

**1.0**

**Preface:**

**Acknowledgements, Abbreviations  
and Glossary of Terminology**

## 1.0 Acknowledgements

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## 1.1 Author's Note

Unless otherwise stated, *all* illustrations and photographs within this dissertation have been produced by the author. The views expressed, and any mistakes, are the author's own and do not necessarily represent the opinions or views of any organisation connected with the operation of level crossings.

## 1.2 Ordnance Survey of Northern Ireland

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*Figure 1.1*

*Meigh AHB LC, (pronounced 'Mike') Northern Ireland Railways, County Armagh:  
The mountains of Mourne in the background and a Dublin bound 'Enterprise' service, just about to  
cross the border into Eire. Why should the railway pay for the crossing ?*

### 1.3 Abbreviations

ABCL	Automatic Half Barrier Locally Monitored
AHB	Automatic Half Barrier
AHBD	Automatic Half Barrier Distant Monitored (Unique to NIR)
AOCL	Automatic Open Crossing Locally Monitored
AOCR	Automatic Open Crossing Remotely Monitored
ATC	Another Train Coming
BR	British Rail or British Railways
BRB	British Railways Board
BTC	British Transport Commission
CNR	Canadian National Railways
CWT	Constant Warning Time
DMU	Diesel Multiple Unit
DoE(NI)	Department of the Environment, Northern Ireland
DoT	Department of Transport
DoTER	Department of Transport, Environment & Regions
DVLA	Driver Vehicle Licensing Agency
DWL	Drivers White Light (Train Driver)
ECML	East Coast Main Line
f.p.m	Flashes per minute (road signals)
GNER	Great North Eastern Railway
HMRI	Her Majesty's Railway Inspectorate
IRSE	The Institution of Railway Signal Engineers



## Acknowledgements, Abbreviations and Glossary of Terminology

LBNGR	Leighton Buzzard Narrow Gauge Railway
LC	Level Crossing
LCU	Local Control Unit
LUL	London Underground Ltd
MCB	Manually Controlled Barriers
MCBctv	Manually Controlled Barriers, with Closed Circuit Television
MCG	Manually Controlled Gates
MCTMBG	Manually Controlled Toe Motor Boom Gates
MoT	Ministry of Transport
MSL	Miniature Stop Lights (see Chapter 3, Level Crossing types)
MWL	Miniature Warning Lights (See MSL)
NIR	Northern Ireland Railways
NIRU	Not in regular use
NSW	New South Wales
NVR	Nene Valley Railway
NZ	New Zealand
OC	Open Crossing
OECD	Organisation for Economic Co-operation and Development
OOU	Out of Use
OS	Ordnance Survey
OSNI	Ordnance Survey of Northern Ireland
PLC	Programmable Logic Controller
PW	Permanent Way
PWI	The Permanent Way Institution
RT	Railtrack plc
RHDR	Romney, Hythe & Dymchurch Railway
RIA	Railway Industry Association



SPAD	Signal Passed at Danger (railway signal)
SS	Sheffield Supertram
TMO	Trainman Operated
TMR	Tyneside Metropolitan Railway (Newcastle Metro)
TRRL	The Transport & Road Research Laboratory
UK	United Kingdom
USA	United States of America
UtV	Unable to Verify (Grid reference)
UWB	User Worked Barriers
UWG	User Worked Gates
UWGRbS	User Worked Gates, Released by Signalman
VfT	Viewed from Train/s
WCML	West Coast Main Line

#### **1.4 Glossary of Terminology Used<sup>1</sup>**

These definitions are shown in order to assist the reader in understanding level crossing technical and operational terminology used in the railway industry and within this dissertation. Types of UK level crossings are explained in further detail in Chapter 3.

##### **Actual daily road vehicle user**

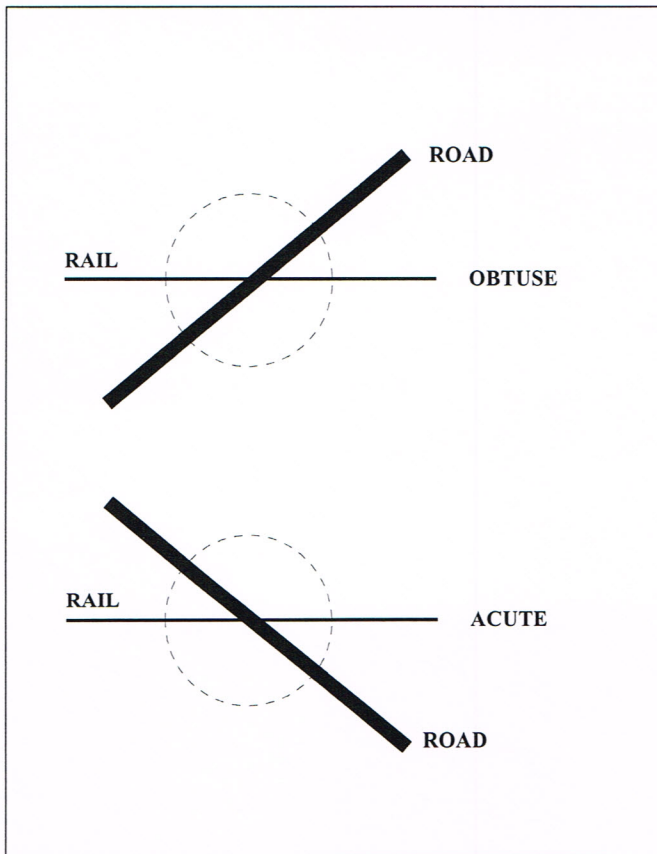
The number of road vehicles passing over the crossing between 0600 hrs and 2400 hrs; the daily figure being averaged over a nine day period.

##### **Acute (skew) Crossing**

A road crossing a railway at an angle of less than 90<sup>0</sup> anticlockwise (see figure 1.2) .

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<sup>1</sup> Railway Safety Principles and Guidance, Part 2, Section E, appendix e, pages 67-71, HSE/HMRI, 1996, ISBN 0 7176 0952 9.



### **Automatically (Controlled)**

In the context of this dissertation, automatically means the operation of the level crossing by the passage of trains, over which the signalman has no control.

*Figure 1.2*

*Illustration showing the difference between 'Acute' and 'Obtuse' skew crossings; always considered in an anti-clockwise direction from road to rail.*

### **'Blocking back'**

Road traffic tailing back onto a crossing.

### **Bomac<sup>2</sup>**

A proprietary system of steel framed, concrete panel road decking, manufactured by Tarmac.

### **Constant Warning Time Devices**

See Grade Crossing Predictor.

### **Control Point**

The controlling signal box.

<sup>2</sup> The Bomac System - History and recent developments, Dr H.P. Taylor & M.S. Rayner, Permanent Way Institution, Proceedings, Volume 107, Part 1, Pages 76-100, 1989.



### **Crossing Length**

The distance between the gates or full barriers, measured across the railway; or in the case of automatic half barrier and open crossings, the measurement across the railway from the stop line or give way sign to a point on the other side of the crossing that the rear of any vehicle would be clear of the railway or crossing equipment, usually considered to be 1m clear of the rail closest to the exit point.

### **Crossing speed**

The approach speed of a train to a locally monitored or open crossing.



*Figure 1.3*

*An eastbound Norfolk Southern train on 19th Street in Erie, Pennsylvania, crossing Cascade Street grade crossing. Note the absence of any road markings; the crossing attendant more interested in the train rather than any approaching traffic; no retro-reflective backboard on the traffic signal; no other apparent signage to warn motorists.*

*Possibly the last main line street-running operation in the USA on the former Nickel Plate Road.*

*Photograph reproduced by kind permission of Mike Hoppe, ERIE, USA.*



### **Driver's White Light**

A signal that indicates to the train driver that the crossing equipment is functioning correctly. Used at AOCL, AHBD and ABCL crossings (see figure 3.2).

### **Duplicate Primary Signal**

The Road Traffic signal located on the right hand side of the road in the direction of travel.

### **Grade Crossing**

The American term for a level crossing. (See figure 1.3)

### **Grade Crossing Predictor**

The standard American method of grade crossing control equipment; Such devices rely on the characteristics of tuned loops being altered by the presence of train wheelsets. The detected alteration is processed and then determines the arrival time of the train at the grade crossing. Such devices drive audible and visual warning devices and where fitted, barrier mechanisms. There is no interlocking with signalling systems, or monitoring by train drivers or signalmen. They are also known as Motion Detectors and Constant Warning Time Devices.

### **Highway Authority**

In the context of this dissertation, highway authority should be construed as meaning any local, parish, regional or county Council, the Highways Agency or any other body with responsibility for the road and associated infrastructure.

### **Level Crossing**

A point on a railway where a road crosses on the level. For a description of level crossing types in use in the UK see Chapter 3.

### **Level Crossing Order**

Each level crossing requires an 'Order' - effectively an individual Act of Parliament, that explains how the crossing will operate and what equipment is installed. The railway

company produces a draft order and plans which are submitted to HM Railway Inspectorate. HMRI approves the crossing on behalf of the appropriate Minister. See Appendix B for a typical level crossing order.

### **Manually (Controlled)**

In the context of this dissertation, manually means a level crossing operated by a signalman.

### **Mark 11 Barrier Machine**

The current standard barrier machine used in the UK. It is an electro-hydraulic machine that is powered in the up direction and falls by gravity in the down direction.

### **Motion Detectors**

See Grade Crossing Predictors.

### **Primary Signal**

The Road Traffic signal located on the left hand side of the road in the direction of travel.

### **Obtuse (skew) Crossing**

A road crossing a railway at an angle of more than  $90^{\circ}$  anticlockwise (see figure 1.2).

### **Omni**

A proprietary system of rubber panel road decking distributed in the UK by Holdfast Level Crossings Ltd.

### **Strail**

A proprietary system of rubber panel road decking manufactured by Gummiwerk Kraiburg Elastik GmbH, Germany.

### **'Strike in'**

A position on the railway at which point the train starts the automatic crossing operating sequence.

**'Strike out'**

A position on the railway at which point the train cancels the automatic crossing operating sequence.

**Supervising point**

The supervising signal box.

**Track Circuit**

A low voltage electrical circuit using the running rails as conductors and, when clear of trains, energising a relay used in signalling and level crossing circuitry. The train's wheels short circuit the relay coil, causing the relay to de-energise, thus opening signal circuit contacts etc.

**Traffic moment**

The number of road vehicles multiplied by the number of trains using the crossing in a given period. This figure then determines the type of protection required.

**Yodalarm**

An electronic warbling device to warn pedestrians audibly of the operation of the level crossing. If a second train strikes in the warbler changes to a faster, different tone.