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Rail Industry Standard for Safe Use of Plant for Infrastructure Work
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Rail Industry Standard for Safe Use of Plant for Infrastructure Work

Issue Record

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One	7 April 2007	Original document Replaces GM/RT1403 issue one and GM/RC1503 issue one
Two	03 October 2009	Replaces issue one Small scale change amendment – Appendix A withdrawn The revision also incorporates amendments to GN056 and 3.1.3, as set out in the amendment section of the Railway Group Standards Catalogue in August 2009.
Three	05 March 2011	Supersedes issue 2. Small scale change amendment – revision of guidance GN055, updating of references to Rule Book Handbook in place of modules and updating of reference to the ORR document Railway Safety Publication 1 'Developing and Maintaining Staff Competence' March 2007 in place of GO/RT3260.

Amended or additional parts of revised pages have been marked by a vertical black line in the adjacent margin, other than the changed references to the Rule Book.

Superseded or replaced documents

The following Railway Group documents are superseded or replaced, either in whole or in part as indicated:

Superseded or replaced documents	Sections superseded	Date when sections are superseded
RIS-1700-PLT issue two Rail Industry Standard for Safe Use of Plant for Infrastructure Work	All	05 March 2011

Supply

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Rail Industry Standard for Safe Use of Plant for Infrastructure Work

Part 1 Introduction

1.1 Purpose and structure of this document

- 1.1.1 This document has been published by Rail Safety and Standards Board (RSSB) to provide a voluntary standard on the safe use of plant for infrastructure work, for the rail industry to use if they so choose, as set out in clause 1.2.1.
- 1.1.2 This document details requirements for the safe use of plant (as defined in this document) on, or that could affect, Network Rail controlled infrastructure, used for all infrastructure related activities, including (but not limited to) maintaining, inspecting, measuring, renewing and installing infrastructure and its components. This document is particularly relevant to situations where plant has the potential to infringe running line clearances or where plant is used adjacent to an open running line.
- 1.1.3 The document is set out in the form of standard requirements followed by guidance notes. Guidance notes are marked by a grey bar in the margin with the letters GN and sequential numbering, to differentiate them from the standard requirements to which they relate.
- 1.1.4 This document contains requirements and guidance that are amended under the Railway Group Standards Code (Issue Three) as a small scale change. Reference to the amendments is made in the 'Issue Record'. All other parts of the document are unchanged from the previous issue.

1.2 Application of this document

- 1.2.1 An infrastructure manager or a railway undertaking may choose to adopt all or part of this document in company procedures or contract conditions. Where this is the case the duty holder will specify the nature and extent of application.
- 1.2.2 Specific compliance requirements and dates have therefore not been specified since these will be the subject of the internal procedures or contract conditions of the companies which choose to adopt this standard.

1.3 Health and safety responsibilities

- 1.3.1 Users of documents published by Rail Safety and Standards Board (RSSB) are reminded of the need to consider their own responsibilities to ensure health and safety at work and their own duties under health and safety legislation. RSSB does not warrant that compliance with all or any documents published by RSSB is sufficient in itself to ensure safe systems of work or operation or to satisfy such responsibilities or duties.

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1.5 Approval and authorisation of this document

1.5.1 The content of this document was approved by:

Plant Standards Committee on 16 December 2010.

1.5.2 This document was authorised by RSSB on 19 January 2011.

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Part 2 Requirements for Use, Approval and Maintenance of Plant

2.1 Approval of plant

- 2.1.1 All items of plant to be used on Network Rail controlled infrastructure, including lifting accessories designed specifically for lifting rail, shall have approval from Network Rail Product Acceptance Services prior to use, as set out in RIS-1530-PLT and RIS-1701-PLT.

2.2 Identification

- 2.2.1 Items of plant to be used on Network Rail controlled infrastructure shall be uniquely identified and shall have a contact telephone number displayed on each item.

GN001 The Provision and Use of Work Equipment Regulations 1998 requires all (safety) markings to be clearly visible. In addition all items of plant should be uniquely identified.

GN002 The telephone number should be a number that can be used to contact the owner of the item of plant or his representative.

2.3 Maintenance of plant

- 2.3.1 The requirements for maintenance of plant are set out in the Provision and Use of Work and Equipment Regulations 1998, GM/RT2004 and RIS-1530-PLT as applicable, and manufacturers' recommendations, where appropriate.

- 2.3.2 Maintenance of plant shall be recorded such that it is readily auditable. The maintenance arrangements, including the rectification of defects, shall address the safety requirements for the use of the plant in a railway environment, as detailed in this document for the specific types of plant. The maintenance arrangements shall include the reporting of safety-related defects, as set out in GE/RT8250.

- 2.3.3 When plant is hired and the hire company undertakes to perform maintenance, it shall be the employer's responsibility to ensure that the above maintenance requirements are met.

GN003 The 'employer' in this case is the company who procures the equipment from the hire company for use on the railway.

- 2.3.4 There shall be a system to ensure the operator is aware that the item of plant to be used is in date for its maintenance.

GN004 It is recommended that the next maintenance due date is displayed on each item of plant. For the purposes of this clause the maintenance due date is for examination / testing by skilled plant maintenance staff. It does not include pre-work checks by the operator.

2.4 Documentation

- 2.4.1 On-track plant (OTP) shall carry with it the following documentation, as a minimum:
- a) Operating manual or instructions
 - b) A valid Certificate of Engineering Acceptance (where the machine is not registered on the Rolling Stock Library)
 - c) Machine logbook in which is recorded evidence of maintenance undertaken, including reporting and rectification of defects

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- d) Where applicable, evidence of the last 'thorough examination', as required by the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)
- e) Where applicable, results of performance tests
- f) Where applicable, load radius charts (duty charts).

GN005 The load radius chart for knuckle boom cranes is often a label beside the controls. Requirements for duty charts of hydraulic excavators used as cranes are set out in RIS-1530-PLT.

GN006 Knuckle boom cranes includes machines formerly known as lorry loaders.

2.4.2 All items of plant shall, where applicable, carry documentation as evidence of:

- a) Performance tests
- b) Statutory examination.

GN007 Examples of performance tests are pressure holding tests for rail stressing equipment, sound level tests of automatic warning device (AWD), etc. Individual employers may combine this with the maintenance due date (see GN004).

GN008 Evidence should be provided on the item of plant that statutory requirements have been met, for example portable appliance testing (PAT) of electrical tools, examination by a competent person of lifting equipment etc.

2.5 Urgent high risk defects

2.5.1 Urgent high risk defects shall be reported to NIR-Online using the system set out in GE/RT8250.

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Part 3 Preparing a Safe System of Work for Use of Plant

3.1 Planning for use of plant

- 3.1.1 When planning work, consideration shall be given to additional requirements for using plant. These include, but are not limited to, the following:
- a) The need for a site visit during daylight hours to identify the hazards at the site and the precautions that need to be put in place for using the particular item of plant
 - b) The transport of plant to and from the site
 - c) The ability of the plant to transport personnel and that it is certificated (or approved) to do this
 - d) The loading and unloading of plant at the site
 - e) Specific site lighting requirements for the plant
 - f) The use that will be made of the plant, including, for example, noise and fumes generated by its use and any interaction between items of plant on the same site
 - g) Access for the plant and positions of safety for personnel involved with using the plant and affected by the plant
 - h) Any areas of limited space and clearance associated with the use of the plant
 - i) Load carrying capacities of platform surfaces, bridges and other track supporting structures, and lifts that may be used
 - j) Storage locations, including security of the plant on site.

GN009 Where a hazard is identified the relevant mitigations to be put in place to minimise the risks arising from the hazard should be documented.

GN010 Planners should give consideration to how personnel are to arrive at the worksite. Walking long distances along ballast / track should be avoided. Therefore the choice of plant to be used could be influenced by its ability to provide transport.

GN011 Planners should consider the number of personnel needed to be conveyed simultaneously to the worksite and back, and hence make sufficient provision for vehicles with adequate capacity to achieve this.

- 3.1.2 When the work requires the use of road vehicles the planners shall consider how the vehicles are to arrive at the location at which they are to be used. This shall include, but not be limited to:
- a) Access point
 - b) Vehicles with a wheel load over 3 t (or 6 t axle load) – see clause 4.1.1.2
 - c) The potential for vehicles to damage ballast shoulders – see clause 4.1.1.3
 - d) The need for vehicles to turn round at worksite to return to original access point, without fouling a line open to traffic, or causing damage to ballast or ballast shoulder.
 - e) Cable troughing and drainage channels

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- f) Overhead, third and fourth rail contact electrification systems.

GN012 Consideration of the electrical system should include the return conductor that is positioned along the side of the gantry structures. The return conductor is not in a fixed position and should be assumed to be at any height. Note also that the access road adjacent to the railway may be higher than rail level.

- 3.1.3 The planning process shall ensure that, unless this line is protected as set out in the applicable Rule Book handbook, the intended route of any road vehicle allows no part of the vehicle or any part of the load to encroach to closer than 6 feet 6 inches (2 m) to the closest railway line.

3.2 Documented safe system of work

- 3.2.1 The documented safe system of work shall include all requirements for the safe use of the plant.
- 3.2.2 The documented safe system of work shall require the use of plant, including the on and off tracking of plant, to be controlled by competent and certificated persons.
- 3.2.3 The documented safe system of work shall define the controls to address the general and specific risks associated with the operation of plant. Risk controls for specific types of plant are set out in Parts 4, 5, 6 and 7 of this document.
- 3.2.4 If circumstances dictate the need for a change to the documented safe system of work for the use of plant after work has commenced, only a competent person shall be permitted to make the change.

GN013 It is recognised that some safe system of work documents are very lengthy. It is recommended that where this is the case the document should be split into smaller sections for use by individual personnel at the worksite.

3.3 Lift plan

- 3.3.1 Every lifting operation using lifting equipment shall have a documented lift plan in addition to, or as part of, the documented safe system of work.

GN014 Generic lift plans are acceptable for routine lifting of a repetitive nature, such as in depots with overhead hoists, lorries unloading the same products etc. Each lift of equipment on a worksite should be planned and documented beforehand. An acceptable method of planning is set out in M&EE Group Code of Practice COP 011.

- 3.3.2 Equipment for which a lift plan is required shall include all machines used for lifting as follows:
- a) Purpose-built rail cranes
 - b) Road cranes working within the railway boundary
 - c) Hydraulic excavators used as cranes
 - d) Knuckle boom cranes
 - e) Jacks
 - f) All other items included within the definitions of lifting equipment set out in LOLER.
- 3.3.3 The lift plan shall incorporate the requirements of LOLER and BS 7121, and additionally include adequate control measures for the following railway specific risks:

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- a) Infringement by the crane or the load of the gauge; horizontally to adjacent line(s) and vertically for height limit
- b) Control of stability on canted track and gradients
- c) Control over the safe working load related to rated duties
- d) Tandem lifting.

GN015 The lift plan for the crane should take into account the following:

- a) The weights and symmetry of the load(s) to be lifted, including any possible adhesion between the ground and load or load and structure. When a load cannot be weighed, calculated, or estimated accurately, technical assistance should be obtained.
- b) The weight of the lifting accessories to be used, for which due allowance should be made in the crane loading.
- c) The radius, track cant and track gradient (or ground slope if not rail mounted) on which the crane will be required to lift each load.
- d) The details of any special instructions which apply to the lifting equipment to be used, or to the method of lifting to be employed.
- e) The suitability of track and ground conditions to withstand the concentrated loads imposed by wheels or outriggers of the crane.
- f) The clearance between the crane and loads to overhead and adjacent structures, for example bridges, overhead line equipment, signal posts, lineside cabinets etc. Where applicable this should be indicated on a site diagram.
- g) Any sub-surface works or services eg culverts, drains, building construction, etc, which have the potential to be damaged by the lifting operation or affect the safe operation of the crane. Where applicable these should be indicated on a site diagram.
- h) All other rail vehicles in the vicinity. These should be listed, their use defined and their position and direction of approach clearly indicated.
- i) An assessment of the possession requirements of running lines upon which the crane stands and adjacent running lines, including electrical isolation.
- j) Any requirements for liaison with other parties responsible for work in the same possession.
- k) The requirement for removing or slueing OLE for the duration of the work.
- l) The provision for controlling the operation on site.
- m) Any requirements for cranes working independently but in close proximity on the same site. The limits of travel should be agreed in advance.
- n) Any requirements for tandem or multiple crane lifting. See also clause 5.3.
- o) The requirement to work on a bridge, arch, viaduct or embankment. Advice and authority of the relevant infrastructure manager should be obtained to ensure the structure is capable of supporting the crane and the assessed loads.
- p) The limits of the lifting operation and positions of safety for work groups.

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- q) Adequate resources (including sufficient slingers) are available.
 - r) An assessment of the potential requirement to inspect the lifted components for damage caused by the lifting process.
 - s) Method of communication (noting likely environmental conditions such as noise, lighting etc).
- GN016 An acceptable method of establishing control measures for tandem lifting is set out in M&EE Group Code of Practice COP 008.

3.3.4 Lift plans shall be written by staff competent in lifting operations.

- GN017 Lift plans should be written by staff competent as crane controllers, as set out in clauses 5.4.1.1 and 8.4.2. The crane controller (planning) should obtain all the necessary information to ensure a safe lifting operation and decide on a lift plan.

3.4 Selection and planning of protection against rail movements

3.4.1 Selection of protection arrangements when the work is on or near the line

- GN018 A safe system of work for using plant should be decided with reference to safety against rail movements, as set out in the applicable Rule Book handbook.

3.4.1.1 When the use of plant is to take place in a red zone, outside of a possession, there shall be an assessment to determine the safety arrangements to ensure that all plant, except those items specifically designed to be used outside of possessions, such as rail grinders, can be cleared from the line and the associated personnel can reach a position of safety. This assessment shall, in addition to the factors referred to in the Rule Book, take account of the following:

- a) The weight of the plant and the number of people required to place it clear of the track. It is a condition of red zone working that any plant, its load and personnel associated with its use can be disengaged from and placed in a position of safety at least 10 seconds before the passage of a train.
- b) If the track geometry is to be altered by the use of plant and it affects a line open to traffic, then it shall be a condition of use that assurance is given that the track geometry is able to be returned to its original (or acceptably safe) state before the passage of a train, and where jacks are used they shall be used in accordance with the requirements of Part 7.
- c) If there is any doubt about the ability of the plant to return the track geometry to its original (or acceptably safe) state, then red zone working shall be prohibited.
- d) The mobility of the operation. Where the operation of plant is mobile (that is, moving along the track) red zone working shall be permitted only where the length of the movement is predetermined and within the distance such that the lookout, at a set location, is able to give an effective warning and where at all times the movements are made towards the lookout.

3.5 Railborne plant

3.5.1 Gauge

- 3.5.1.1 When operation of railborne plant involves movement of components to outside of the vehicle's travelling gauge, the safe system of work shall take account of clearances of infrastructure obstructions, for example, ground frames, shunting signals, lineside telephones, bridges and platforms; and passage of trains and other railborne plant on adjacent lines – see also clause 4.2.2.1.

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3.5.2 Gradient and cant

- 3.5.2.1 The capability of plant to work safely on a gradient or on canted track shall be assessed and a safe system of work developed and documented such that the likelihood of a runaway or overturning event is eliminated. Where a vehicle has a Certificate of Engineering Acceptance it is permissible for the assessment to be limited to ensure it is used within the parameters set down in the certificate.
- 3.5.2.2 Where a vehicle pre-dates April 1994 and still does not have a current Certificate of Engineering Acceptance, a documented assessment shall be carried out for the capability of the vehicle for each site.

3.5.3 Axle counters

- 3.5.3.1 When work is to take place in an area with axle counters consideration shall be given to the potential for operation of the axle counters by various railborne items of plant.

GN019 This is especially relevant where an item of plant is placed on the track and passed over an axle counter which registers its presence. If the item is removed from the track the section will continue to show occupied.

- 3.5.3.2 Work shall be planned to minimise the likelihood of damage to the axle counter equipment

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Part 4 Safety Requirements for Use of Infrastructure Plant

4.1 All plant

4.1.1 Prevention of damage to the infrastructure

4.1.1.1 Before using plant, an assessment shall be made to ensure that the track, lineside and under-track equipment, including supporting structures, will not be damaged by the use of the plant.

GN020 Particular attention should be given to ensure against damage that may be difficult to detect prior to the subsequent passage of rail vehicles.

4.1.1.2 Loads on sleepers shall be limited to avoid overstressing of sleepers and to prevent damage:

- a) Wheeled vehicles that have a loading greater than 6 t per axle shall not be permitted to run on sleepers or bearers
- b) Tracked vehicles shall not be permitted to run over rails, sleepers or other infrastructure components etc, without the use of suitable protection to prevent damage.

4.1.1.3 Plant shall be used such that it does not damage ballast shoulder.

4.1.1.4 Plant which grips or clamps to a rail shall be specifically approved by the infrastructure manager prior to use. It shall only be used in accordance with the manufacturer's approved documented instructions.

4.1.1.5 A site survey shall be undertaken before any activity where plant grips or clamps to the rail web to mitigate the risks of damaging:

- a) Axle counter equipment
- b) Force transducers
- c) Accelerometers
- d) Other items that may be fastened to the rail web.

4.1.1.6 The routes of cables and services shall be identified and a safe system of work adopted which prevents damage to them by the use of plant.

4.1.1.7 A site survey shall be undertaken before any excavation or anything is driven into the ground to avoid damage to underground pipework and cabling by the use of plant.

GN021 Network Rail has issued an instruction (NR/PRC/MPI/CP0026) that should be adhered to whilst using buried cable-locating equipment (commonly known as CAT scan equipment).

GN022 The positioning of temporary lighting poles and other items that have spikes should be considered where driving the spike into the ground could damage underground pipework and cabling.

4.1.1.8 Plant shall not be used on platforms, decks, bridges or other structures without confirmation that the structure is strong enough to bear the weight of the plant and any load it could be carrying.

4.1.1.9 The use of dynamic track stabilisers or machines with similar actions shall not be permitted unless an assessment of risk to the infrastructure has been carried out.