NR/L3/SIG/10663 Signal Maintenance Specifications		
NR/SMS/Part/D		
Level Crossing Annual Test		
Issue No: 06	Issue Date: 06/09/14	Compliance Date: 07/03/15

The level crossing annual tests (Service B in NR/SMS/Test/070 to 076-80, 81, and NR/SMS/LC10) are produced in an A4 format only for use of the person(s) conducting the annual test of the level crossing. They are formatted to provide a tick box next to each item that requires to be tested so that an auditable record of the test is produced.

These test documents are only available electronically and can be downloaded from Connect (on Network Rails Intranet) from the 'Network Rail Standards' link and use the search function to call up document NR/L3/SIG/10663.
The index of these documents is as follows:

Crossing Type	Annual Test	Issue
Automatic Half Barrier Crossing (AHBC)	NR/SMS/LX70	05
Automatic Barriers Controlled Locally (ABCL)	NR/SMS/LX71	05
Automatic Open Crossing Locally Monitored (AOCL)	NR/SMS/LX72	05
Automatic Open Crossing Remotely Monitored (AOCR)	NR/SMS/LX73	05
Miniature Stop Light Crossing (MSL)	NR/SMS/LX74	05
Manually Controlled Barriers (MCB)	NR/SMS/LX75	05
On Call Barriers (OCB)	NR/SMS/LX76	04
EBI Gate 200 Level Crossing System	NR/SMS/LX77	01
Automatic Half Barrier Crossing (AHBC) controlled by a LC predictor	NR/SMS/LX80	04
Miniature Stop Light Crossing (MSL) controlled by a LC predictor	NR/SMS/LX81	02
Automatic Open Crossing Locally Monitored (AOCL) + Barriers	NR/SMS/LX83	01

End

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LEVEL CROSSING TESTING

AUTOMATIC HALF BARRIER CROSSING

NR/SMS/LX70

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GENERAL

This test plan is the 'Service B Tests' of NR/SMS/LC10 and NR/SMS/Test/070. It is for use of the person conducting the annual test of the level crossing and has relevant 'tick boxes' by each task so that particular item of the test can be correctly recorded as per the index in 'crossing defects'.
It does not cover AHBC installations controlled by HXP-3 crossing processors
The numbering of the sections in this test plan is unique; they do not follow on from the operation sequence test in NR/SMS/Test/070 'Service A Tests'.
To perform the annual test the following documents will be required:

- The crossing ground plan
- The level crossing order
- The crossing control tables
- The signalling plan

Missing documentation shall be listed as a defect.

Test Summary	
Level Crossing Name	
Level Crossing Type	
Name of Monitoring Signal Box(es)	
Date of Full Test	
Time Full Test Commenced	
Time Full Test Completed	
Tested by	
Signature	
Date of Signature	
Grade and Title	

CROSSING DEFECTS

On the test plan each item requires to be recorded with the following letters in the box provided:

X: Found Incorrect, Action Required
R: Found Incorrect, Rectified on Day of Test
C: Correct
N: Not Applicable to this Installation

Any items found incorrect (X or R) are to be listed on the summary pages.
On items requiring action list the party(s) responsible for rectifying them.

All items (rectified on the day of the test or not) shall be reported as corrective maintenance as detailed in NR/SMS/Part/A02.

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SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all items found incorrect and rectified on the day of the test (code letter R).

Description of Items found Incorrect and Rectified

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SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below all items found incorrect and requiring action (code letter X).

Description of Item Found Incorrect and Requiring Action	Responsible Party(s)

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1. Road Arrangements

1.1 *Check* that the road markings are in accordance with the section order and plans.

1.2 *Check* that the road markings on the approaches to the crossing (up to the stop line) are complete and visible.

1.3 *Check* the condition and the sighting of the road signs on the crossing approaches.
See NR/SMS/SG00 for details on reflective boards and signs.

1.4 *Check* (if provided) the condition and security of any pedestrian guardrails.
Any defects found in 1.2 to 1.4 shall be reported to the appropriate council via the SM(S).

1.5 *Check* the condition of the road surface over the crossing.

1.6 *Check* that the road markings between and including the stop lines are complete and visible.

1.7 *Check* (if provided) that the cattle/anti-trespass guards are complete and securely fastened down.

1.8 *Check* (if provided) the condition and security of any wicket gates.

1.9 *Check* the condition and the security of any fencing around the barrier machines and (if provided) on the approach to equipment room or locations.

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2. Barrier and Machine BR Standard Mk1 (Penguin)

Is This Section Applicable to the Crossing Under Test? Yes / No

		Y	Z
2.1	*Examine* the exterior of the pedestal unit; *Check* the concrete is not excessively cracked or crumbing. *Report as corrective maintenance if any of the concrete re-enforcing bars are visible.*		
2.2	*Check* that the pedestal unit and foundation are stable and correctly aligned.		
2.3	*Check* that the cement plug at the top of the pedestal unit is intact and secure. *If missing secure the hole with a wooden plug and arrange for a more permanent fixture.*		
2.4	Remove the pedestal covers and anti-guillotine shields.		
2.5	*Check* the condition of the rubber up and down stops; replace any that have become soft or damaged.		
2.6	With the barriers on manual operation, lower and *Check* the following:		
2.7	The boom takes 6 to 8 seconds to lower.		
2.8	The boom is horizontal when fully lowered.		
2.9	The boom is the correct length.		

Boom	Design	Actual
Y		
Z		

2.10	The boom saw cuts for signs of splitting.		
2.11	Condition of the boom.		
2.12	The boom is securely fixed.		
2.13	The reflective strips are undamaged, clean and are in the correct position.		
2.14	The boom lamps, hoods, brackets, and fastenings are undamaged and free from corrosion.		
2.15	The boom wiring and terminations are undamaged.		
2.16	*Check* the height of the boom from the road surface.		
2.17	Top of boom at the centre of the road: 0.9m Minimum.		
2.18	Underside of boom at any point: 1m Maximum.		

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Y	Z

2.19 *Check* the counter balance weights are secure and are the correct weight by *Measuring* with a weight measuring device the tip weight by using the following method:

- At the tip end slowly lift the boom until it is approximately 4° to 5° from the horizontal.
- Connect the weight measuring device to the tip end of the boom.
- Release the boom onto the measuring device ensuring that the boom has not fully lowered then take a reading.

Boom Length	Tip Weight
3.99m to 6.02m	2.3Kg (Min) to 2.5Kg (Max)

2.20 *Check* that the boom can be lifted by hand to the fully raised position.

2.21 *Check* the condition and the security of the carrier assembly.

2.22 *Check* the interior of the pedestal for water ingress and contamination.
Clean as necessary.

Check the following on the hydraulic pack assembly:

2.23 The pack is secure to the carrier.

2.24 There are no signs of a fluid leak.

2.25 The hose connections are tight.

2.26 The pack, hoses, and ram are clean and undamaged.

2.27 The fluid level is correct.
Just visible in the filter strainer or to the max mark on the indicator.

2.28 The motor brushes.
They shall be of sufficient length, slide freely in their holder and seat fully on the commutator.

2.29 The motor commutator (where accessible).
It shall be undamaged and a light coffee colour.

2.30 *Record* the pack details (Mk and serial number).

Unit	Mk.	Serial No.
Y		
Z		

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		Y	Z
2.31	*Check* that the modifications to the top ram pin (the fitting of the clamp to prevent it turning) have been carried out. *Any installations that do not have this modification shall be reported to the S&T Maintenance Engineer immediately.*		
2.32	*Check* that the turned pins are lubricated and free from wear.		
2.33	*Check* that the pedestal wiring and terminations are undamaged, secure and positioned so that they will not be trapped by the boom movement. *Wiring to the boom lamps through the spindle is especially prone to damage Protect as necessary.*		
2.34	*Check* the spindle is lubricated and free from wear. *If fitted with PTFE bearing do <u>not</u> lubricate.*		
2.35	Unfasten the lid of the circuit controller and *Check* the following items:		
2.36	The spindle and control arm are lubricated and free from wear. *Do not lubricate the spindle if fitted with Oilite bearings. This can be identified by a P or an R stamped on the controller lid.*		
2.37	Terminations and wiring.		
2.38	Contact fingers. *Replace any fingers that are worn or have lost their spring tension.*		
2.39	Bands. *Check that they are clean and not worn (copper dust in the bottom of the casting) If worn the complete controller shall be renewed.*		
2.40	*Measure* by use of an inclinometer and digital voltmeter (on resistance) the setting of the bands whilst raising the boom on 'hand' operation. Adjust if necessary (Appendix A).		
2.41	Close and fasten the circuit controller. *Check* if any adjustments have been carried out that all the terminations have been correctly tightened.		
	Raise the boom under 'power' operation and *Check* the following:		
2.42	The boom is between 80° and 85° when fully raised.		
2.43	The boom does not excessively oscillate when it comes to rest in the raised position.		

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		Y	Z
2.44	The boom does not 'hunt' when fully raised. *This is a sign of an internal fluid leak inside the hydraulic pack.*		
2.45	*Check* the condition of the anti-guillotine shields and covers. Replace and secure shields and covers. *Arrange for replacements to be fitted if any are damaged.*		

3. Barrier and Machine BR Spec. 843

Is This Section Applicable to the Crossing Under Test? Yes / No

		Y	Z
	Check the following on the barrier pedestal unit:		
3.1	The pedestal is correctly aligned and stable.		
3.2	The locks and hinges are undamaged.		
3.3	With the boom in the raised position there is adequate clearance between the side arm/counter balance weights and the ground/base.		
3.4	The main shaft to side arm fastenings. *Check that there is not any excessive play in the keyway.*		
3.5	Lower the barriers on local control and leave the LCU switch in the Lower/Hand position. Open the front and rear doors of the pedestal units and fully extend the manual pump handle. Pump the booms to the fully raised position.		
3.6	*Observe* they remain raised.		
3.7	On each barrier in turn raise the pump handle until the boom begins to lower. *Check* that the pump handle roll pin has not reached an alignment where its top is above the bottom edge of the handle guide slot.		
	Allow the boom to fully lower and *Check* the following:		
3.8	The boom takes 6 to 8 seconds to lower.		
3.9	The boom is damped during the last 10°to 15° of movement.		
3.10	The boom is horizontal when fully lowered.		
3.11	The boom is the correct length.		

Boom	Design	Actual
Y		
Z		

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		Y	Z
3.12	The condition of the boom.		
3.13	The security of the boom.		
3.14	The boom fixing bolt 'E' clips are undamaged and the whole shear bolt assembly has had grease applied.		
3.15	The reflective strips are undamaged, clean and are in the correct position.		
3.16	The boom lamps, hoods, brackets, and fastenings are undamaged and free from corrosion.		
3.17	The boom wiring, plugs, clamps, and terminations are undamaged.		
3.18	(If Fitted) the strainer wire, support bracket and fastenings are effective.		
	Check the height of the boom from the road surface.		
3.19	Top of boom at the centre of the road, 0.9m Minimum.		
3.20	Underside of boom at any point, 1m Maximum.		
3.21	*Check* the counter balance weights are secure and are the correct weight by *Measuring* with a weight measuring device the tip weight by using the following method: • At the tip end slowly lift the boom until it is approximately 4° to 5° from the horizontal. • Connect the weight measuring device to the tip end of the boom. • Release the boom onto the measuring device ensuring that the boom has not fully lowered then take a reading.		

Boom Length	Tip Weight
3.6m to 4.1m	7.6Kg ±0.5Kg
4.6m to 9.1cm	6.1Kg ±0.5Kg

3.22	*Check* that the boom can be lifted by hand to the fully raised position.		
3.23	*Check* the interior of the pedestal for water ingress and contamination. *Clean as necessary.*		
3.24	*Check* the following on the hydraulic pack assembly:		
3.25	The pack fastenings.		

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		Y	Z
3.26	The top and bottom pack trunnion block mountings and lock washers.		
3.27	The ram adjusting screw and lock washer (Do not adjust).		
3.28	The auto/manual valve is set in the auto position.		
3.29	The split pin and seal are intact.		
3.30	The wiring and terminations to the pack. *The movement of the pack can cause the B24 feed wire to break internal strands, disconnect the wires to check for this type of damage.*		
3.31	The fluid level is correct. *Just visible in the filter strainer or to the max mark on the indicator.*		
3.32	The motor brushes. *They shall be of sufficient length, slide freely in their holder and seat fully on the commutator.*		
3.33	The motor commutator (where accessible). *It shall be undamaged and a light coffee colour.*		

3.34 *Record* the pack details (Mk and serial number).

Unit	Mk.	Serial No.
Y		
Z		

3.35	*Check* that the shock absorber plunger cannot be depressed more than 3mm by finger pressure.		
3.36	*Check* the up and down stop block striker pads. *Replace if worn.*		

Unfasten the lid of the circuit controller and *Check* the following items:

3.37	The spindle and control arm are lubricated and free from wear. *Do not lubricate the spindle if fitted with Oilite bearings. This can be identified by a P or an R stamped on the controller lid.*		
3.38	Terminations and wiring.		
3.39	Contact fingers. *Replace any fingers that are worn or have lost their spring tension.*		

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		Y	Z
3.40	Bands. *Check that they are clean and not worn (copper dust in the bottom of the casting) If worn the complete controller shall be renewed.*		
3.41	*Measure* by use of an inclinometer and digital voltmeter (on resistance) the setting of the bands whilst raising the boom on 'hand' operation. *Adjust* if necessary (Appendix A).		
3.42	Close and fasten the circuit controller. *Check* if any adjustments have been carried out that all the terminations have been correctly tightened.		
3.43	*Check* the circuit controller cam, cam slot and roller assembly.		
3.44	*Check* the earth-bonding strip is secure and undamaged.		
3.45	*Check* the main shaft bearings and fastenings. *Check* that sufficient grease has been applied to the bearings.		
3.46	*Check* the bearing end cap seals are effective. *Water ingress into the end caps can freeze and can prevent the booms from lowering.*		
3.47	*Check* that the pedestal fixing bolts are all fitted and correctly tightened.		
3.48	*Check* the operator's door (rear) micro switch assembly, fastenings, and wires. *Check* that they are secure and undamaged.		
3.49	Raise the boom by hand pumping, *Check* that the boom does not lower between pumping strokes.		
3.50	Lower both the boom's; stow the pump handles and close and lock the operator's doors (rear). Raise the boom under 'power' operation by switching the LCU to raise and *Check* the following:		
3.51	The booms are between 80° and 85° when fully raised.		
3.52	The booms do not excessively oscillate when they comes to rest in the raised position.		
3.53	The booms do not 'hunt' when fully raised. *This is a sign of an internal fluid leak inside the hydraulic pack.*		
3.54	Close and lock the front pedestal door.		

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4. Local and Manual Control BR Standard Mk1 (Penguin)

Is This Section Applicable to the Crossing Under Test? Yes / No

Note: The LCU control unit is normally fitted to the Y pedestal but on some installations it may on the Z pedestal.

		Y	Z
4.1	On the pedestal with the LCU unit, unlock the local control access door.		
4.2	*Check* when unlocked the key is retained in the lock and cannot be withdrawn unless the door is locked again.		
4.3	Pull the control arm to the lowered position and operate the raise button. *Check* that on pressing the raise button the auto button is released.		
4.4	*Check* that two buttons cannot be depressed at the same time. *The pressing of a button will release the button already depressed, the button interlocking shall prevent two buttons locking down at the same time.*		
4.5	Operate the lower button and allow the booms to lower. *Observe* the following items:		
4.6	All the amber road signals illuminate and the audible warnings commence concurrently (Yodalarms at normal warbling rate).		
4.7	After 3 seconds (5 seconds at older installations) all the amber signals extinguish and all the red flashing road signals start to flash.		
4.8	After approximately a further 4 seconds (8 seconds at older installations) the booms commence to lower.		
4.9	The booms take 6 to 8 seconds to reach the fully lowered position.		
4.10	Red flashing road lights continue to be illuminated. Audible warnings may continue to sound depending on design (check diagrams).		
4.11	Press the hand button then operate the control valve to the raise position and hand pump the LCU side boom to the raised position. *Observe* the following items:		
4.12	The boom does not lower between pumping strokes.		
4.13	The red flashing road signals are illuminated.		
4.14	The audible warnings are silent.		

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		Y	Z
4.15	On the other pedestal unlock the local control access door and *Check* when unlocked that the key is retained in the lock and cannot be withdrawn unless the door is locked again.		
4.16	Operate the control valve to the raise position and hand pump the boom to the raised position. *Check* the following items:		
4.17	The boom does not lower between pumping strokes.		
4.18	The red flashing road signals stay illuminated until the boom is above 80° from the horizontal.		
4.19	The audible warnings are silent.		
4.20	On the LCU pedestal operate the control valve to the lower position and allow the boom to fall sufficiently to illuminate the red flashing road signals.		
4.21	Operate the control valve to the raise position and *Check* that the boom movement is arrested.		
4.22	*Check* that the audible warnings are silent. Pump the boom to the raised position.		
4.23	*Observe* that the red flashing road signals are extinguished when the boom is above 80° from the horizontal.		
4.24	Repeat 4.20 to 4.23 for the other boom.		
4.25	Check that the blocks are fitted to the inside of the local control access doors on both the Y and Z pedestals. *The blocks prevent the local control access door being closed and locked with the control valve in the raise position.*		
4.26	Operate the control valve on both the Y and Z pedestals to the lower position and allow both booms to fully lower.		
4.27	Close and lock the local control access door in the non LCU pedestal.		
4.28	Operate the raise button on the control unit in the LCU pedestal and *Observe* the following:		
4.29	Both booms rise together.		
4.30	The audible warnings sound, if designed to operate when the booms are lowered (check diagrams).		
4.31	The red road lights extinguish and the audible warnings (depending on design) cease before the booms have reached 45° from the horizontal.		

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		Y	Z
4.32	*Check* that the local control access door on the LCU pedestal cannot be closed with the control arm in the lowered position.		
4.33	Press the lower button, allow the booms to lower then operate the auto button. *Check* that the same sequence of events occur as listed in 4.5 to 4.10.		
4.34	When the booms are fully raised, stow the control arm and close and lock the access door.		

5. Local and Manual Control BR Spec. 843

Is This Section Applicable to the Crossing Under Test?

		Yes / No	
		Y	Z
5.1	Open the local control unit door. *Check* when unlocked the key is retained in the lock and cannot be withdrawn unless the door is locked again.		
5.2	Operate the control switch to the lower position and *Observe* the following items:		
5.3	All the amber road signals illuminate and the audible warnings commence concurrently (Yodalarms at normal warbling rate).		
5.4	After 3 seconds (5 seconds at older installations) all the amber signals extinguish and all the red flashing road signals start to flash.		
5.5	After approximately a further 4 seconds (8 seconds at older installations) the booms commence to lower.		
5.6	The booms take 6 to 8 seconds to reach the fully lowered position.		
5.7	Red flashing road lights continue to be illuminated. Audible warnings may continue to sound depending on design (check diagrams).		
5.8	Open the operator's door (rear) of Y pedestal. *Check* that if the audible warnings are designed to continue to operate when the booms are fully lowered they are silenced. Extend the pump handle and hand pump the boom to the raised position. *Observe* the following items:		
5.9	The boom does not lower between pumping strokes.		

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		Y	Z
5.10	The red flashing road signals are illuminated.		
5.11	The audible warnings are remain silent.		
5.12	Open the operator's door (rear) of Z pedestal. Extend the pump handle and hand pump the boom to the raised position. *Observe* the following items:		
5.13	The boom does not lower between pumping strokes.		
5.14	The red flashing road signals stay illuminated until the Z boom is above 80° from the horizontal.		
5.15	The audible warnings remain silent.		
5.16	On Y pedestal lift the pump handle and allow the boom to fall sufficiently to illuminate the red flashing road signals.		
5.17	Release the pump handle, and *Check* that the boom movement is arrested.		
5.18	*Check* that the audible warnings are silent. Pump the boom to the raised position.		
5.19	*Observe* that the red flashing road signals are extinguished when the boom is above 45° from the horizontal.		
5.20	Repeat 5.16 to 5.19 for Z pedestal.		
5.21	On Y pedestal lift the pump handle and allow the boom to fully lower.		
5.22	*Check* that the operator's door cannot be closed and locked unless the pump handle is in the stowed position.		
5.23	*Check* that the guide pin is seated in the bottom of the guide slot when the pump handle is fully stowed. *Check* that the spiral pin is not bent and the spiral pin guide is not worn or does not have a 'step'. Close and fully lock the operator's door ensuring that the audible warnings (if designed to operate when the booms are lowered) remain silent. *When locking the operator's door check that the key is turned a further 90° clockwise then back again to the removal position to correctly operate the door proving micro switch.*		

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		Y	Z
5.24	Repeat 5.21 to 5.23 for Z pedestal ensuring that when the operator's door is fully locked the audible warnings (if designed to operate when the booms are lowered) begin to sound.		
5.25	Operate the switch in the local control unit to the raise position and *Observe* the following:		
5.26	Both booms rise together.		
5.27	The red road lights extinguish and the audible warnings (depending on design) cease before the booms have reached 45° from the horizontal.		
5.28	*Check* that the guide on the inside of the local control unit door prevents the door being closed and locked unless the switch is in the auto position.		
5.29	Operate the switch to the lower position and *Observe* that the sequence of events occurs as listed in 5.3 to 5.7.		
5.30	Operate the switch to the auto position and *Observe* the sequence of events occur as listed in 5.26 to 5.27. *On modern installations the switch can be put straight to the auto position, which will cause the booms to perform a lowering sequence then rise. Check the diagrams for the correct mode of operation applicable to the crossing.*		
5.31	Close and lock the local control unit door.		

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6. Road Traffic Light Signals

		YO	YN	ZO	ZN	Aux 1	Aux 2
	On each of the road traffic light signals *Check* the following items:						
6.1	The signal structure is stable.						
6.2	The signal light units are undamaged and the hoods are securely fitted.						
6.3	The signal lenses are undamaged, clean and correctly orientated.						
6.4	Signs and notices attached to the signal post are undamaged, clean, and legible. *See NR/SMS/SG00 for details on reflective boards and signs.*						
6.5	Cables and conduit are undamaged and secure.						
6.6	*Check* that if the signals are fitted with 50-watt Quartz Halogen lamps the road traffic light signal backboard is fitted with a red/white border. *White only and red/white border backboards shall not be mixed together at the same crossing.*						

If auxiliary road traffic light signals are fitted (in addition to YO, YN, ZO and ZN), list the addional signal identification below:

Signal No.	Signal Identification
Aux 1	
Aux 2	

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7. Audible Warnings

		YO	YN	ZO	ZN
7.1	*Check* that the audible warning device and any exposed cables and conduit are undamaged and secure. *Check* the device is correctly aligned.				
7.2	*Check* that there has been no water ingress into yodelalarm units. *Rectify* or replace as necessary.				
7.3	*Check* that the sound output of the audible warning is sufficient for the crossing circumstances and (if applicable) is reduced for the night time. *Some crossings have had the sound output of yodelalarms reduced because of local conditions, check the diagrams.*				

7.4 *Check* (if applicable) that the audible warning time clock is set to the correct time and the day/night settings are correct. *Some time clocks have a control to 'skip' the set controls on certain days, check this is not activated.* [ ]

8. Pedestrian Signals

Is This Section Applicable to the Crossing Under Test? Yes / No

		YO	YN	ZO	ZN	Aux 1	Aux 2
8.1	*Check* that the sign is securely fixed to the post, the post is stable, the sign is undamaged and correctly aligned.						
8.2	*Check* that the hood is securely fitted and the signal face is clean and undamaged.						
8.3	If a sun screen is fitted *Check* this is undamaged and securely fitted.						

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If auxiliary pedestrian signals are fitted (in addition to YO, YN, ZO and ZN), list the addional signal identification below:

Signal No.	Signal Identification
Aux 1	
Aux 2	

9. Telephone Systems

Different types of telephones systems are fitted to AHBC's. Older installations at BR standard Mk1crossings usually have two pedestal phones, two emergency phones, and two 'lay-by' phones. If the crossing has had 'section 66' modifications the two 'lay-by' telephones are replaced with signs instructing the public to use the phones at the crossing. Newer installations (BR Spec. 843) usually have two emergency phones and a LCU phone. There are also 'hybrid' installations, which can be a mixture of the two types. The crossing section order will state the telephone system that is required at the crossing.

		Telephone Identity (see grid)						
		1	2	3	4	5	6	7
9.1	*Check* the telephone and cord is undamaged.							
9.2	*Check* the correct labels and symbols are fitted inside and outside the case and they are legible.							
9.3	*Check* that any associated signs are stable, undamaged, and legible. *Emergence telephones require having the yellow telephone symbol visible on three sides of the telephone case or on a separate plate above the telephone.*							
9.4	*Check* that the correct crossing name is stated on any telephone labels and signs.							
9.5	*Check* that telephone numbers given on any sign are correct. *The site plan will give information on the correct names/numbers that shall be displayed.*							
9.6	If betalights are fitted *Check* that they are lit. *Betalights are usually fitted to older style telephones units that the public have access to.*							

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9.7 On emergency telephones *Check* that an ETD number is given for the public to call in case they cannot contact the monitoring point. Ring this number and *Check* that the recipient gives correct procedures for the call.

Public Telephone Numbers	

Telephone Identity (see grid)						
1	**2**	**3**	**4**	**5**	**6**	**7**

9.8 Ring the monitoring point and *Check* that the call is received correctly. Ask the monitoring point to ring back.

9.9 *Check* the telephone rings correctly. *Check* that the quality of speech and hearing is clear and not distorted.
On Whiteley PETS telephone systems there is a short time when answering a call at either end of the line where the system 'handshakes' .During this period transmission and reception of speech is not possible.

9.10 If lay-by and/or pedestal telephones are fitted *Check* that there is a ring differential at the monitoring point between them and the emergency telephones.

9.11 *Check* that if a lay-by or pedestal telephone is in use a call from the emergency telephone is still received correctly at the monitoring point.

9.12 *Check* that with one of the public access telephones (emergency, lay-by, and pedestal) is left 'off the hook' calls on the other telephones can be made and received correctly.
Whiteley PETS systems will indicate a fault at the monitoring point.

9.13 If a block switch is fitted *Check* that when operated 9.8 to 9.12 operate correct at the alternative monitoring point.

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9.14 *Check* that at the normal monitoring point any audible devices do not sound.

9.15 Repeat 9.13 to 9.14 for any other alternative monitoring points.

9.16 If an absent switch is fitted to the telephone system operate it and *Check* that if an emergency call made this is indicated by a low level of illumination of the telephone unit and any audible devices do not sound. Operate the absent switch is back to normal operation and *Check* that a normal emergence call is received.

9.17 Switch off the mains power to the telephone system. After a period of time equal to the crossing sequence testing repeat tasks 9.8 to 9.16. Switch the mains power to the telephone system back on.

Identify telephones at the installation under test in the grid below:

No.	Telephone Identity
1	
2	
3	
4	
5	
6	
7	

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Note: The tasks in 10 to 14 shall be carried out with the mains power turned off

10. Barrier Proving

Check that a cut-out is provided in the motor contactors before proceeding with 10.1to 10.3.

The booms can be lowered and raised by local control or train simulation.

		Y	Z
10.1	Allow the booms to lower. Restrain the tip of one of the booms then allow the booms to rise. *Check* that the motor cutout for the restrained boom operates within 15 seconds. *This time relates to a SPX contactor.*		
10.2	Release the boom and *Check* that the motor cuts in again within four minutes and the boom fully rises.		
10.3	Repeat 10.1 to 10.2 for the other boom.		
10.4	Allow the booms to lower. Disconnect the Up KR link in the equipment room/location from one of the booms. Allow the booms to rise. *Check* that the red flashing road lights signals have extinguished when the booms reach 45° from the horizontal.		
10.5	*Check* that the road signals re-illuminate 6 seconds after the booms have started to rise. Reconnect the Up KR link and *Check* that the road signals extinguish.		
10.6	Repeat 10.4 to 10.5 for the other boom.		

11. Red Flashing Road Traffic Light Signal Proving

The booms shall be lowered and raised by train simulation

Some early installations only require one red road light to be working on each side to allow the booms to rise. (RECR modifications have not been carried out) *Check* the diagrams for circuit design. Report any of these crossings to the S&T Maintenance Engineer.

		YO	YN	ZO	ZN	Aux 1	Aux 2
11.1	Simulate a train striking in and allow the booms to lower. *Check* that all the red road signals are illuminated (flashing).						

FPM:	

		YO	YN	ZO	ZN	Aux 1	Aux 2
11.2	*Measure* the rate of flashing. (Between 70 and 90 flashes per minute).						

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11.3 Disconnect the left and right lamps on one of the light units by slipping the links in the equipment room/loc.

11.4 Operate the exit function and remove the train simulation. *Check* that the booms remain lowered.

11.5 Re-connect the right hand lamp and *Check* that the booms raise.

11.6 Disconnect again the right hand lamp and simulate a train striking in. *Check* that approximately 2 seconds after the amber lights extinguish the booms begin to lower.

11.7 Operate the exit function and remove the train simulation. *Check* that the booms remain lowered.

11.8 Re-connect the left hand lamp and *Check* that the booms raise. Re-connect the right hand lamp.

11.9 Repeat 11.1 to 11.8 for the other red road signal units.
The flashes per minute rate only requires to be measured on one light unit.

If auxiliary road traffic light signals are fitted (in addition to YO, YN, ZO and ZN), list the addional signal identification below:

Signal No.	Signal Identification
Aux 1	
Aux 2	

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12. Local Control Sequence

12.1 Operate the LCU to the LOWER position and *Check* the following:

12.2 All the amber road signals illuminate and the audible warnings commence concurrently (Yodalarms at normal warbling rate).

12.3 After 3 seconds (5 seconds at older installations) all the amber signals extinguish and all the red road signals and any pedestrian lights start to flash.

12.4 After approximately a further 4 seconds (8 seconds at older installations) the booms commence to lower and the boom lamps illuminate.

12.5 The booms take 6 to 8 seconds to reach the fully lowered position.

12.6 Red road lights and any pedestrian lights continue to be illuminated. Audible warnings may continue to sound depending on design (check diagrams).

12.7 Operate the LCU to the RAISE position and *Check* the following:

12.8 The booms begin to rise.

12.9 The red road lights extinguish and the audible warnings (depending on design check diagrams) cease before the booms have reached 45° from the horizontal.

12.10 The boom lights extinguish when the booms have reached approximately 81° from the horizontal.

12.11 The booms do not take more than 7 seconds to reach the fully raised position of between 81° and 85° from the horizontal.

12.12 Operate the LCU to the LOWER position, allow the lowering sequence to take place and then operate the LCU switch to the AUTO position. *Check* that the lowering sequence is as 12.2 to 12.6 and the raise sequence is as 12.8 to 12.11. *On modern installations the switch can be put straight to the auto position, which will cause the booms to perform a lowering sequence then rise. Check the diagrams for the correct mode of operation applicable to the crossing.*

12.13 Close and lock the LCU door.

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13. Automatic Control Sequence

- Check in the crossing control tables for any special controls that affect the automatic control sequence.
- On early designs of crossings ATC and Strike in treadle reverse proving is required in the automatic sequence and the crossing sequence will start as soon as the strike in treadles are operated. Check the diagrams.
- Where the word EXIT occurs, the strike out treadle shall be operated.
- On single lines or where bi-directional controls exist, the leaving track circuit shall also be operated.
- Where directional proving controls exists the bi-directional strike out treadle shall also be operated in the correct sequence.

		UP	UP X	DN	DN X
13.1	Simulate an approaching train by shunting a controlling track circuit and/or treadle operation. *Observe* the following:				
13.2	On double lines 10 seconds elapse before the crossing sequence commences. On single lines the sequence starts immediately.				
13.3	<u>All</u> the amber road signals illuminate and the audible warnings commence concurrently (Yodalarms at normal warbling rate).				
13.4	After 3 seconds (5 seconds at older installations) <u>all</u> the amber signals extinguish and <u>all</u> the red road signals and any pedestrian lights start to flash.				
13.5	After approximately a further 4 seconds (8 seconds at older installations) the booms commence to lower.				
13.6	The boom lamps illuminate at approximately 80° from the horizontal. *Check the sighting of the boom lamps.*				
13.7	The booms take 6 to 8 seconds to reach the fully lowered position.				
13.8	Red road lights and any pedestrian lights continue to be illuminated and flash alternately with the road lights. Audible warnings may continue to sound depending on design (check diagrams).				
13.9	Operate the exit function and remove the train simulation if controlling track circuit shunted. *Observe* the following:				
13.10	The booms begin to rise.				

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		UP	UP X	DN	DN X
13.11	The red road lights extinguish and the audible warnings (depending on design check diagrams) cease before the booms have reached 45° from the horizontal.				
13.12	The boom lights extinguish when the booms have reached approximately 81° from the horizontal.				
13.13	The booms do not take more than 7 seconds to reach the fully raised position of between 81° and 85° from the horizontal.				

13.14 Repeat 13.1 to 13.13 for the opposite direction on a single line and the other direction on double lines.

14. Double Lines Second Train Approaching Sequence

Is This Section Applicable to the Crossing Under Test? Yes / No

		UP	DN
14.1	Simulate a train striking in on line one as per 13.1.		
14.2	Simulate a second train striking in on line two. *Observe* the following:		
14.3	The booms remain lowered.		
14.4	The road lights and any pedestrian lights continue to flash.		
14.5	The audible warning rate where designed to sound when booms are lowered continues at the normal rate (check diagrams).		
14.6	Operate the exit function and remove the simulation for the first train if controlling track circuit shunted. *Observe* the following:		
14.7	The booms remain lowered.		
14.8	The road lights and any pedestrian lights continue to flash.		
14.9	The audible warning rate where designed to sound when booms are lowered changes to the increased rate (check diagrams).		

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14.10 Operate the exit function and remove the simulation for the second train. *Observe* that the sequence is the same as described in 14.10 to 14.13.

14.11 Repeat steps 14.1 to 14.10 for a train striking in on line two first and a second train striking in on line one.

Note: The rest of the tasks in this test shall be carried out with the mains power on

15. Special Control Function Sequence

Is This Section Applicable to the Crossing Under Test? Yes / No

Check in the control tables for any special controls functions that are applicable to the crossing.

15.1 Perform any special control functions according to the control tables (Stopping/Non-Stopping, Signal, TRTS etc). *Record* the function performed and its results.

Function	Results

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16. Strike in Track Circuit Resetting

Is This Section Applicable to the Crossing Under Test? Yes / No

Check the diagrams to find if these controls are fitted to the crossing
The booms shall be operated by train simulation.
Record the actual times in the grid below.

	UP	UP X	DN	DN X
16.1 Simulate a train striking in by dropping a controlling track circuit, *Observe* that the barrier lowering sequence is correct.				
16.2 Make up the track circuit and start timing with a stopwatch from the time the track circuit is re-connected. *Check* that the booms remain lowered.				
16.3 *Observe* that after 120 seconds the booms rise. *If any adjustments have to be made to achieve this time, allow a period of time for the bi-metal strip in the timer to cool down.*				

Direction	TC Name	Time (Seconds)
Up		
Up X		
Dn		
Dn X		

17. Leaving Track Circuit Resetting

Is This Section Applicable to the Crossing Under Test? Yes / No

Check the diagrams to find if these controls are fitted to the crossing
The booms shall be operated by train simulation.
Record the actual times in the grid below.

	UP	UP X	DN	DN X
17.1 Simulate a train striking in by dropping a controlling track circuit, *Observe* that the boom lowering sequence is correct.				
17.2 Drop the leaving track circuit, operate the exit function and make up the controlling track circuit. *Check that the leaving track circuit remains dropped.*				
17.3 *Observe* that a boom raising sequence takes place when the controlling track circuit is made up, start timing with a stopwatch as soon as the booms start to rise.				

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	UP	UP X	DN	DN X
17.4 *Observe* that after 130 seconds on double lines or 120 seconds on single lines a boom lowering sequence takes place.				
17.5 Re-connect the leaving track circuit and *Observe* that after 120 seconds a boom raising sequence takes place. *If any adjustments have to be made to achieve this time, allow a period of time for the bi-metal strip in the timer to cool down*				

.

Direction	Entrance TC	Exit TC	Time (Seconds)
Up			
Up X			
Dn			
Dn X			

18. Speed Discriminator

Is This Section Applicable to the Crossing Under Test? Yes / No

UP	DN

18.1 *Check* (if fitted) that the speed discriminator synchronous motor timer times correctly.

18.2 *Record* the time up and down (in seconds).

Direction	Time
Up	
Dn	

19. Line Dimensions

Is This Section Applicable to the Crossing Under Test? Yes / No

Where track works have taken place since the previous test

19.1 *Check* and identify the distance of track circuits and treadles as specified on the signalling plan. *Record* the design and actual dimensions.

Line	Design Measurement	Actual Measurement

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20. Indications (Needle Type) and Audible Devices

Is This Section Applicable to the Crossing Under Test? Yes / No

It may be convenient to combine this with section 10 Telephone systems
A competent person (not the signaller) is required at the monitoring point(s) to observe the indications

.

20.1	*Check* that the indicator is in the barriers raised / power on position.	
20.2	Simulate a train striking in and *Observe* that the indicator moves to the no legend (barriers working) position.	
20.3	Remove the train simulation and operate the exit function, *Observe* that the indication returns to the barriers raised / power on position.	
20.4	Open the local control operator's door, if door proving is fitted *Observe* that the indicator moves to the no legend (barriers working) position.	
20.5	Otherwise operate the local control buttons to raise, lower and hand in turn and *Observe* that the indicator moves to and remains in the no legend (barriers working) position.	
20.6	Return the local control unit to the auto position and close and lock the operator's door, *Observe* that the indicator returns to the barriers raised / power on position.	
20.7	Simulate a train striking in and *Observe* that the indicator moves to the no legend (barriers working) position.	
20.8	*Check* that after 240 seconds on double lines or 180 seconds on single lines the audible alarm sounds and it can be silenced.	
20.9	Remove the train simulation and operate the exit function. *Observe* that the indication returns to the barriers raised / power on position and the audible alarm sounds and it can be silenced.	
20.10	Withdraw in turn each power supply fuse that is in the (PO) PR circuit (check diagrams). *Observe* that for each fuse the indicator moves to the barriers raised / power off position.	
20.11	*Check* that the audible alarm sounds and can be silenced.	
20.12	When each fuse is replaced *Observe* that the indicator returns to the barriers raised / power on position.	
20.13	*Check* that the audible alarm sounds and can be silenced.	
20.14	*Check* (where provided) that the monitoring point test switches operate.	

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20.15 If an Absent switch is provided, switch to the absent position and *Check* that the indicator moves to the no legend (barriers working) position, the audible alarms devices do not sound and the level crossing protecting functions (block/signal) are effective.

20.16 If a block switch is provided, switch to the alternative monitoring point and *Check* that at the normal monitoring point the indicator moves to the no legend (barriers working) position and the audible alarms devices do not sound. At the alternative monitoring point repeat 20.1 to 20.14.

21. Indications (Lamp Type) and Audible Devices

Is This Section Applicable to the Crossing Under Test? Yes / No

It may be convenient to combine this with section 13 Telephone systems
A competent person (not the signaller) is required at the monitoring point(s) to observe the indications.
The barrier indications are normally White for barriers raised, barriers working and power on. For barriers failed and standby in use they are normally Red.

21.1 *Check* that the indications show barriers raised and power on.

21.2 Simulate a train striking in and *Observe* the barriers raised indication extinguishes, the barriers working indication illuminates and the power on indication remains illuminated.

21.3 Operate the exit function and remove the train simulation, *Observe* that the barriers working indication extinguishes, the barriers raised indication illuminates and the power on indication remains illuminated.

21.4 Open the LCU unit door and *Observe* that the barriers raised indication extinguishes, the barriers working indication illuminates and the power on indication remains illuminated.

21.5 *Check* that with each position of the switch (Raise, Lower/Hand and Auto) the barriers raised indication remains extinguished and the barriers working indication remains illuminated.

21.6 Return the switch to the auto position, and close and lock the door. *Observe* that the barriers raised indication illuminates, the barriers working indication extinguishes and the power on indication remains illuminated.

21.7 Unlock in turn each of the BR standard 843 barrier pedestal unit operator's doors (rear) and *Observe* that the barriers raised indication extinguishes and the barriers working indication illuminates when unlocked and illuminates again when locked. The power on indication will remain illuminated.

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21.8 Operate in turn each exit treadle (or freddy) and *Observe* that the barriers raised indication extinguishes and the barriers working indication illuminates when the treadle is not proving normal (or freddy activated) and returns to barriers raised illuminated, barriers working extinguished again when normal proving is regained (or freddy de-activated). The power on indication will remain illuminated.

21.9 Simulate a train striking in and *Observe* that the barrier raised indicator extinguishes and the barriers working indicator illuminates.

21.10 *Check* that after 240 seconds on double lines or 180 seconds on single lines the barriers working indicator extinguishes, the barriers failed indication illuminates and the audible alarm sounds and it can be silenced. The power on indication will remain illuminated.

21.11 Remove the train simulation and operate the exit function, Observe that the barriers failed indication extinguishes, the barriers raised indication illuminates, and the audible alarm sounds and it can be silenced. The power on indication will remain illuminated.

21.12 Withdraw in turn each power supply fuse that is in the (PO) PR circuit (check diagrams). *Observe* that for each fuse the power on indication extinguishes and the standby in use indication illuminates.

21.13 *Check* that the audible alarm sounds and can be silenced. When each fuse is replaced *Observe* that the standby in use indication extinguishes and the power on indication illuminates.

21.14 *Check* that the audible alarm sounds and can be silenced. The barriers raised indication will remain illuminated.

21.15 *Check* (where provided) that the monitoring point test switches operate.

21.16 If an Absent switch is provided, switch to the absent position and *Check* that all the indications extinguish, the audible alarms devices do not sound and the level crossing protecting functions (block/signal) are effective.

21.17 If a block switch is provided, switch to the alternative monitoring point and *Check* that at the normal monitoring point all the indications are extinguished and the audible alarms devices do not sound. At the alternative monitoring point repeat 21.1 to 21.16.

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22. Power Supplies and Batteries

22.1 *BUSBAR EARTH TEST (051).*	
22.2 *DYNAMIC EARTH TEST (052) Level Crossing Barriers.*	
22.3 *ELD TEST (053).*	

Power Supply Identification

APPENDIX A

Circuit Controller Band Settings

Band	Made Between
DN KR	0° and 4°
HJPR	42° and 90° (#)
MR	0° and 83°
UP KR	81° and 90°

#: The HJPR band on early installations may be set to make sooner than 42°. *Check* the diagrams for the required setting for the installation you are testing.

Note: It is important to obtain the over-lap between the UP KR band making and the MR band breaking. This is to ensure that if a boom drops slightly it will drive up again before the red road signals operate.
On barrier units that use limit switches in place of circuit controllers, reference shall be made to the diagrams for the positions of the cams.

End

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LEVEL CROSSING TESTING

AUTOMATIC BARRIER CROSSING LOCALLY MONITORED

NR/SMS/LX71

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Published & Issued by: Network Rail Kings Place 90 York Way, London N1 9AG

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GENERAL

This test plan is the 'Service B Tests' of NR/SMS/LC10 and NR/SMS/Test/071. It is for use of the person conducting the annual test of the level crossing and has relevant 'tick boxes' by each task so that particular item of the test can be correctly recorded as per the index in 'crossing defects'.

The numbering of the sections in this test plan is unique; they do not follow on from the maintenance test in NR/SMS/Test/071 'Service A Tests'.

The following abbreviations are used in this test plan:
DRL: Driver's Red Light
DWL: Driver's White Light

To perform the annual test the following documents will be required:

- The crossing ground plan
- The level crossing order
- The crossing control tables
- The signalling plan

Missing documentation shall be listed as a defect.

Test Summary	
Level Crossing Name	
Level Crossing Type	
Name of Monitoring Signal Box(es)	
Date of Full Test	
Time Full Test Commenced	
Time Full Test Completed	
Tested by	
Signature	
Date of Signature	
Grade and Title	

CROSSING DEFECTS

On the test plan each item requires to be recorded with the following letters in the box provided:

X: Found Incorrect, Action Required
R: Found Incorrect, Rectified on Day of Test
C: Correct
N: Not Applicable to this Installation

Any item found incorrect (X or R) are to be listed on the summary pages. On items requiring action, list the party(s) responsible for rectifying them.

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All items (rectified on the day of the test or not) shall be reported as corrective maintenance as detailed in NR/SMS/Part/A02.

SUMMARY OF ITEMS FOUND INCORRECT (1)

List in the table below all items found incorrect and rectified on the day of the test (code letter R)

Description of Items found Incorrect and Rectified

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SUMMARY OF ITEMS FOUND INCORRECT (2)

List in the table below all items found incorrect and requiring action (code letter X)

Description of Item Found Incorrect and Requiring Action	Responsible Party(s)

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1. Road Arrangements

1.1 *Check* that the road markings are in accordance with the section order and plans. ☐

1.2 *Check* that the road markings on the approaches to the crossing (up to the stop line) are complete and visible. ☐

1.3 *Check* the condition and the sighting of the road signs on the crossing approaches. ☐
See NR/SMS/SG00 for details on reflective boards and signs.

1.4 *Check* (if provided) the condition and security of any pedestrian guardrails. ☐
Any defects found in 1.2 to 1.4 shall be reported to the appropriate council via the SM(S)

1.5 *Check* the condition of the road surface over the crossing. ☐

1.6 *Check* that the road markings between and including the stop lines are complete and visible. ☐

1.7 *Check* (if provided) that the cattle/anti-trespass guards are complete and securely fastened down. ☐

1.8 *Check* (if provided) the condition and security of any wicket gates. ☐

1.9 *Check* the condition and the security of any fencing on the approach to equipment room or locations. ☐

2. Barrier and Machine (BR Spec. 843)

		Y	Z
2.1	*Check* the following on the barrier pedestal unit:		
2.2	The pedestal is correctly aligned and stable.		
2.3	The locks and hinges are undamaged.		
2.4	With the boom in the raised position there is adequate clearance between the side arm/counter balance weights and the ground/base.		
2.5	The main shaft to side arm fastenings. *Check that there is not any excessive play in the keyway.*		

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	Y	Z
2.6 Lower the barriers on local control and leave the LCU switch in the Lower position. Open the front and rear doors of the pedestal units and fully extend the manual pump handle. Pump the booms to the fully raised position and *Observe* they remain raised.		
2.7 On each barrier in turn raise the pump handle until the boom begins to lower. *Check* that the pump handle roll pin has not reached an alignment where its top is above the bottom edge of the handle guide slot. Allow the boom to fully lower and *Check* the following:		
2.8 The boom takes 6 to 8 seconds to lower.		
2.9 The boom is damped during the last 10° to 15° of movement.		
2.10 The boom is horizontal when fully lowered.		
2.11 The boom is the correct length.		

Boom	Design	Actual
Y		
Z		

2.12 Condition of the boom.		
2.13 The security of the boom.		
2.14 The boom fixing bolt 'E' clips are undamaged and the whole shear bolt assembly has had grease applied.		
2.15 The reflective strips are undamaged, clean and are in the correct position.		
2.16 The boom lamps, hoods, brackets, and fastenings are undamaged, free from corrosion and correctly aligned.		
2.17 The boom wiring, plugs, clamps, and terminations are undamaged.		
2.18 (If Fitted) the strainer wire, support bracket and fastenings are effective.		
Check the height of the boom from the road surface.		
2.19 Top of barrier at the centre of the road 0.9m Minimum.		
2.20 Underside of barrier at any point 1m Maximum.		

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Y	Z

2.21 *Check* the counter balance weights are secure and are the correct weight by *Measuring* with a weight measuring device the tip weight by using the following method:

- At the tip end slowly lift the boom until it is approximately 4° to 5° from the horizontal.
- Connect the weight measuring device to the tip end of the boom.
- Release the boom onto the measuring device ensuring that the boom has not fully lowered then take a reading.

Boom Length	Tip Weight
3.6m to 4.1m	7.6Kg ±0.5Kg
4.6m to 9.1m	6.1Kg ±0.5Kg

2.22 *Check* that the boom can be lifted by hand to the fully raised position.

2.23 *Check* the interior of the pedestal for water ingress and contamination.
Clean as necessary.

Check the following on the hydraulic pack assembly:

2.24 The pack fastenings.

2.25 The top and bottom pack trunnion block mountings and lock washers.

2.26 Bolts through the trunnion to the operating lever are the correct length and spiral pins are fitted correctly.

2.27 The ram adjusting screw and lock washer.
Do not adjust the screw.

2.28 The auto/manual valve is set in the auto position and the split pin and seal are intact.

2.29 The wiring and terminations to the pack.
The movement of the pack can cause the B24 feed wire to break internal strands, disconnect the wires to check for this type of damage.

2.30 The fluid level is correct.
Just visible in the filter strainer or to the max mark on the indicator.

2.31 The motor brushes.
They shall be of sufficient length, slide freely in their holder and seat fully on the commutator.

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		Y	Z
2.32	The motor commutator (where accessible). *It shall be undamaged and a light coffee colour.*		
2.33	*Record* the pack details (Mk and serial number). *Check* that the pack is of the correct type for an ABCL (coloured blue).		

Unit	Mk.	Serial No.
Y		
Z		

2.34	*Check* that the shock absorber plunger cannot be depressed more than 3mm by finger pressure.		
2.35	*Check* the up and down stop block striker pads *Replace if worn.*		
2.36	Unfasten the lid of the circuit controller and *Check* the following items:		
2.37	The spindle and control arm are lubricated and free from wear. *Do not lubricate the spindle if fitted with Oilite bearings. This can be identified by a P or an R stamped on the controller lid.*		
2.38	Terminations and wiring.		
2.39	Contact fingers. *Replace any fingers that are worn or have lost their spring tension.*		
2.40	Bands. *Check they are clean and not worn (copper dust in the bottom of the casting) If worn the complete controller shall be renewed.*		
2.41	*Measure* by use of an inclinometer and digital voltmeter (on resistance) the setting of the bands whilst raising the boom on 'hand' operation. *Adjust* if necessary (Appendix A).		
2.42	Close and fasten the circuit controller. *Check* if any adjustments have been carried out that all the terminations have been correctly tightened.		
2.43	*Check* the circuit controller cam, cam slot and roller assembly.		
2.44	*Check* the earth-bonding strip is secure and undamaged.		
2.45	*Check* the main shaft bearings and fastenings. *Check* that sufficient grease has been applied to the bearings.		

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		Y	Z
2.46	*Check* the bearing end cap seals are effective *Water ingress into the end caps can freeze and prevent the booms from lowering.*		
2.47	*Check* that the pedestal fixing bolts are all fitted and correctly tightened.		
2.48	*Check* the operator's door (rear) micro switch assembly, fastenings and wires. *Check* that they are secure and undamaged.		
2.49	Raise the boom by hand pumping, *Check* that the boom does not lower between pumping strokes.		
2.50	Lower both the booms; stow the pump handles and close and lock the operator's doors (rear). Raise the boom under 'power' operation by switching the LCU to raise and *Check* the following:		
2.51	The booms are between 80° and 85° when fully raised.		
2.52	The booms do not excessively oscillate when they comes to rest in the raised position.		
2.53	The booms do not 'hunt' when fully raised. *This is a sign of an internal fluid leak inside the hydraulic pack.*		
2.54	Close and lock the front pedestal door.		

3. Local and Manual Control

		Y	Z
3.1	Open the local control unit door. *Check* when unlocked that the key is retained in the lock and cannot be withdrawn unless the door is locked again.		
3.2	Operate the control switch to the lower position and *Observe* the following items:		
3.3	<u>All</u> the amber road signals illuminate and the audible warnings commence concurrently (Yodalarms at normal warbling rate).		
3.4	After 3 seconds <u>all</u> the amber signals extinguish and <u>all</u> the red flashing road signals start to flash.		
3.5	The crossing headlights illuminate the crossing at the same time the red road lights commence to flash.		
3.6	The DWL signals do <u>not</u> illuminate for any direction.		

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		Y	Z
3.7	After approximately a further 4 seconds the booms commence to lower.		
3.8	The booms take 6 to 8 seconds to reach the fully lowered position.		
3.9	Red flashing road lights continue to be illuminated. Audible warnings continue to sound.		
3.10	Open the operator's door (rear) of Y pedestal. *Check* the audible warnings are silenced. Extend the pump handle and hand pump the boom to the raised position. *Observe* the following items:		
3.11	The boom does not lower between pumping strokes.		
3.12	The red flashing road signals are illuminated.		
3.13	The audible warnings are remain silent.		
3.14	Open the operator's door (rear) of Z pedestal. Extend the pump handle and hand pump the boom to the raised position. *Observe* the following items:		
3.15	The boom does not lower between pumping strokes.		
3.16	The red flashing road signals stay illuminated until the Z boom is above 80° from the horizontal.		
3.17	The audible warnings remain silent.		
3.18	Operate the LCU control switch to the raise position and *Check* that the red flashing road signals are extinguished.		
3.19	On Y pedestal lift the pump handle and allow the boom to fall sufficiently to illuminate the red flashing road signals. Release the pump handle and *Check* that the boom movement is arrested.		
3.20	*Check* that the audible warnings are silent. Pump the boom to the raised position.		
3.21	*Observe* that the red flashing road signals are extinguished when the boom is above 80° from the horizontal.		
3.22	Repeat 3.19 to 3.21 for Z pedestal.		
3.23	Operate the LCU switch to the lower position.		
3.24	On Y pedestal lift the pump handle and allow the boom to fully lower.		
3.25	*Check* that the operator's door cannot be closed and locked unless the pump handle is in the stowed position.		

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		Y	Z
3.26	*Check* that the guide pin is seated in the bottom of the guide slot when the pump handle is fully stowed. *Check* that the spiral pin is not bent and the spiral pin guide is not worn or does not have a 'step'. Close and fully lock the operator's door ensuring that the audible warnings remain silent. *When locking the operators' door check that the key is turned a further 90° clockwise then back again to the removal position to correctly operate the door proving micro switch.*		
3.27	Repeat 3.24 to 3.26 for Z pedestal ensuring that when the operator's door is fully locked the audible warnings begin to sound.		
3.28	Operate the switch in the local control unit to the raise position and *Observe* the following:		
3.29	Both booms rise together.		
3.30	The red road lights extinguish and the audible warnings cease before the booms have reached 45° from the horizontal.		
3.31	*Check* that the guide on the inside of the local control unit door prevents the door being closed and locked unless the switch is in the auto position.		
3.32	Operate the switch to the auto position and *Observe* that a lowering sequence takes place and then the booms rise as listed in section 13.		
3.33	Close and lock the local control unit door.		

4. Road Traffic Light Signals

		YO	YN	ZO	ZN	Aux 1	Aux 2
	On each of the road traffic light signals *Check* the following items:						
4.1	The signal structure is stable.						
4.2	The signal light units are undamaged and the hoods are securely fitted.						
4.3	The signal lenses are undamaged, clean and correctly orientated.						

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	YO	YN	ZO	ZN	Aux 1	Aux 2
4.4 Signs and notices attached to the signal post are undamaged, clean, and legible *See NR/SMS/SG00 for details on reflective boards and signs.*						
4.5 Cables and conduit are undamaged and secure.						
4.6 *Check* that if the signals are fitted with 50-watt Quartz Halogen lamps the road traffic light signal backboard is fitted with a red/white border. *White only and red/white border backboards shall not be mixed together at the same crossing.*						

If auxiliary road traffic light signals are fitted (in addition to YO, YN, ZO and ZN), list the addional signal identification below:

Signal No.	Signal Identification
Aux 1	
Aux 2	

5. Audible Warnings

	YO	YN	ZO	ZN
5.1 *Check* that the audible warning device and any exposed cables and conduit are undamaged and secure. *Check* that the device is correctly aligned.				
5.2 *Check* that there has been no water ingress into yodelalarm units. *Rectify* or replace as necessary.				
5.3 *Check* that the sound output of the audible warning is sufficient for the crossing circumstances and (if applicable) is reduced for the night time. *Some crossings have had the sound output of yodelalarms reduced because of local conditions, check the diagrams.*				

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5.4 *Check* (if applicable) that the audible warning time clock is set to the correct time and the day/night settings are correct.
Some time clocks have a control to 'skip' the set controls on certain days, check this is not activated.

6. Pedestrian Signals

Is This Section Applicable to the Crossing Under Test? Yes / No

	YO	YN	ZO	ZN	Aux 1	Aux 2
6.1 *Check* that the sign is securely fixed to the post, the post is stable; the sign is undamaged and correctly aligned.						
6.2 *Check* that the hood is securely fitted and the signal face is clean and undamaged.						
6.3 If a sun screen is fitted *Check* this is undamaged and securely fitted.						

If auxiliary pedestrian signals are fitted (in addition to YO, YN, ZO and ZN), list the addional signal identification below:

Signal No.	Signal Identification
Aux 1	
Aux 2	

7. Crossing Headlight Unit

	Y	Z
7.1 *Check* that the structure is stable and securely fixed in the ground.		
7.2 *Check* that the light unit is undamaged and correctly aligned.		
7.3 *Check* that the lens is clean and the hood is securely fixed.		

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8. Drivers Crossing Indicators (DRL/DWL) Signals

		UP	UP X	DN	DN X
8.1	*Check* (with no trains approaching) that the flashing red signal (DRL) is clearly visible from the speed restriction board.				
8.2	*Check* that the structure is stable and securely fixed in the ground.				
8.3	*Check* that the unit is undamaged, correctly aligned and sighted.				
8.4	*Check* that the lens(es) are clean and the hood(s) is/are securely fitted.				
8.5	*Check* that all the LED's on the DRL unit are flashing.				

9. Lineside Notice Boards and Signs

		UP	UP X	DN	DN X
9.1	*Check* that the sign is securely fixed to the post, the post is stable and securely fixed in the ground.				
9.2	*Check* that the sign is correctly aligned and sighted.				
9.3	*Check* that the sign is of the correct retro-reflective material (see 1.3).				
9.4	*Check* that the sign is clean and the legend is correct and legible. *The site plan will give details on the correct information that shall be displayed.*				

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