Control, Safe Use and Operation of Excavators, Loaders and Earth Moving Equipment
Part A
Synopsis

A standard detailing the requirements for the control, safe use and operation of excavators, loaders and earth moving equipment.

Approval and authorisation

Submitted by: Nominated responsible manager

Approved by: Chairman, Civil Engineering Subject Committee

Approved by: Chairman, Electrification & Plant Subject Committee

Authorised by: Board Member, Engineering

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Control, Safe Use and Operation of Excavators, Loaders and Earth Moving Equipment

Issue / Revision record
This standard will be updated when necessary by distribution of a complete replacement.

Amended or additional parts of revised pages will be marked by a vertical black line in the adjacent margin.

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Responsibilities and distribution
To all managers responsible for the operation of excavators loaders and earth moving equipment used in the pursuance of railway business.

Implementation
This Group standard is mandatory and the process of implementation shall begin on its receipt.

Supply
Controlled and uncontrolled copies of this standard may be obtained from the TDCC Manager, Document Services, Railway Technical Centre, London Road, Derby, DE24 8UP.

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Part B

1 Purpose

To specify to managers, supervisors and operators, factors that must be considered for controlling, safely using and operating excavators, loaders and earth moving equipment, in the railway environment.

2 Scope

This standard applies to all personnel responsible for the operation of all types of excavators, loaders and earth moving equipment used, in pursuance of railway business, on railway property.

When using excavators as cranes, reference must be made to Group Standard GC/OG0004 (Control, Safe Use and Operation of Rail Mounted Cranes) and to this standard.

When using excavators with flail attachments, reference must be made to Group Standard GC/OG0022 (Control, Safe Use and Operation of Flail Equipment) and to this standard.

When using excavators, loaders and earth moving equipment in the vicinity of overhead power cables reference must be made to Group Standard GC/OG0020 (Control, Safe Use and Operation of Plant working in the vicinity of Overhead Electric Supply Lines) and to this standard.

When using excavators with rail wheel attachments, reference must be made to Group Standard GC/OG0018 (Control, Safe Use and Operation of Road-Rail Plant) and to this standard.
3 Key definitions

Excavators, loaders and earth moving equipment includes:-

- Wheeled/tracked 360° excavators
- Wheeled/tracked front loading shovels
- Skid steer loaders
- Back hoe excavators
- Dumpers
- Tracked bulldozers
- Graders

4 Plant Acquisition

Before any new excavator, loader or earth moving equipment is used technical approval must be obtained from the Infrastructure owner. The scope of approval will only cover such items that may affect safety of the railway operation or the safety of the parties operating the excavators, loaders and earth moving equipment.

The following must be complied with:-

All vehicles
- Dual circuit braking or two independent brakes to prevent uncontrolled movement onto or towards the running line.
- Hydraulic hoses to be fitted with safety check valves to prevent uncontrolled lowering of jibs/buckets in the event of hose failure.

Vehicles required to be loaded on rail wagons only
- Compliance with W6/W5 gauge.
- Compatibility of vehicle weight distribution and the rail wagon.

The following factors, which form a non exhaustive list, must be considered :-

- The possibility of fouling adjacent lines by the tail swing of the equipment.
- Slew locks / slew limiters to be provided to prevent uncontrolled movement of the superstructure during transit / or limiting arc of slew close to adjacent lines.

- Means of limiting jib height etc. when proposing to work under live electric supply lines.

5 Registration

Excavators, loaders and earth moving equipment must be registered so that they can be uniquely identified for maintenance purposes.

6 Maintenance

Excavators, loaders and earth moving equipment must be subject to maintenance which must be recorded and evidence of when the next maintenance is due must be apparent or available to the user.

The maintenance regime must be suitable for the utilisation of the plant and must always ensure the plant is fit for purpose.

In addition to the requirements of other legislation and the manufacturers maintenance schedules adequate maintenance and testing of the following must be included for railway operation:-

- Regular inspection of all hydraulic hoses and check valves.
- Regular inspection of all braking systems and pipe work.
- A functional brake test to be carried out at 12 monthly intervals.
- Regular inspection of steering mechanisms.
- Regular inspection of tail locks/slew locks to ensure serviceability.
- Regular inspection of all FOPS (Falling Object Protection Structures) & ROPS (Roll Over Protection Structures) and all other safety guarding on the equipment.

When excavators, loaders, and earth moving equipment are hired and the hire company undertakes to perform
maintenance, it is the hirer's (user's agent) responsibility to ensure that a satisfactory maintenance programme exists and that the equipment is made available for it to be implemented.

7 Modifications

Modifications to type approved excavators, loaders and earth moving equipment that affect the safety of the railway operation or parties operating the plant (e.g. changing lifting capacity, stability, loading gauge etc.), must be approved by the infrastructure owner before further use on the rail system.

8 Statutory Requirements

The requirements of the Health and Safety at Work Act (1974).

Statutory records (if applicable) must be in date and the appropriate certificates available.

Excavators used as cranes must meet the requirements specified in appendix B.

Any such equipment required to work/travel on the Public Highway must conform to the Road Vehicles, Construction and Use Regulations 1986.

Under the requirements of the Road Traffic Act 1991, all mechanically propelled vehicles being driven in public places, must carry a Driver's Logbook to record the name of the driver using the vehicle and the date and time of operation. It is recommended that modified vehicle Log Book BR2414 (Issue 92), or equivalent is used.

Where a vehicle is driven in a public place, operators must hold a current, valid and full driving licence and the vehicle must be registered and licensed in accordance with the Vehicle (Excise) Act 1971.

In the event of an accident or dangerous occurrence, the requirements of the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1985 (RIDDOR) and the Railways (Notice of Accidents) Order 1986, must be complied with.
9 Training and Authorisation

9.1 Operators

Operators must receive training and be assessed in the operation of the specific type of Excavators, Loaders, and Earth Moving equipment, and must carry the appropriate authorisation certificate whilst operating the plant.

Persons selected for training to operate, shall have the following attributes:-

- Be a minimum age of 18 years at the time of assessment.
- Be fit, with regard to eyesight, hearing and reflexes i.e. must meet the requirements of Group Standard GO/ZT0005 -(Medical Fitness of Persons Competent in Personal Track Safety).
- Be able to judge distances, heights and clearances.
- Be physically capable of operating the excavators, loaders, and earth moving equipment.
- Be in possession of the appropriate road vehicle driving licence (if applicable).

Whilst under training, the trainee shall be under the direction, at all times, of a person fully trained and authorised to operate the excavators, loaders, and earth moving equipment concerned.

The training, assessment and authorisation must be recorded for audit purposes. The training and assessment must at least include:-

- The safe system of work (detailed in this standard).
- Track Safety Hand Book.
- Operator servicing and pre use checks.
- Use of emergency equipment and procedures.
- Function of all operator's controls.
- Personal protective equipment.
- Carrying and securing of loads. (if applicable)
- Safe control of the plant in all modes of operation (including attaching and detaching accessories).
• Reporting of defects.
• Safety precautions to be taken when working in the vicinity of overhead power lines (Group Standard GC/OG0020 Control, Safe Use and Operation of Plant Working in the Vicinity of Overhead Electric Supply Lines).
• The relevant parts of the British Rail Rule Book.
• Requirements when working with an adjacent line open to traffic.

Following training, trainees will be assessed by a competent examiner. If the trainee is deemed competent by the examiner, the trainee’s manager may give full authorisation to operate the plant and issue an Authorising Certificate which must contain the following information:-

• Persons full name.
• Employer’s name and address.
• Type and/or make of excavators, loaders and earth moving equipment authorised to operate.
• Date of issue and date of expiry (certificates must expire two years after issue).
• Any limitations of validity (e.g. may only be valid in certain areas).
• Examiners name, company address and signature.
• Authorising managers name, address and signature.

Operators (including operators for maintenance duties only) must be reassessed and re authorised every two years.

Valid Construction Industries Training Board Training programmes and Certificates will be accepted as meeting the non Railway element of the training.

9.2 Persons required to supervise the use of excavators, loaders and earth moving equipment.
Such persons shall have a working knowledge of this standard.

Where an excavator is used as a crane then the person required to supervise the use must be trained, examined and authorised as required by the standard GC/OG0004
10 Safe System of Work

A safe system of work based on a local risk assessment must be produced and communicated to all staff. Adequate supervision must be provided.

10.1 Planning

The planning must as a minimum include consideration of the following factors:-

- Correct selection of equipment.
- Selection and training requirements of staff.
- Getting equipment to and from the site, including any specific wagon loading procedures.
- Hazards at the site.
- Underground cable detection
- Requirements of the Track Safety Hand Book.
- Requirements of the BR Rule Book (BR 87109).
- AC & DC Electrified Lines Working Instructions as appropriate.
- Site Lighting.
10.2 Operators pre use checks:
Operators must carry out any specified pre use checks, which as a minimum must include:

- An examination to ensure that the equipment is in a fit state to undertake the work.

- A functional test of the braking system and machine.

- A functional test of the safe load indicators (if fitted).

10.3 On site operation
10.3.1 Use of excavators, loaders and earth moving equipment on either DC or AC electrified lines or in the vicinity of overhead power cables must be in accordance with GC/OG0020 (Control, Safe Use and Operation of Plant Working in the Vicinity of Overhead Electric Supply Lines) or in accordance with the DC. Electrified Lines Working Instructions.

10.3.2 Operators must ensure that wheel loads greater than three tonnes do not bear directly on to any concrete sleeper.

10.3.3 Operators of excavators, loaders and earth moving equipment must ensure that they have a clear view of the operational area during any movements. If a clear view is not available then the operator must work under the guidance of another person.

10.3.4 Where it is necessary for the operator to work under the guidance of another member of staff, there must be a clear understanding of the signals to be used in the operation. Each signal shall be clear, concise and unmistakable. Where hand signals are used they must be as specified in Appendix A (extract from BS 7121).

10.3.5 Before commencing or changing the direction of the movement of excavators, loaders and earth moving equipment, the operator must satisfy himself it is safe to do so and give ample warning of his intention.

10.3.6 To ensure the safety of the public and staff, the operator must ensure clearance is allowed between any part of the equipment and any adjacent vehicle or obstruction. If the clearance is less than 600 mm (24 ins.) then the area must be designated a "no go" area for personnel and must be clearly marked.
10.3.7 The operator must not allow any other person to travel upon any part of the equipment except:-

- where there is designed provision for the carrying of passengers or
- for the purpose of operator instruction or technical investigation.

10.3.8 The operator must not permit excavators, loaders, and earth moving equipment to be used for the movement of other equipment, unless specifically designed or adapted for that purpose.

10.3.9 Excavators, loaders and earth moving equipment must not be used on docks, platforms, rail vehicles or in warehouses and workshops unless the department responsible for the maintenance of those areas and vehicles has confirmed that the floor is strong enough to bear the weight of the Plant with its maximum permitted load.

10.3.10 Extreme caution must be taken when moving or working adjacent to unsupported excavations.

10.3.11 When excavators, loaders, and earth moving equipment is working on or around platforms, quays or docks, care must be taken to keep as far away from the edge as practicable. Turning and reversing movements must always be made away from the edge and extreme care exercised when turning across gradients.

10.3.12 Before crossing a bridging plate or loading ramp the operator must ensure that it is adequate for the purpose, secured against movement and is clear of items that could cause skidding.

10.3.13 The operator must ensure excavators, loaders, and earth moving equipment are not overloaded or the indicated Safe Working Load is not exceeded. If any inadvertent overloading occurs, it must be reported to the maintainer.

10.3.14 If the operator has to leave the operating position, he must ensure that the plant is brought to rest in a safe position and the hand brake is applied.

10.3.15 When excavators, loaders, and earth moving equipment are left unattended they must be parked off
Control, Safe Use and Operation of
Excavators, Loaders and Earth
Moving Equipment

the track, clear of and parallel to any adjacent railway
lines. When parked for long periods, the hand brake must
be applied, lights turned off, ignition keys removed, fuel
or battery isolated, gears placed in the neutral position,
with tail/slew locks and outriggers (where applicable),
properly stowed and the vehicle secured against
unauthorised entry / use. Parking on platform ramps is
prohibited.

10.3.16 Tracked Vehicles must not be driven over rails
without the use of suitable packing to prevent damage to
the rail head.

11 Personal Protective Equipment

Provision of personal protective equipment for those
operating the excavator, loader and earth moving
equipment and those who may be affected by its
operation must be considered and supplied.

Operators must wear protective clothing where provided.

If there is a possibility that noise levels may be in excess
of 85 dB(A) then a noise assessment must be carried out
in accordance with the Noise at Work Regulations (1989).
Where the item of plant displays a noise protection
warning sign then staff within the limits defined on the
sign must wear approved ear protectors.

As a minimum the following items must be issued to
operators and staff working with the excavators, loaders,
and earth moving equipment:-

- Safety footwear.
- High visibility clothing.
- Safety helmet to BS 5240 (in date) as appropriate.
- Ear protectors (if applicable).
APPENDIX A

HAND SIGNALS (EXTRACT FROM BS 7121)

- Operations Start (Follow My Instructions)
- Stop
- Emergency Stop
- Hoist
- Signal with one hand; other hand on head
- Slew in direction indicated
- Jib up
- Derricking Jib
- Extend Jib
- Retract Jib
- Telescoping Jib
- Travel to me
- Travel from me
- Signal with both hands
- Operations cease or cease to follow my instructions
APPENDIX B

GUIDANCE CHART- EXCAVATORS USED AS CRANES

Note: Record forms acceptable to the requirements of Lifting Plant and Equipment (Record of Test and Examination etc.) Regulations 1992 may be used in place of the specified F numbered forms.