

OPERATIONAL MANAGEMENT OF BEAVER TAMPER, ACCESS ARRANGEMENTS AND PROTECTION OF THE INFRASTRUCTURE PE350

1. PURPOSE

Beaver tampers are delivered to site by road transport then placed onto the track either via the use of the machine lifting cylinders or machine lifting cylinders and turntable. In addition, the machine can be placed on track via Rail Ramps from the rear or the front of the trailer.

In the event that there is no rail access to On/Off track the Beaver tamper, a mobile crane can be used to lift the Beaver On/Off the trailer onto the track as long as the Cant is not above 100mm

Arrangements for On/Off tracking are covered in the following industry standards and company Procedures:

- NR/L2/RMVP/0200 Network Rail Plant Manual modules P301 and P507 both Mandatory documents.
- PE326M007 VR Procedure 'Road Rail Access Points' - Mandatory
- COP0007 M&EE Code of Practice for On, Off and Cross Tracking of On Track Plant

Arrangements, safe systems of work, planning for use, site visits and safe access are contained within the following industry standards:

- NR/L2/OHS/019 Safety of People at Work on or Near the Line - Mandatory
- NR/L2/RMVP/0200 Network Rail Plant Manual modules:
 - P501 'Systems of Work,
 - P503 'Lifting Operations'
 - P505 'Safe Working with Plant'

It is intended that this document sets out Operational Management arrangements which will guide VR (VR) delivery units. This will include the efficient consideration, preparation and execution of the delivery of a Beaver demountable maintenance machine (DMMM). It will also further guide management of related unforeseen events.

2. SCOPE

These arrangements apply to all occasions and circumstances where Beaver Tampers are required to undertake the processes of On/Off tracking.

They also apply to the public highway or private road delivery location. This will include all areas within boundary fences deemed to be on the line-side and all approaches to and from On/Off tracking points.

3. REFERENCES (INPUTS) / RELATED DOCUMENTS

GE/RT8000	Rule Book
GS6	Avoidance of danger from Overhead Electrical Lines
HSG47	Avoiding danger from Underground Services
M&EE COP 0007	Code of Practice for On/Off Tracking of Road-Rail Vehicles (RRV)
NR/L3/TRK/3241	Network Rail Specification Marking of track for tamping machines
NR/L2/RMVP/0200	Network Rail Plant Manual
NR/ L2/RMVP/0200/P301	Network Rail Plant Manual Module for Road Rail Access Points
NR/ L2/RMVP/0200/P501	Network Rail Plant Manual Module for Systems of Work
NR/ L2/RMVP/0200/P503	Network Rail Plant Manual Module for Lifting Operations
NR/ L2/RMVP/0200/P505	Network Rail Plant Manual Module for Safe Working with Plant
RIS-1530-PLT	Rail Industry Standard - Engineering Acceptance of Possession-only Rail Vehicles and Associated Equipment
RIS-1700-PLT	Rail Industry Standard - for the safe use of Plant for Infrastructure Work
PE326M007	Road Rail Access Points

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SAF19	Safety of People Working on or Near the Line
SAF23	Site Management (Incl. Site Set-up, Deliveries, Collections and Demobilisation)
SAF06	Fatigue Risk Management

4. DEFINITIONS

Definition	Meaning
Bridging Material	Material such as steel plates (road plates), which cannot constitute part of an actual On /Off and cross-tracking point but may be used to protect the infrastructure.
Machine Access	The machine route of travel from highway or private road delivery location(s) to the On / Off tracking point(s).
On/Off tracking point	Any point where the process occurs of transferring the Beaver tamper to or from the low loader onto the infrastructure.
Demountable Machine formerly known as Rail Mounted Maintenance Machine (DMMM)	A demountable machine is a vehicle that can travel on rail under its own power system. Such vehicles are not allowed to operate, work or travel outside possessions.

5. PROCESS

5.1 Management Arrangements

5.1.1 Machine Suitability Assessment

When a hire request comes in for the Beaver Tamper the **Senior Account Manager** will liaise with the client to find out the following:

- The exact site location, and contact details in order to arrange a time and date for a site visit.
- Machine type required, be it plain line or S&C Beaver.
- Track details where the machine will travel and work, such as but not limited to the maximum gradient on site, maximum cant on site and minimum curve radius on site.
- **Operations Manager** to arrange a competent person to carry out a site visit completing PE350F01

5.1.2 Machine Access Assessment and PC Responsibilities

The planning for the delivery of a Beaver road transportable tamper shall be carried out in advance of the date that tamping operations are scheduled to take place. This machine access planning is an inherent function of the planning process. It is essential for the enabling of appropriate preparation for immediate works and also for future works where established access arrangements may be required.

Due to the high variation of potential machine access it is essential that during the pre-works site visit, the identification of all route(s) to and from the delivery area and the line-side shall be determined with consideration of the following as a minimum:

- Ground bearing capacity, relative to the type, size and weight of machine(s) to be used and the adequacy of under-bridges, culverts etc. along the route to support axle loads.
- Ground surface stability, specifically the susceptibility to surface degradation or penetration in terms of proposed frequency of use. Particular attention needs to be given to the infrastructure structural and component damage on the approach to the track.
- Any site lateral and horizontal proximity structures and hazards which could affect the safe machine access to the infrastructure. Attention needs to be given to the minimum gauge requirement for the passage of machine carried materials, accessories and attachments.

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- The appropriate traffic management controls which may be required to allow safe access by the machine to and from the infrastructure. Attention needs to be given to the interface with members of the public and need for pedestrian and personnel exclusion zones
- Locations, quantities and the potential layout of other site associated facilities including parked vehicles. Attention needs to be given to the control measures for reversing the low loader and appropriate exclusion zones.
- Embankment vehicle edge protection to prevent subsidence and toppling.
- Environmental hazards including special considerations for noise, working over water, enclosed spaces and protected sites. For example Sites of Special Scientific Interest (SSSI).
- Positioning of support material, consumables, site control and lighting, either temporary or permanent.
- Security and potential vandalism of stabled machines, attachments, accessories and re-fuelling storage facilities.
- Overhead power lines and telephone cables.
- Cant and OHL limitations imposed by the Engineering Compliance Certificate (ECC) at the On/Off tracking point(s).

Stabling arrangements and clearances between subsequent shifts to ensure continuous sufficient clearance from rail lines and OHL, attention needs to be given to consideration of the rule book, rail vehicle travel gauge, driver visibility and the possibility of anyone climbing on top of the machines.

5.1.3 Identification and Assessment of On/Off tracking Points

The only acceptable arrangements are those listed in VR procedure PE326M007. Following this procedure will achieve compliance with NR/L2/RMVP/0200 Module 301 for Road Rail Access points.

1. A suitable level crossing (permanent or temporary).
2. An On/Off tracking point where the road surface is level with the rail top.
3. Consolidated ballast to the top of the rail head.
4. Secured timbers which are level with the rail head.
5. Appropriate Crane and lifting accessories to lift the Beaver Tamper

Consideration is to be applied when assessing the potential of each On/Off and cross-tracking Point with regards to the following:

- Approved timber fastenings;
- Minimum timber thickness;
- Depth and type of consolidation;
- Minimum point dimensions;
- Angles of approach

A member of the Beaver road transportable tamper staff who has been deemed competent to carry out the site assessment and complete the Beaver site visit inspection form (PE350F01), shall consider the following when identifying all potential On/Off and cross-tracking points:

- The immediate area for the delivery and collection of the Beaver road transportable tamper whilst on the low loader. Attention needs to be given to the access gate approach, road dimensions and any height or weight restrictions.
- The type of On/Off tracking point and method of delivery to be used.
- Ensure that there is sufficient room to allow the low loader to pull out from under the raised machine or reverse underneath it.
- Ensure that there is sufficient room to allow the machine to be turned on the turntable for correct orientation if required.
- Any infrastructure hazards such as signal posts, OLE stanchions, bridges, buildings, tunnels, platforms and any other limited clearances which could be a hazard to the safe delivery and operation of the Beaver road transportable tamper.

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- Surface cable troughs, track drainage systems catch pits and if any protection is required.
- Level crossings, switches and crossings.
- Adjacent lines and ALO arrangements, possession arrangements and work-site limits and isolations.
- AC electrified lines, third and fourth rail systems and isolations which will be in place.
- Height of the OLE wires at the On/Off tracking point.
- Any preparation works to be completed by the client to ensure safe delivery and collection of the Beaver road transportable tamper from site.

5.1.4 On/Off tracking Under OLE

If the On/Off tracking point is under OLE the following procedure is to be followed:

- There has to be a full isolation of the OLE and an isolation permit issued covering the full On/Off tracking area. This is to be briefed by the CoSS to all staff including the MC and POS Rep.
- On the site visit the minimum wire height at the On/Off tracking point is to be obtained and recorded on to the Beaver sit visit inspection form PE350F01 (section 14)
- Consideration is to be given to the access point formation to determine if any additional outrigger blocks are required. This is to allow for adequate clearance for the low loader to pull out or reverse under the machine for differences in road height and camber. The height of any additional outrigger blocks plus the overall height of the machine on outriggers is to be recorded on the Beaver site visit inspection form PE350F01 (section 14).
- The overall machine height on outriggers and any outrigger blocks is then subtracted from the minimum wire height. If the figure left is greater than 300mm then the machine may be On/Off tracked. If the figure left is less than 100 mm then an alternate On/Off tracking point should be found

5.1.5 Arrangements prior to the delivery and collection of the beaver tamper.

Once the site visit has been completed and all information obtained, the POM Operation Manager will review and agree all the requirements to deliver the works taking into account the following:

- All delivery and collection arrangements for the low loader with the assigned haulage company.
- That the roster team are informed of the staff requirements for the Beaver tamper, advising that all is in line with SAF06
- Accommodation for the beaver tamper staff, if needed, is booked in line with company policy
- Any arrangements for refueling and time for scheduled maintenance whilst the machine is on site are made.
- That the assigned Beaver tamper staff are given all the relevant information to deliver the works. This will include a copy of the completed Beaver site visit inspection form and any site contacts.
- Where POS Rep is required the relevant documentation is populated. The POS Rep must obtain a detailed brief as minimum prior to the commencement of the shift

5.1.6 On site arrangements for safe delivery and collection of the Beaver tamper.

It is the responsibility of the Beaver Tamper staff to ensure that the Beaver is loaded and unloaded, ensuring that adequate support is provided under the outriggers and turn table.

On arrival at site following signing in at the site access point (SAC) the Beaver Tamper staff are to ensure that the following are carried out;

- Staff identify themselves to the site contact and check that the information on the Beaver site visit inspection form is still correct regarding the machine orientation and line which the machine is to be placed on.
- The Beaver staff receive the relevant site briefings and inductions and that a CoSS is allocated to the Beaver.
- Once the Beaver staff have been briefed by the CoSS, the Beaver site operational briefing sheet is filled out and signed by the staff and the CoSS.

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- The Beaver tamper staff then receive a brief from the POS Rep. If the VR facilitate the POS duties the POS Rep must identify themselves to any other POS Rep that may be on site.
- Log in and out with VRCC at the start and end of the shift.
- Pre-start checks and logbook are correctly filled out on the machine.
- Any faults and any rectified and outstanding faults on the machine are entered into the machine logbook. These are to be reported through the appropriate reporting channels to the **Delivery Supervisor** and **Engineer (POM)**. All correspondence is to be sent to faultreport.RMMM@volkerrail.co.uk
- To ensure the Beaver staff fully understand the machine orientation.
- Once the CoSS for the Beaver gets the authorisation to go on track, the Beaver Tamping staff and the CoSS are to check the on-tracking point for hazards.
- Attention needs to be given to the correct position for the Beaver to on-track, allowing sufficient room to deploy outriggers on firm ground.
- Sufficient clearance for the machine to be rotated to line up correctly in required direction and sufficient room to pull the low loader out from underneath must also be considered.
- Ensure that the machine is correctly placed on the correct line.
- Sufficient outrigger pads are placed under the outriggers to spread the weight of the load.
- The machine is safely unloaded from the low loader and positioned on the track facing the correct direction.
- All equipment safely stowed away to enable travel in W6 gauge.
- Ensure that all tamping is carried out as per the client's instructions and to liaise with the track engineers to remedy any problems encountered.
- The safe loading of the beaver on to the low loader from the infrastructure in accordance with risk assessment 'Beaver Risk Assessment' Loading and Unloading'.

5.1.7 Project and Site Responsibilities

Ground bearing capacity, relative to the type, size and weight of machine(s) to be used and the adequacy of under-bridges, culverts etc. along the route to support axle loads.

Ground surface stability, specifically the susceptibility to surface degradation or penetration in terms of proposed frequency of use. Particular attention needs to be given to the infrastructure structural and component damage on the approach to the track.

Any site lateral and horizontal proximity structures and hazards which could affect the safe machine access to the infrastructure. Attention needs to be given to the minimum gauge requirement for the passage of machine carried materials, accessories and attachments.

The appropriate traffic management controls which may be required to allow safe access by the machine to and from the infrastructure. Attention needs to be given to the interface with members of the public and need for pedestrian and personnel exclusion zones

Locations, quantities and the potential layout of other site associated facilities including parked vehicles. Attention needs to be given to the control measures for reversing the low loader and appropriate exclusion zones.

Embankment vehicle edge protection to prevent subsidence and toppling.

Environmental hazards including special considerations for noise, working over water, enclosed spaces and protected sites. For example - Sites of Special Scientific Interest (SSSI).

Positioning of support material, consumables, site control and lighting, either temporary or permanent.

Security and potential vandalism of stabled machines and re-fueling storage bunds.

Overhead power lines and telephone cables.

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Cant and OHL limitations imposed by the Engineering Compliance Certificate (ECC) at the On / Off tracking point(s).

Stabling arrangements and clearances between subsequent shifts to ensure continuous sufficient clearance from rail lines and OHL, attention needs to be given to consideration of the rule book, rail vehicle travel gauge, driver visibility and the possibility of anyone climbing on top of the machines

The **Project Manager** and/or **Site Engineer - Track** shall ensure that planned on off tracking points are documented within the Work Package Plan and Task Brief

The **Project Manager** and/or **Site Engineer - Track** shall ensure that a SSOW is in place for the site visit and that all relevant information is correctly recorded on the Beaver site visit inspection form PE350F01.

The site Engineer and/or Track Quality Supervisor shall ensure that the beaver tamper staff are briefed on the work required. The tower operator is to ensure that copies of all ALC files used are saved on to the machine computer system.

It is the responsibility of the Site Engineer and/or Track Quality Supervisor to ensure that the infrastructure is correctly marked up in line with NR/L3/TRK/3241 specifications. The Beaver staff are to be briefed to identify any cables, bonds, axle counters, greasers, tie bars, areas where banks need to be raised, clamps need to be opened and any other obstructions.

5.1.8 Emergency Recovery

In the event the Beaver turntable or the hydraulic rams for the legs fail, the **Maintainer Operators** will attempt to rectify the fault while reporting in accordance with SAF04. If the fault cannot be rectified the Beaver tamper will have to be recovered, this will be determined by locations and site-specific constraints.

5.1.9 Measuring Performance

There are no direct performance indicators associated with this standard, other than an annual review of any problems encountered on site.

5.2 Audit Requirements

The arrangements associated to this procedure will be monitored for compliance through site inspections and safety tours.

5.3 Retention of Records

All Beaver site visit inspection forms PE350F01 shall be retained for 5 years.

6. DOCUMENTATION (OUTPUTS)

- PE350F01 - Beaver Site Visit Inspection form
- PE350F02 - Beaver Site Operations Briefing sheet
- PE350F03 - Braver Tamper Request Form

7. ISSUE RECORD

Issue	Date	Comments
1	25/02/2016	New
2	23/11/2018	Minor amendments to reference documents (NR/PLANT/0200 now NR/L2/RMVP/0200) and reference to SAF33 in PE350F01 amended to PE326M002. Both forms formatted to current template.

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Issue	Date	Comments
3	14/11/2023	Procedure has had five year review. New form PE350F03 added.

8. WHAT HAS CHANGED IN THIS LATEST ISSUE AND WHY

PE350F01 and PE350F02 have been re-formatted to current template.
PE350F03 - Beaver Tamper Request Form has been added as a new form.

9. BRIEFING REQUIREMENTS

All new employees will receive an introduction to the Integrated Management System (IMS) at induction, according to the nature of the role.

All employees with an email address receive the 'Record of Revisions' each month, which details changes to the IMS. All Line Managers retain the responsibility to ensure their staff are briefed on changes as appropriate.

The following table defines how revised issues of this document are briefed to existing employees according to related specific responsibilities.

This is determined using the 'RACI' principle. Those roles identified as 'Responsible' and 'Accountable' should receive a formal awareness briefing facilitated by the Document Owner.

Discipline	Role	RACI	Type of briefing
Senior Management	Plant Director	Accountable	Detailed
Senior Management	Business Manager	Responsible	Detailed
Senior Management	Senior Operations Managers POM	Responsible	Detailed
Management	Operations Manager	Responsible	Detailed
Project Management	Project Managers	Responsible	Detailed
Engineering	Project Engineers	Responsible	Detailed
Engineering	Engineer (POM)	Responsible	Detailed
Engineering	Site Engineer Track	Responsible	Detailed
Plant	Delivery Supervisor	Responsible	Detailed
Plant	Maintainer Operators	Responsible	Detailed
Plant	Senior Account Manager	Responsible	Detailed
HSQES	Competence and Training Manager	Informed	Awareness
Senior Management	HSQES Director	Consulted	Awareness

Competence	RACI	Type of briefing
Beaver Operator (TAP306)	Responsible	Detailed

10. IMS AUTHORISATION

Document owner approval:

Tony Everatt, Business Manager - POM, 14/11/2023

Approval for IMS:

Paula Roberts, IMS Coordinator, 14/11/2023

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