, Queensland Transport, 1992.

¹⁹⁶ Motor Traffic Handbook, Roads and Traffic Authority, New South Wales, 1990, ISSN 0727 9280.

¹⁹⁷ Statutory Instrument SI 1995/3188, The Railtrack (Swinedyke Level Crossing) Order 1995, HMSO, 1995, ISBN 0 11 053754 8.

C.5 University & Research Publications

Identification of Second Train warning systems for pedestrians¹⁹⁸

An internet summary of a Canadian report that considers different types of pedestrian warning systems for second trains.

Test Report 05.527¹⁹⁹

Test Report 969²⁰⁰

Test Report 389²⁰¹

All three reports represent independent tests undertaken by various University departments into Strail products; the first two look at the electrical resistance of Strail rubber decking components; the third at the skid resistance of the same decking components.

Driver Behaviour at Rail-Highway Crossings²⁰²

A literature review of driver behaviour at grade crossings on behalf of US Congress study of national highway-railroad improvement and maintenance needs.

¹⁹⁸ Identification of Second Train warning systems for pedestrians, Transport Canada, 1997, <http://www.tc.gc.ca/TDC?summary/13018e/htm>.

¹⁹⁹ Test Report 05.527, Test Institute, Munich, 26.11.80

²⁰⁰ Test Report 969, Technical University, Munich, 22.10.81

²⁰¹ Skid Resistance Tests, Technische Universitat Berlin, 15.11.96

²⁰² Driver behaviour at rail-highway crossings, N. Lerner, D. Ratte & J. Walker, Comsis Corporation, Silver Spring, Maryland, USA, 1990.

C.6 Railtrack Standards

Railtrack Standards are mandatory standards applied to technical and operational matters involving the Railtrack system. The few relating to level crossings are shown below.

Level Crossing Local Control Unit²⁰³

This standard outlines the manufacturing, controls switches and anti-vandalism requirements for Local Control Units used at all barrier type crossings.

Testing Telephones at Level Crossings²⁰⁴

This standard outlines the commissioning tests that have to be carried out on railway level crossings telephone systems, following installation.

Protection of Temporary Vehicular Level Crossings²⁰⁵

This standard outlines the requirements for temporary level crossings e.g. for a construction site.

Lighting of Railway Premises²⁰⁶

Part of this standard gives technical details of the lighting required at level crossings e.g. floodlighting at MCBcctv crossings.

Quartz Halogen Level Crossing Road Signals²⁰⁷

This standard is effectively a design instruction outlining the installation of the newer quartz halogen lamps in the level crossing road traffic signals.

Protection at Occupation and Accommodation Level Crossings²⁰⁸

²⁰³ Level Crossing Local Control Unit, Railway Group Standard GK/RT 0306, Railtrack plc, 1995.

²⁰⁴ Testing Telephones at Level Crossings, Railtrack Standard TTI BTEL 9034, Railtrack plc, 1995. Standard originally BR Standard produced in 1990.

²⁰⁵ Protection of Temporary Vehicular Level Crossings, Railway Group Standard GO/RT 3204, Railtrack plc, 1995.

²⁰⁶ Lighting of Railway Premises, Page 9 & Appendix B, Railtrack Standard GM/TT0146, Railtrack plc, 1993. Originally a BR Standard.

²⁰⁷ Quartz Halogen Level Crossing Road Signals, Railtrack Standard STDG 025, Railtrack plc, 1992. Originally a BR Standard.

²⁰⁸ Protection at Occupation and Accommodation Level Crossings, Railtrack Standard GO/OT0003, Railtrack plc, 1993. Originally a BR Standard.

Protection at Footpath and Bridleway Level Crossings²⁰⁹

These two standards outline the basic 'must have' requirements at Occupation, Accommodation, Footpath and Bridleway crossings.

CCTV camera and Environmental housing²¹⁰

CCTV High Frequency transmission equipment²¹¹

Standard Lifting Barrier Mk11 for Level Crossings²¹²

Flasher Unit for Level Crossing Road Signals²¹³

Light Unit for use in level crossing road traffic signal²¹⁴

CCTV level crossing fibre optic transmission system²¹⁵

Drivers Crossing indication at automatic level crossings²¹⁶

Specification for pennants for use as temporary protection at level crossings²¹⁷

All the above are BR specifications now taken over by RT and they outline requirements of the equipment concerned.

Civil Engineering Requirements for Level Crossings²¹⁸

This standard outlines the civil engineering requirements at level crossings necessary to meet the HMRI Safety Principles and Guidance.

Rule Book²¹⁹

Section L of Railtrack's Rulebook describes the action to be taken by operations staff at level crossings and when they are in failure mode.

Level Crossing Standards²²⁰

A series of standard typical circuitry drawings for all types of level crossings.

²⁰⁹ Protection at Footpath and Bridleway Level Crossings, Railtrack Standard GO/OT0011, Railtrack plc, 1993. Originally a BR Standard.

²¹⁰ BR Specification 0823, 1976

²¹¹ BR Specification 0825, 1976

²¹² BR Specification 0843, 1995

²¹³ BR Specification 0901, 1970

²¹⁴ BR Specification 0908, 1991

²¹⁵ BR Specification 1656, date unknown.

²¹⁶ BR Specification 1970, 1986

²¹⁷ BR Specification 0957, 1991

²¹⁸ Civil Engineering Requirements for Level Crossings, Railway Group Standard, Railtrack plc, 1997.

²¹⁹ Sect L, pages L1 to L22, Railway Group Standard, Master Rule Book, GO/RT3000, Railtrack plc, 1996.

²²⁰ Level Crossing Standards, GK/RT 0226, AHB/AOCL typical standard drawings, 1995.

Loading Requirements for the design of Bridges²²¹

Self explanatory standard highlighting the various British Standards to be used when designing structures for RT use, relating in the main to bridges carrying railway track/s.

²²¹ Loading Requirements for the design of Bridges, GC/RT 5112, 1997

C.7 Commercial Catalogues, Brochures & Publications

Barrier Machine JEGD 601/602²²²

A trade leaflet describing an ABB level crossing barrier mechanism type JEGD 601/602.

Teknis Safe Cross²²³

A trade brochure explaining the Teknis radar system of level crossing control, also described by Lechowicz²²⁴.

Safe Flash²²⁵

A trade leaflet describing the Safe Highway Crossing Flasher.

Electro Hydraulic Boom Mechanism²²⁶

A trade brochure detailing the boom mechanism commonly used in Australia.

HXP3²²⁷

A very detailed instruction manual detailing the installation, setting up and maintenance of Harmon's HXP3 level crossing control system.

Barrier Drive SIM 6/13²²⁸

A trade leaflet describing a Siemens level crossing barrier mechanism type Sim 6/13.

Style EB Highway Crossing Barrier²²⁹

An instruction manual explaining the setting up of a Westinghouse manufactured barrier mechanism.

²²² Barrier Machine JEGD 601/602, trade leaflets issued by ABB Signal and EB Signal, date unknown.

²²³ Teknis Safe Cross - Railway Level Crossing System, Export Brochure, date unknown, Teknis Electronics Pty Ltd, Adelaide, Australia

²²⁴ Radar Based Level Crossing Control, S. Lechowicz, Institution of Railway Signal Engineers Australasian Section, Paper of Technical Meeting, Launceston, Tasmania, November 1996.

²²⁵ Safe Flash, trade leaflet, Westinghouse Brake & Signal Ltd, Australia, 1995.

²²⁶ Electro Hydraulic Boom Mechanism, trade leaflet, GEC Alsthom, Australia, 1987.

²²⁷ HXP3 Instruction manual, reference 04/94/IM/183/BOO, 1994, Harmon Industries, Grain Valley, Missouri, USA.

²²⁸ Barrier Drive SIM 6/13, Trade leaflet, Siemens Switzerland Ltd, 1997.

²²⁹ Style EB Highway Crossing Barrier, Instruction Manual MH14004, Westinghouse Brake & Signal, Australia, 1987.

Half Arm Barrier²³⁰

A trade leaflet describing a GEC Alsthom South Africa level crossing protection system.

BUE 95F Level Crossing Protection System²³¹

A trade leaflet describing a Siemens level crossing protection system.

National Electric Gate Company²³²

Trade leaflets outlining lightweight aluminium and ployglass boom arms and accessories.

The Original Bomac Level Crossing²³³

A trade leaflet describing the Bomac system of level crossing road surface components.

Level Crossing Catalog²³⁴

A Western Cullen Hayes catalogue describing level crossing products manufactured for the USA, Australasian and far east markets.

Level Crossing Catalog²³⁵

A Safetrans catalogue describing level crossing products manufactured for the USA, Australasian and far east markets.

Level Crossing Services²³⁶

A trade leaflet describing the level crossing design services offered by Signalling Control UK. (Now part of Westinghouse Signals Ltd).

The Choice Decking for Level Crossings²³⁷

A colour trade brochure describing the Strail road panel system and sub-systems.

²³⁰ Half Arm Barrier, Trade leaflet, GEC Alsthom, South Africa, 1997.

²³¹ BUE 95F Level Crossing Protection System, trade leaflet, Siemens Switzerland Ltd, 1997.

²³² Trade leaflets, National Electric Gate Company, Wood Dale, Illinois, USA, date unknown.

²³³ The Original Bomac Level Crossing, trade leaflet, Tarmac UK, date unknown.

²³⁴ Level Crossing Catalog, current issue, Western Cullen Hayes, Chicago, USA.

²³⁵ Level Crossing Catalog, current issue, Safetran Systems, USA.

²³⁶ Level Crossing Services, Signalling Control UK, trade brochure, 1995.

²³⁷ The Choice Decking for Level Crossings, trade brochure, Gummiwerk Kraiburg Elastik GmbH, Germany, 1997.

Pedestrail²³⁸

A colour trade brochure describing the pedeStrail system of crossing components.

Instruction Manual²³⁹

A detailed manual illustrating the methodology to be employed in fitting Strail road panels to ensure optimum performance.

Installation Instructions²⁴⁰

A pocket sized set of instructions on plasticised pages aimed at American engineers outlined the correct method of installing Strail road panels.

Level Crossing Tender Specification²⁴¹

A checklist type of document to aid the engineer in ensuring that all aspects are considered when ordering or tendering for the road components.

Smiths Hydraulics for British Railways Board Auto Half Barrier

A trade brochure outlining the design and use of the hydraulic actuators used to drive LC barriers.

SILEC Rail Contactors²⁴²

A trade brochure describing and illustrating SILEC treadles, widely used in LC applications.

²³⁸ PedeStrail, trade brochure, Gummiwerk Kraiburg Elastik GmbH, Germany, 1996.

²³⁹ Instruction Manual for the Strail rubber level crossing units, trade brochure, Gummiwerk Kraiburg Elastik GmbH, Germany, 1996.

²⁴⁰ Installation Instructions, (for the Strail rubber level crossing units), Gummiwerk Kraiburg Elastik GmbH, Germany, date unknown.

²⁴¹ Level Crossing Tender Specification, a checklist for specifying road component parts of the crossing, Gummiwerk Kraiburg Elastik GmbH, Germany, date unknown.

²⁴² Silec Rail Contactors, Societe Industrielle De Liaisons Electriques, France, Date Unknown.

C.8 Articles

First BR Automatic Crossing²⁴³

A short article relating to the introduction of the first AHB in the UK at Spath.

Modified auto half barriers are commissioned²⁴⁴

An article commenting on the Hixon recommendations and subsequent alterations to road signing and the like, following the Hixon tragedy and Inquiry.

IRSE News²⁴⁵

Brief articles within a regular Newsletter:

No 3, New type of Open Level Crossing on BR; Describes Naas level crossing converted to the first AOCR type of crossing.

No 13, New Camera for Level Crossings; Mulvana outlines the installation of Charged Coupled Device cameras at level crossings in the north east.

No 27, The latest in CCTV; Mulvana describes the installation of fibre optic CCTV systems during the Ely resignalling.

No 37, Just in time crossings; this article briefly mentions Safetran's method of delivering grade crossing components by container to site.

No 39, Open at last; McLennan outlines the ceremonial re-opening of Broughty Ferry crossing, which BR had tried unsuccessfully to close follow accident damage.

No 45, Road Traffic Signals at Level Crossings; Grose describes why the road traffic signal is different from a conventional road traffic light signal.

No 48, Grade Crossing Predictors in Tasmania; Edwards describes the installation of predictor systems in Tasmania.

No 50, Electronic Level Crossing Actuator System; Poupe outlines an electronic system of level crossing actuation employed in Czechoslovakia. The system employs an additional white flashing light indicating to road users that the crossing is clear.

No 57, Trainless Train Horn Use Grows; This article describes a new system put to use on the Union Pacific Railroad in the USA. The system comprises of horns directed

²⁴³ First BR Automatic Crossing, *Trains Illustrated* page 195, April 1961.

²⁴⁴ Modified auto half barriers are commissioned, *Railway World*, pages 437/8 468, Oct 1970.

²⁴⁵ IRSE News, Newsletter of the Institution of Railway Signal Engineers, Issues 3, 13, 27, 37, 39, 45, 48, 50 & 57, 1983/1998.

towards the traffic at grade crossings. The trainless horns are activated by the passage of the train approaching the crossing. It is currently only fitted to automatic crossings with barriers.

Level Crossings by a Barrister²⁴⁶

A brief article on some of the legal aspects relating to the public v. railways and their respective rights particularly in connection with accidents and injuries. Two interesting statements are made:

'Road Rail crossings on the same level, unhappily much in the news recently, have proved to be a fruitful source of danger since their inception during the earliest days of railways.'

'But enough has been said to show that it must, in addition to complying with statutory requirements as to gates etc., conduct its business with due regard to the inherent danger arising from the operation of the trains.'

Lifting Barriers in New South Wales²⁴⁷

An article outlining the construction and use of boom gates (barriers) by New South Wales Government Railways, since 1913.

An Automatic Railway Gate²⁴⁸

A short article describing a new electrically operated automatic railway crossing gate developed in Sweden by one Mr Westfelt, operated by the passage of a train over an insulated section of track (a track circuit).

Automatic Signals at French Level Crossings²⁴⁹

This brief article and photographs outline the introduction of automatic road signals at some French level crossings.

²⁴⁶ Level Crossings by a Barrister, Railway World Page 273, June 1968.

²⁴⁷ Lifting Barriers in New South Wales, The Railway Gazette, 6th February 1953, page 154 .

²⁴⁸ An Automatic Railway Gate, 1928, The Model Engineer and Light Machinery Review, Page 15, Jan 5th, 1928.

²⁴⁹ Automatic Signals at French Level Crossings, Railway Gazette International, page 183, February 1953.

Continental - type Lifting Barriers at Stallingborough²⁵⁰

A short railway employees magazine article describing the first automatic crossing with barriers to be installed t Stallingborough, near Grimsby on the Eastern Region of BR.

Polysafe - leading the level crossing market²⁵¹

A brief article outlining low maintenance crossing components manufactured by Polysafe.

The Combination Crossing²⁵²

A brief article outlining the combination crossing, concrete/rubber crossing components manufactured by Holdfast.

Making Public Road Crossings Safer²⁵³

This article reviews the Lockington accident and the subsequent changes to level crossing practice and in particular, looks at some level crossings in the Cornwall area affected by the events of Lockington.

²⁵⁰ Continental - type Lifting Barriers at Stallingborough, page 248/9, BR(ER) Magazine, August 1962.

²⁵¹ Polysafe - leading the level crossing market, Article, Rail Bulletin, date unknown.

²⁵² The Combination Crossing, article, page 40, Rail Bulletin, October 1996.

²⁵³ Making Public Road Crossings Safer, J. Heaton, Modern Railways, June 1994

C.9 Miscellaneous Publications

Operation Lifesaver²⁵⁴

A public education program running in the USA which has had dramatic success in reducing grade crossing accidents. Selection of facts and tips aimed at the public on the internet.

Federal Railroad Administration²⁵⁵

An Internet site giving details of Special Topics, legislation and etc.

National Transportation Safety Board Publications^{256/257}

An Internet listing a of National Transportation Safety Board publications, a large number of which are US Government reports regarding railroad accidents including those on grade crossings.

Level Crossings²⁵⁸

A set of training notes that describes British Rail level crossing types, practice and circuitry.

La Signalisation Ferroviaire²⁵⁹

The French equivalent to the IRSE text book; Chapter 11 explains in great technical detail the operation of level crossings on the French State Railway system.

An Illustrated History of Signalling²⁶⁰

Vanns outlines the history of level crossings from the inception of railways until the present day.

²⁵⁴ Operation Lifesaver, Nationwide public education program, Alexandria, Virginia, USA; from Internet.

²⁵⁵ Federal Railroad Administration: <http://www.fra.dot.gov/s/regs/fr/Sect1103c.htm>

²⁵⁶ National Transportation Safety Board: http://www.nts.gov/Publicatn/V_Stu.htm

²⁵⁷ National Transportation Safety Board: http://www.nts.gov/Publicatn/R_Acc.htm

²⁵⁸ Level Crossings, Training Notes, Transmark, date unknown.

²⁵⁹ La Signalisation Ferroviaire, R. Réiveau, Chapter 11, pages 267-296, Presses de l'école nationale des Ponts et chaussées, 1987, ISBN 2 85978 102 1.

²⁶⁰ An Illustrated History of Signalling, M.A. Vanns, pages 132-135, Ian Allan Ltd., 1997, ISBN 0 7110 2551 7.

British Railway Disasters²⁶¹

Another book reviewing accidents with many official and newspaper photographs and some original, excellent sketches showing the results of each incident. Both Hixon and Lockington have their own chapters.

Obstruction Danger²⁶²

A railwayman's view of various accidents, Hixon rates it's own chapter, along with an appendix on level crossing issues.

Historic Railway Disasters 4th Edition²⁶³

A Signal Engineers view of various accidents, Once again Hixon rates it's own chapter.

A History of Railroad Accidents²⁶⁴

A brief chapter on crossing collisions, mainly in the USA. The irresponsibility of (road) users seems to be apparent throughout the world!

Southern Signals²⁶⁵

A brief chapter on Southern Railway level crossings with captioned photographs; historical and irrelevant to this project.

LNER Constituent Signalling²⁶⁶

Odd photographs and references to level crossings, historical and irrelevant to this project.

²⁶¹ British Railway Disasters, pages 27-30 & 75-78, Eaglemoss Publications Ltd., 1996, ISBN 0 7110 2470 7.

²⁶² Obstruction Danger, A. Vaughan, Pages 33/43, 251/4, Patrick Stephens Ltd, 1989, ISBN 1 85260 055 1.

²⁶³ Historic Railway Disasters, O.S. Nock, Chapter 18, Ian Allan Ltd, 1987, ISBN 0 7110 1752 2.

²⁶⁴ A History of Railroad Accidents, Safety Precautions and Operating Practices, R. B. Shaw, Pages 280/9, Vail-Ballou Press Inc. USA, 1978.

²⁶⁵ A Pictorial History of Southern Signals, G. Pryer, pages 177-181, Oxford Publishing Company, 1977, ISBN 902888 81 1.

²⁶⁶ A Pictorial Record of LNER Constituent Signalling, A.A. Maclean, Oxford Publishing Company, 1983, 86093 146 3.

The Signal Box²⁶⁷

Odd photographs and references to level crossings, historical and irrelevant to this project.

Great Western Signalling²⁶⁸

A brief chapter on Great Western Railway level crossings with captioned photographs; historical and irrelevant to this project.

L.N.W.R. Signalling²⁶⁹

A more detailed explanation of London North Western Railway practices; historical and irrelevant to this project.

Signals and Signal-Boxes²⁷⁰

Captioned photographs of Signal Boxes; some of which show various types of crossing equipment; The photographs allow study of the surroundings but not much else, mainly historical and irrelevant to this project.

Signalman's Reflections²⁷¹

Odd references and photographs of level crossings and controlling signal boxes; historical and irrelevant to this project. Some of the crossings shown have been visited to look at the more modern barrier equipment at the particular locations²⁷².

London Midland Signalling²⁷³

Based on photographs with long captions. Includes various types of level crossing at various locations on the London Midland Region of BR. The photographs allow study of the surroundings but not much else.

²⁶⁷ The Signal Box, A Pictorial History and Guide to Designs, The Signalling Study Group, Oxford Publishing Company, 1986, ISBN 0 86093 224 9.

²⁶⁸ A Pictorial History of Great Western Signalling, A. Vaughan, pages 94-97, Oxford Publishing Company, 1973, ISBN 0 902888 08 0. Revised 1984, ISBN 0 86093 346 6

²⁶⁹ A Pictorial Record of L.N.W.R. Signalling, R.D. Foster, pages 101-112, Oxford Publishing Company, 1982, ISBN 0 86093 147 1.

²⁷⁰ Signals and Signal Boxes of Great Britain, D. Hucknall, Sutton Publishing Ltd, 1998, ISBN 0 7509 1322 3.

²⁷¹ Signalman's Reflections, A. Vaughan, Silver Link Publishing, 1990, ISBN 0 947971 54 8.

²⁷² Signalman's Reflections, A. Vaughan, pages 6, 114-117, Silver Link Publishing, 1990, ISBN 0 947971 54 8.

²⁷³ A Pictorial Survey of London Midland Signalling, D. Allen, C.J. Woolstenholmes, OPC/Haynes Publishing Ltd, 1996, ISBN 0 86093 523 X.

Railway Signalling²⁷⁴

A brief chapter based on photographs with long captions. Includes various modern types of crossing at various locations. The photographs allow study of the surroundings but not much else.

²⁷⁴ A Pictorial Survey of Railway Signalling, D. Allen, C.J. Woolstenholmes, pages 73-80, Haynes Publishing Ltd, 1991, ISBN 0 86093 453 5.