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Issue:	2
Date:	02/06/2012
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Level 2

Signalling Design: Module X22 – Level Crossings: Manually Controlled Barriers

Endorsement and Authorisation

For endorsement and authorisation, please refer to
NR/L2/SIG/11201

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Issue record

Issue	Date	Comments
1	December 2011	First Issue
2	June 2012	Second Issue

Compliance

This Network Rail standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 03/12/2011.

When this standard is implemented, it is permissible for all projects that have formally completed GRIP Stage 3 (Option Selection) to continue to comply with the issue of any relevant Network Rail standards current when GRIP Stage 3 was completed and not to comply with requirements contained herein, unless stipulated otherwise in the scope of this standard.

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1 MANUALLY CONTROLLED BARRIERS (MCB.).

1.1 GENERAL DESCRIPTION.

1.1.1 These crossings are protected by colour light or motor worked semaphores that are capable of reverting to danger automatically behind a train. These signals shall be interlocked with the barriers so that it is not possible to clear the signals unless the road is fully closed by the barriers and "Crossing Clear" confirmed by the operator.

1.1.2 By default these crossings shall normally have auto lower and auto raise facilities provided. Exceptions shall only be provided where extreme cost is an issue and by agreement with the operating managers.

1.1.3 The optimum distance between the crossing and the protecting signals is standard overlap distance. but is often varied as a result of taking into account other factors:-

- If signal spacing fit is better as a result, the protecting signals may be in the range 50m to 600m without further consideration.
- Where two crossings are sited in the same signal section, then the distance to the second crossing is usually unavoidably more than 600m. This may be minimised by moving the protecting signal to 50m from the first crossing.
- If the crossing is closed to road a significant time in any hour, then reducing to 50m minimises road closure time.
- Protecting signals may be within 50m if some appropriate SPAD mitigation is provided.

1.1.4 It shall not be possible to raise the barriers unless the signals are replaced to Red and are free of approach locking, or the train has passed the signals and traversed the crossing.

NOTE Where approach locking is not presently fitted, then any installation or modification work carried out to the crossing must also provide approach locking. Where it is a complete renewal or resignalling, then approach locking meeting all modern standards shall be provided. Where it is lesser work than complete renewal and the necessary infrastructure does not presently exist to support approach locking meeting modern standards, then a simpler arrangement may be provided. As a minimum a single device (such as a treadle or single track circuit occupying), can determine when a train has arrived at the crossing for releasing approach locking and semaphore protecting signals need not be light proved or arm proved "ON" in the approach locking release. (Lever in "B" position shall be sufficient.)

1.1.5 These crossings are protected by a minimum of two road traffic light signals (RTL's) each side of the road and lifting barriers on both sides of the railway. An audible warning to pedestrians is provided.

1.1.6 The crossing is supervised by an operator who shall be located within 50m of the crossing who has a full view of the crossing area, including the barriers and out at least as far as the road stop lines, from the normal level crossing operating position.

1.1.7 The barriers shall normally be kept raised unless required to be lowered for the passage of trains. In exceptional circumstances and only where there is a low road usage, it is permissible for the barriers to be kept lowered and only raised when required for road traffic. (See the MCB-OC section.)

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1.1.8 A scaled ground plan shall be produced showing the road and rail layout and all equipment sited at the level crossing.

1.1.9 The normal arrangement at a crossing shall be four barriers. This shall have separate nearside and offside barriers on each side of the railway.

1.1.10 The entrance barriers shall be arranged to lower before the exit barriers. On a conventional two-way road, the entrance barriers are the nearside barriers and the offside barriers are the exit barriers.

1.1.11 On smaller roads where considerable widening would be needed to make four barriers practical, then provided there are no more than two tracks across the crossing, two barriers may be used. Two barrier crossings on two-way roads shall normally have the barrier pedestals sited at the nearside of the road approaches.

1.1.12 A few crossings may be on one-way roads (including individual carriageways of dual carriageway roads). These have the entrance barriers sited on the side that road traffic enters and the exit barriers on the side that it leaves. Two barrier crossings in this situation shall be considered to follow the method of operation and rules of a four barrier crossing as the entrance and exit barriers lower separately. Standing Red Men pedestrian signals may be provided as an alternative to the RTL's on the exit side of the crossings.

1.1.13 Two barrier crossings on one-way roads preferably have the entrance barrier pedestal sited at the nearside of the road approach. The exit barrier pedestal is preferred at the same side of the road as the entrance pedestal so the footways either side of the road become blocked at similar time intervals during the descent of the barriers. But there is less importance to pedestal positioning than at two-way roads and if a different pedestal position provides a better arrangement at a particular site, that may be used.

1.1.14 By exception there may be a need to use a different number of barriers or barrier arrangement. On a one way road, two barriers have sometimes been provided on one side with only one barrier on the other. Other barrier arrangements that are appropriate to local circumstances are not ruled out.

1.1.15 A minimum of two audible warning devices are required at all crossings. They shall be normally sited at the diagonally opposite nearside corners of the crossing facing onto the crossing area. Larger crossings may use four audible warning devices with one at each corner.

1.1.16 The crossing sequence may either be started by the operator or it may be started automatically. The first warning to a road user of the sequence starting shall be display of the RTL signals towards approaching traffic and the sounding of audible warnings. After appropriate timings, the barriers shall lower. The crossing shall be protected by signals on each rail approach which shall be interlocked with the crossing controls.

1.1.17 Telephones for public use are not normally provided.

1.1.18 All new or significantly rewired crossings shall be provided with a Datalogger that monitors and records the crossing operation.

2 TRAIN DETECTION SYSTEM CONTROLS.