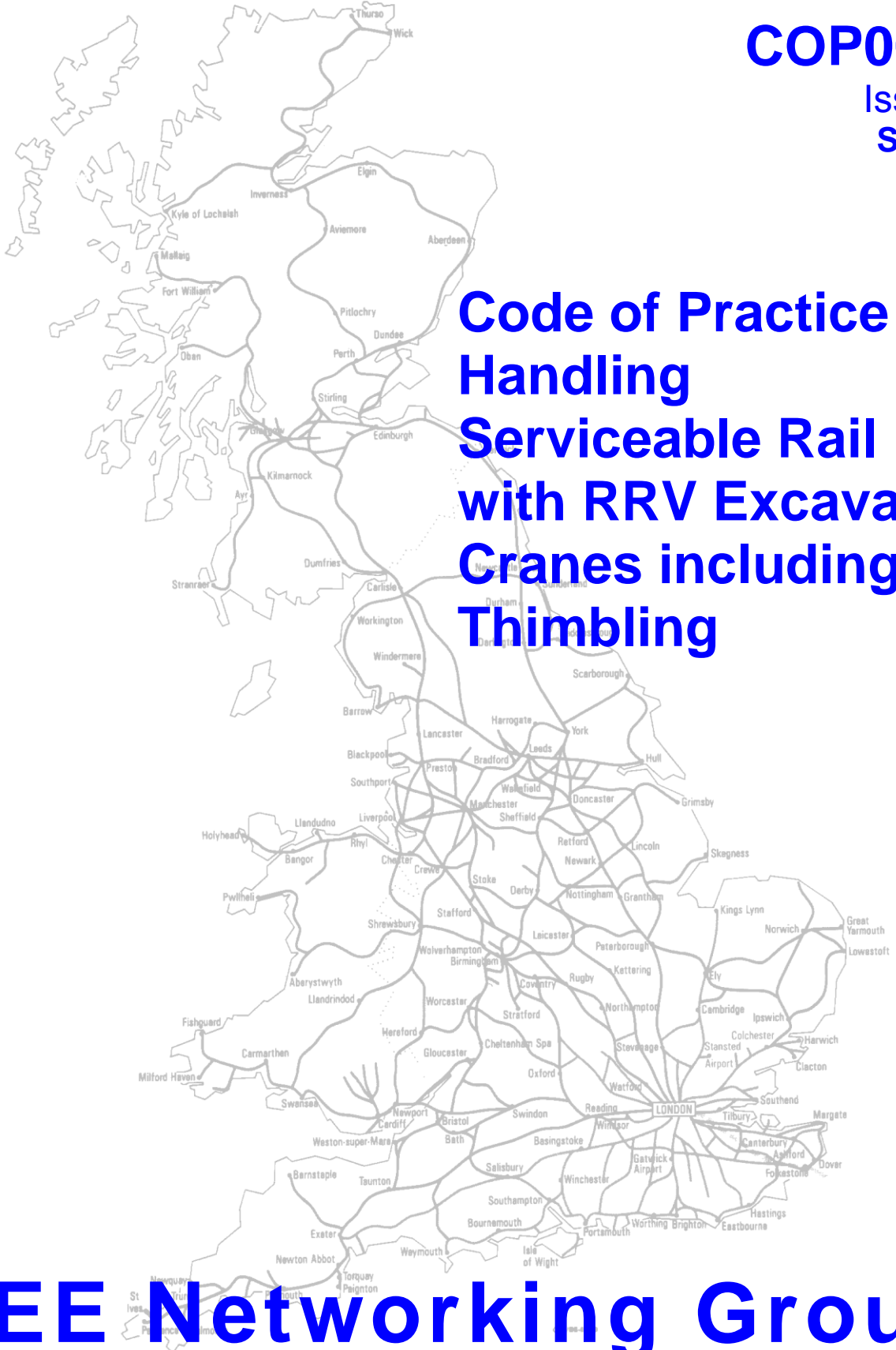


COP0005
Issue 3
Sep 10



Code of Practice for Handling Serviceable Rail with RRV Excavator Cranes including Thimbling

M&EE Networking Group

Document revision history

Issue	Date	Reason for change
1		First issue (now withdrawn)
2	Nov 05	Revised and updated (now withdrawn)
3	Sep 10	.Reviewed and updated. Appendix A simplified.

Background

A sub-group of the M & EE Networking Group have looked at the arrangements for handling rail and thimbling with RRV excavator cranes and recommend the following as good practice for the industry.

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Sign off

The M & EE Networking Group agreed and signed off this Code of Practice on 8 September 2010 and published on 5 March 2011

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Purpose

This Code of Practice details the equipment and working practices for handling rail to minimise risk to personnel and damage to the rail.

Scope

This Code of Practice concerns the handling and thimbling of serviceable rail using RRV excavator cranes.

This Code of Practice does not deal with tandem lifting of rail, which is covered in COP0008. This Code of Practice deals with the longitudinal movement for up to 20 m of rail, and lateral movement of any length of rail.

Note: These recommendations can also be used for handling scrap rail where the risk to personnel is the same as handling serviceable rail but the damage to the rail is not so critical.

Definitions

Pick & Carry A process of lifting and transporting rail with a suitably rated RRV excavator crane and accessories (designed to prevent the rail slipping through or turning) whilst suspended from the RRV excavator crane when moving along the track.

Pick & Lift A process of lifting and moving rail with a suitably rated RRV excavator crane and accessories (designed to prevent the rail slipping through or turning - unless a sufficient length of the rail remains in contact with the ground to act as a restraint), whilst suspended from the RRV excavator crane with the RRV excavator crane remaining static during the entire operation.

Rail Individual serviceable rail released from fastenings and free of all loose material.

Thimbling A process of laterally moving long welded flat bottomed rail with an RRV excavator crane and lifting accessory fitted with guidance rollers suspended from the RRV excavator crane. Minimum length of rail suitable for this process is 100m (300ft).

1 General requirements

- 1.1 Ensure lifting accessory to be used has Network Rail approval (Product Acceptance), the approval should also state:
- the intended rail section to be moved
 - rail-head condition concerned (badly side cut rail may not be adequately retained by the lifting accessory)
 - method of lifting
 - proposed further use of the rail.
- 1.2 Ensure lifting accessories to be used have sufficient capacity for the intended use.
- 1.3 Ensure RRV excavator crane to be used has the capacity for the intended use.
- 1.4 The operator should hold Sentinel (or CPCS up to Dec 2010) RRV operator certification, (endorsed for additional work eg “thimbling” if this operation is to be undertaken).
- 1.5 The person in control of the operation on site should be competent as a 'crane controller' to the Sentinel Scheme, holding a suitably endorsed secure counterpart certificate for the duties being undertaken.
- 1.6 The person specifying the RRV excavator crane to be used should be familiar with COP 0002 and COP0011.
- 1.7 The following parameters should be determined at the planning stage:
- Maximum cant & gradient to be operated over (for the RRV excavator crane)
 - Overhead limitations and track obstructions
 - Site tail-swing restrictions
 - Length of rail to be lifted
 - Positions of rail to be moved from/to
 - Electrical isolations
 - Restrictions due to passing traffic

- 1.8 From site parameters the person planning the work will select a suitable process from Table 1. Although tandem lifting is more commonly used for track sections, lengths of rail could also be moved using two RRV excavator cranes (tandem lifting), this method is explained in COP0008.

Rail Length	Pick-&-Lift	Pick-&-Carry	Thimbling	Lifting Accessory	Method
Up to 6m (20ft)	Yes	Yes	No	Chains, Web-slings, Fassetta type Beams	May be single point lift
6m to 20m (20ft) (75ft)	Yes	Yes	No	Beams required with 2 Camlocks, Fassetta type Beam.	Minimum 2 point lift
20m to 100m (75ft) (300ft) <i>Not Bullhead</i>	Yes Laterally only	No	No	Suitable thimble, for minimum of 2 tonne capacity	Pick and lift only (Max. height of lift 500mm)
Above 100m (300ft) <i>Not Bullhead</i>	Yes Laterally only	No	Yes	Suitable thimble, for minimum of 2 tonne capacity	Thimbling (Max. height of lift 500mm)

Table 1 Handling method for lengths of rail

- 1.9 From the site parameters and process the person planning the work should select a suitable RRV excavator crane taking into consideration the potential need for height and slew limiters.
- 1.10 At no time should any person be under or carry out work on a suspended load. Should work be required, the rail should be landed onto suitable blocks.
- 1.11 Consideration should be given, when landing the rail, to ensure its stability, safe release of the lifting accessory, and avoidance of damage to existing track components.

2 Pick-and-lift

- 2.1 The RRV excavator crane selected must be fitted with a Rated Capacity Indicator (RCI).
- 2.2 For rail lengths up to 20m (75ft) the rail should be balanced and suitably restrained (either controlled handling device or 'tag' lines). An initial lift should be made to check balance and correct attachment of the lifting accessory(s), re-adjusting if necessary.
- 2.3 When laterally moving rail lengths of over 20m (75ft), sufficient length should remain on the ground to act as a restraint. All ground personnel should be at least 3m from the rail and at least 5m from the end of the rail when the free end is being raised off the ground due to the risk of rail "whipping".
- 2.4 If using a thimble to pick and lift then the operator and crane controller should have thimbling competence under the Sentinel scheme.

3 Pick-and-carry

- 3.1 The RRV excavator crane should have an RCI with “Lift & Carry” duty. An assessment of the cant encountered over the distance to be travelled with the load should be carried out and the RRV excavator crane selected should have the capacity for the most adverse cant identified.
- 3.2 For rail up to 20m (75ft) the rail should be gripped and balanced and suitably restrained (either controlled handling device or ‘tag’ lines). An initial lift should be made to check balance and correct attachment of the lifting accessory, re-adjusting if necessary. Lengths greater than 20 m should not be pick-and-carried.
- 3.3 Where practical, the rail should be kept parallel to the running line and as low as practicable.

4 Thimbling

4.1 Planning for Thimbling

- 4.1.1 Type, section and size of rail to be thimbled should be determined. If rail-head is badly lipped or side cut, thimbling should not be considered where the thimble locates under the rail head (ie it is permissible to use a thimble that locates under the foot of the rail).
- 4.1.2 The planner should decide the nominal radius at which the load is to be lifted. The nominal radius should always be the furthest point the rail is to be moved from or to. The planner should always note that thimbling is accomplished at an angle from the track therefore the nominal radius is greater than the perpendicular distance from the centre of the track to the rail to be moved. Further assistance is given in Appendix A.
- 4.1.3 With many designs of thimbles it is necessary to have the rail raised and placed on blocks to allow the thimble to be correctly closed around the rail. The lifting of the rail to place it on blocks can be carried out in a number of ways, one of which is to use the thimble located only under the head of the rail. The suitability of the thimble for this duty should be determined and if not suitable other means of lifting the rail should be planned and allowed for.

4.2 RRV Excavator Crane Capacity & Selection

- 4.2.1 The RRV excavator crane should not be used where cant is in excess of the rated limit shown on the Engineering Acceptance Certificate (and shown on a data panel on the side of some RRV excavator cranes).
- 4.2.2 When the RRV excavator crane is ordered the person requesting it should specify that the RRV excavator crane should be fitted with an RCI with a minimum capacity of 2 tonne for lifting rail sections up to 113lbs/yd / UIC60, at radius as defined in the lifting plan. Adjustments will be necessary when lifting heavier rail sections (such as conductor rail) and guidance should be sought.

Note: The 2 tonne capacity is inclusive of the rail and thimble. It does not make an allowance for any other lifting accessory such as a quick-hitch which will also need to be included as part of the total load being lifted if the quick hitch is not part of the lifting equipment.

4.3 Thimble

- 4.3.1 Thimbles are a lifting accessory with a minimum lift capacity of 2 tonnes and capable of securely locating the rail in the vertical position and have the capability of securely gripping the rail under the rail head (Pick & Lift capability).
- 4.3.2 The thimble should be designed such that the rail cannot be accidentally released, eg integrity of the opening / closing circuits on a hydraulically operated thimble should be protected to avoid accidental opening under load (ie hose failure).
- 4.3.3 Thimbles should be suspended from an approved lifting point and should be able to swivel freely.

4.4 Site Preparation

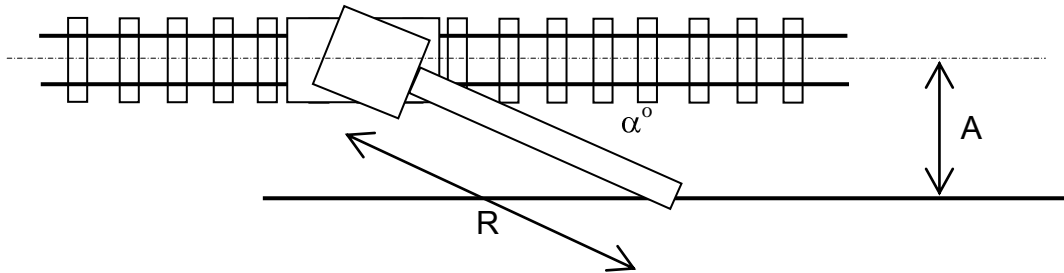
- 4.4.1 All rail welds and other obstructions that cannot be removed should be clearly marked, briefed and indicated to the RRV excavator crane operator by the crane controller before the thimbling operation progresses.
- 4.4.2 Pads, bonds, fishplates, creep adjusters and other loose material should be removed from rail or clearly marked.
- 4.4.3 Sufficient blocks should be available where necessary for:-
- landing rail
 - passing obstructions
 - use when attaching/detaching the thimble

4.5 Use

- 4.5.1 All personnel should be at least 3m from rail and 5m from the free end of the rail when the thimble approaches due to possibility of the rail “whipping”.

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- 4.5.2 The crane controller should be satisfied that the thimble is correctly closed on the rail before commencing every lift during the thimbling operation.
- 4.5.3 When an obstruction is reached the rail should be lowered onto blocks (where necessary), the thimble opened and moved past before continuing with the operation.
- 4.5.4 The RRV excavator crane operator should monitor the RCI throughout the thimbling operation. If the load approaches close to 2 tonnes this may indicate that an obstruction has been encountered (eg weld, pads, etc), or that the rail is fixed in position, or snagged in some other way. In this event travel should be stopped, the load lowered, the cause identified and rectified.
- 4.5.5 The height of the rail being thimbled will also have an effect on the load on the RRV excavator crane (the higher the rail is lifted the heavier the load), therefore rail height should be kept to the minimum. The minimum height is that required to avoid unnecessary contact with other track components which could be impacted by the thimble itself or the rail being thimbled.
- 4.5.6 The operator should orientate the RRV excavator crane to give themselves maximum vision in the direction of travel and of the rail being handled.
- 4.5.7 The load should be carried in the lifting duty sector which has the maximum lift capacity (normally the fixed axle end). This should be taken into consideration when on-tracking the RRV excavator crane so that the thimbling operation is undertaken within this duty sector.
- 4.5.8 Overhead restrictions (e.g. OLE) should be considered as this may influence the load/radius capacity of the RRV excavator crane.
- 4.5.9 Speed of travel should be such that the crane controller can closely observe and control the operation, stopping should the thimble snag on any obstructions (e.g. pads, welds, creep adjusters), that have inadvertently not been previously removed or marked, or when personnel encroach within the 3m and 5m parameters described in 4.5.1.
- 4.5.10 The operator and crane controller should have thimbling competence to the Sentinel scheme.

Appendix A Determination of nominal radius



Perpendicular distance from track to rail to be moved from or to A m	Angle machine used from track α°	Nominal radius of machine to be used for planning R m
1	20	2.9
2		5.8
3		8.8
4		11.7
2	40	3.1
3		4.7
4		6.2
5		7.8
6		9.3
7		10.9
8	12.5	
3	60	3.5
4		4.6
5		5.8
6		6.9
7		8.1
8		9.2
9		10.4
10		11.6

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References

Document	Title
LOLER	Lifting Operations and Lifting Equipment Regulations
M&EE COP0002	Planning the Use of OTP
M&EE COP0008	Tandem Lifting with Two Excavator Cranes
M&EE COP0011	Planning and Executing Lifting Operations
RIS-1530-PLT	Engineering Acceptance of On-Track Plant and Associated Equipment