

**ISSUE DETAILS**

<b>Reference</b>	P&E/334	<b>Issue No.</b>	3	<b>Issue Date:</b>	01/06/2015
<b>Title</b>	Road Rail Access Points				
<b>Status</b>	Revised				
<b>Compliance Date</b>	Immediate				
<b>Document Owner</b>	Jack Pendle, Engineering Director				

**BRIEFING REQUIREMENTS**

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.

<b>Role</b>	<b>RACI</b>	<b>Type of briefing</b>
All roles that are required to supervise, plan or undertake work using RRV's	Responsible	Detailed

**PURPOSE**

This Standard provides guidance for the safe on and off tracking of road-rail vehicles to mitigate the possibility of derailing or overturning the machine, potentially causing injury or damage to the machine and/or infrastructure, whilst undertaking this process.

**SCOPE**

These arrangements apply to all occasions and circumstances where RRVs are required to undertake on, off and cross-tracking processes, including leaving and returning to the track where the rails have been removed.

They apply to all types of road rail vehicle when getting on or off track by either:

- Driving onto and off the rails by means of either their road wheels or caterpillar tracks.
- On and off tracking by means of jack legs and lateral movement beams to allow side shift.
- On and off tracking by use of turntable.

They also apply to the public highway or private road delivery location, including all areas within boundary fences deemed to be on the line-side and including all approaches to and from on, off and cross-tracking points.

The arrangements associated to this standard are mandatory.

**WHAT HAS CHANGED IN THIS LATEST ISSUE AND WHY**

Updated to reflect the changes associated with the introduction of Safe Work Leader.

Full review in line with Network Rail Standard NR/PLANT/0200 Module P301.

**ISSUE RECORD**

Issue No.	Date	Summary of changes
1	April 2008	First Issue. To convey the practical management instructions, for the provision of road-rail plant access and On, Off and Cross-tracking arrangements in Network Rail Company Standard NR/L2/RVE/007 Issue E1
2	14/09/2012	The standard has been reviewed in line with the current organisation, job titles amended as necessary throughout.  It has also taken account of the change in Network Rail standards and in particular the replacement of NR/L2/RVE/007 with NR/L2/RMVP/0207 in June 2011.
3	01/06/2015	Updated to reflect the changes associated with the introduction of Safe Work Leader.  Full review in line with Network Rail Standard NR/PLANT/0200 Module P301.

**IMS AUTHORISATION**

Approval	Name	Role
Document Owner	Jack Pendle	Engineering Director
Approval for issue to IMS	Jack Pendle	Engineering Director
Acceptance for issue to IMS	Ross Reed	Assurance Coordinator

**1. PURPOSE**

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**3. REFERENCES (INPUTS) / RELATED DOCUMENTS**
M&EE Codes of Practice

COP 0002 – Minimum requirements for the Planning and Management of Possession-only Rail Vehicles

COP 0007 – On and Off Tracking of Road-Rail Vehicles

COP 0019 – Code of Practice for Action to be Taken in the Event of an Accident or Incident Involving OTP

Network Rail Standards

NR/L2/OPS/101 – Temporary Vehicular Level Crossing and Temporary Increased use of Existing Level Crossings

NR/PLANT/0200/P301 – Road Rail Access Points

NR/L2/TRK/2102 – Design and construction of track

NR/L2/TRK/2049 – Track Design Handbook

NR/L2/TRK/4040 – Level Crossing Surface Systems

**4. DEFINITIONS AND ABBREVIATIONS**

Definition	Meaning
Cross Tracking	Cross tracking is the process of transferring the road-rail vehicle from one line to another by off and on tracking
On Tracking	On tracking is the process of placing road-rail vehicles on the line
Off Tracking	Off tracking is the process of removing road-rail vehicles from the line
Road-Rail Vehicle (RRV)	A vehicle that can travel on the ground under its own power and also travel on rail by virtue of a rail wheel guidance system under its own power system. Such vehicles are not allowed to operate, work or travel on rail outside possessions.

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**5. PROCESS**
**5.1. Machine Access Assessment**

The planning for road-rail and other mobile plant access shall be carried out well in advance of the date that core works machine operations are scheduled to take place.

Machine access planning is an inherent function of the 'Site Specific Machine and Lifting Operations' planning, the requirements of which are detailed in P&E/326. Due to the huge variation in potential Machine Access, from rural dirt-track, to industrial estate and inner city high-street it is essential that the identification of all route(s) to and from the delivery area, and the line-side shall be determined during the pre-works day-light site visit 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, its susceptibility to surface degradation or penetration in terms of proposed frequency of use and especially infrastructure structural and component damage on the approach to the track
- Any site lateral & horizontal proximity structures and hazards that could affect the safe machine access to the infrastructure, including the minimum gauge requirement for the passage of machine carried materials, accessories and attachments
- Appropriate traffic management controls that may be required to allow safe access by the machine and others to/from the infrastructure, 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, parked vehicles & stabled attachments and the control measures for reversing and 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 i.e. sites of special scientific interest etc.
- Positioning of support material, consumables and site control and lighting, either temporary or positioned for significant periods of time
- Security and potential vandalism of stabled machines, attachments, accessories and re-fuelling storage facilities
- Overhead power lines and telephone cables
- Cant and OHLE limitations imposed by the RRV Engineering Acceptance Certificate at the on, off and cross-tracking point/s to which the access/s leads
- Stabling arrangements and clearances between subsequent shifts to ensure continuous sufficient clearance from rail lines and OHLE, including consideration of the rule book, rail vehicle travel gauge, driver visibility and the possibility of anyone climbing on-top of the machines

**5.2. Identification and Assessment of Potential On, off and cross-tracking Points**

An approved on and off tracking point (commonly known as a RRAP – road-rail access point) should be of sufficient length appropriate to the type of machine (normally this is at least 1.5 times the length of the wheelbase where the vehicle is required to drive onto the track – a longer length of RRAP permits a shallower approach angle and reduces the risk of fouling lines open to traffic). This is one of the following: -

1. Suitable level crossings, (permanent or temporary) see illustration 1 & 2. Where the use of a public level crossing is considered, suitable traffic management controls should be assessed and implemented during the use of the crossing.

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2. Yard where the road surface is level with the rail top
3. Proprietary Network Rail product approved track access system for road-rail vehicles to be on or off tracked see illustration 3.
4. Consolidated ballast to at least the underside of the rail head see illustration 4
5. Secured timbers, level with the rail head adequately supported underneath, over the full length. All timbers shall be secured to their adjacent timber see illustrations 5, 6 and 7

On and off tracking points are either permanent or temporary. Permanent on and off tracking points are designated by the relevant Infrastructure Manager. Temporary on and off tracking points are used for a possession or work site and should either:

- a) Be removed before handing back the possession  
or
- b) Approval obtained from the appropriate Infrastructure Manager's Track Engineer or Project Engineer for a RRAP to remain in place.

Where temporary on and off tracking points are used over two or more shifts arrangements shall be put in place to ensure the RRAP remains safe to use. Where the possession has been handed back with a RRAP still in place (see (b) above) checks shall be made to ensure arrangements are in place to ensure the RRAP remains fit for traffic to pass over between possessions.

When planning to use a location of an on and off tracking point, consideration shall be given to:

- Limitations on the Engineering Acceptance Certificate of the machines concerned.
- The type, size and weight of machine to be used
- The frequency of use and potential to damage the approach to the track
- Cant and gradients
- At all stages during the on/off tracking process the rail or road wheels are always braked capable of holding the RRV on the gradient present at site.
- Ballast shoulder – high, low, soft
- Deep cess, soft cess
- Protecting roadway and verges from damage
- Protecting the infrastructure from damage
  - Protection of sleepers and sleeper mounted equipment
- Protecting railhead from damage, especially from tracked vehicles
  - Proprietary rail head protection equipment approved by the Infrastructure Manager should be used where required – see illustration 8
  - Adequate bridging materials should be used to prevent damage
- Cables, bonds, troughing routes, drainage routes and buried services
- OLE and other overhead obstructions including structures, cables etc.
- 3rd and 4th rail systems
  - Where insufficient gaps exists the third rail should be lowered off the insulators, an adequate number of insulators removed and the rail protected from damage.
- Ground bearing capability – use of load distribution materials

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- Positioning of any jacking legs which should always be used on proprietary pads or suitable packing on ballast. Never place jacking legs onto sleeper ends
- Any other site specific hazards

The approach to the rail should be of a suitable incline for the machine (normally this is approximately no steeper than 1 in 10). This is also relevant for machines to safely enter and exit the formation, where the rails have been removed (e.g. ramping up using spoil or ballast).

The site specific work plan should cover all planned on and off tracking and identify contingencies for off tracking, on tracking or cross tracking during the works.

Consideration shall be given to adjacent lines during the on/off tracking process. Where the RRAP crosses multiple railway lines, but only some are blocked to rail traffic, consideration should be given to demarcating the area available for RRV.

When leaving the track to an area where the rails and sleepers have been removed (or returning) due consideration should be given to:

- Making provisions for machines to safely exit (see illustrations 10, 11 and 12)
  - Adequate ramping allowance should be made at the beginning and end of excavation for example using ballast or proprietary temporary ramp.
- Adequately supporting the end of the rail.

During on, off and cross tracking it is not permitted to use the boom dipper arm in this process (See illustration 13).

All on, off and cross tracking sites should be inspected for damage and all damage should be reported immediately to the engineering supervisor / safe work leader / safe work manager or person in charge of siding as appropriate.

Arrangements should be in place on site to inspect the infrastructure at and in the vicinity of the on, off and cross tracking site for possible damage caused by the manoeuvring of the OTP during on and off and cross tracking activity.

Note: Re railing subsequent to a derailment should not be undertaken until the requirements of M & EE Code of Practice COP0019 have been complied with.

### 5.3. Operational Implications

Considered along with the physical parameters of the site are related operational aspects such as the envisaged sequence and orientation of the multiple RRVs that will be on, off and cross-tracked and the effects of core-works site specific methodology.

Consideration of the potential need for the temporary removal and re-installation of arrangements is crucial. It has been commonplace that the main on, off and cross-tracking point/s at work-sites have been obstructed by the stabling of other plant, attachments & accessories and the stacking of materials such as cargo bags, level crossing panels and sleepers stored as part of the working process.

Of key importance are suitable on, off and cross-tracking arrangements at the actual rail-mounted machine access to the zone of rail line work, specifically the point at which the machine off-tracks and returns to the track to and from formation where the rails have been removed and where there is a need to safely exit and enter the formation or leave and return to the track, (e.g. ramping up using spoil or ballast).

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**5.4. Locations where access points should not be fitted**

- On curves of 200m radius or less where continuous check rails are installed
- Where guard rails or lateral resistance and plates are present
- On high ballast shoulder areas
- Over rail joints(see note) or rail welds
- Over rail adjustment switches, treadles, axle counters, or hot axle bearing detectors
- Within 20m of a platform ramp
- Where cross track cables are present
- Where red or third rail impedance bonding is present
- Where overhead line equipment (OLE) is less than 4165mm above rail level
- Where a non-level road could place any part of the OTP within 600mm of the OLE
- As shown in NR/L2/TRK/2102

*Note: Access points located within sidings may be located over rail joints subject to risk assessment and approval of the Infrastructure Manager*

**5.5. Locations where access points should not be fitted unless a risk assessment demonstrates that it is safe to do so.**

- Less than a minimum of 20m from any switch and crossing unit
- Less than 20m from an underbridge or tunnel where there are vertical or lateral restrictions that could restrict vehicle manoeuvrability
- Where infrastructure assets such as signalling equipment and line side structures are located which could restrict vehicle manoeuvrability
- Next to, or over, under track crossings
- Where there is an excessive height difference between adjacent running lines (see note)
- Within trespass and vandalism hotspots
- Where road access is hazardous (e.g. access is directly from a dual carriageway, busy road or areas of limited visibility)

*Note: See NR/L2/TRK/2102 for requirements*

**5.6. Locations where access points should not be fitted unless an assessment into their effect on lineside neighbours has been undertaken.**

- Sites of special scientific interest (SSSI's)
- Conservation areas
- Adjacent to hospitals
- Residential areas
- Schools

**5.7. Classification and Construction of RRAP.**

The appropriate classification and type of RRAP to be installed, shall be selected using Tables 2 and 3 from NR/PLANT/0200/module P301

The RRAP shall:

- conform to NR/L2/TRK/2049 and NR/L2/TRK/4040
- be constructed so that the flangeway gap is as specified in NR/L2/TRK/2049
- be constructed so that lineside drainage is suitably protected and not compromised
- be constructed and where necessary protected, such that vehicles using them as a turning point cannot foul the line

*Note Protection should include the placing of removable/lockable bollards, lockable barriers and Armco type railings such that any vehicle and its load cannot foul the line.*

Ballast shoulders abutting up to a RRAP shall be in accordance with NR/L2/TRK/2102

Exposed timber surfaces shall have an approved anti-slip coating applied

Proprietary access equipment shall be approved for use by the Infrastructure Manager

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**5.8. Requirements in DC electrified areas**

In DC electrified (third rail) areas:

- a) A permanent section gap as defined in Illustration 14 shall be present at the RRAP to permit unrestricted access to the track.
- b) Where insufficient gaps exists, lower the third rail off the insulators, remove an adequate number of insulators and protect the rail from damage.

In DC electrified (fourth rail) areas, RRAP shall NOT be installed without the appropriate authorisation

**5.9. Requirements in AC electrified areas**

In overhead line electrified areas, position RRAP such that:

- a) The approach to the RRAP when under OLE is level where reasonably practicable;
- b) The requirements of Illustration 15 are met, and;
- c) Appropriate authorisation to install the RRAP has been given by the Infrastructure Manager.

**5.10. Illustrations**



**Illustration 1 – Permanent Level Crossing**

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**Illustration 2 – Temporary Level Crossing or Road Rail Access Point**



**Illustration 3 - Examples of suitable proprietary temporary access equipment**

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**Illustration 4 - Temporary access point constructed of consolidated ballast to the underside of the rail head**



**Illustration 5 - Secured timbers level with the rail head**

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**Illustration 6 - Example of unacceptable timber crossing with timbers not secured to each other**



**Illustration 7 - Example of unacceptable timber crossing with timbers not adequately supported beneath. Timbers should be positioned to prevent movement during on and off tracking process**

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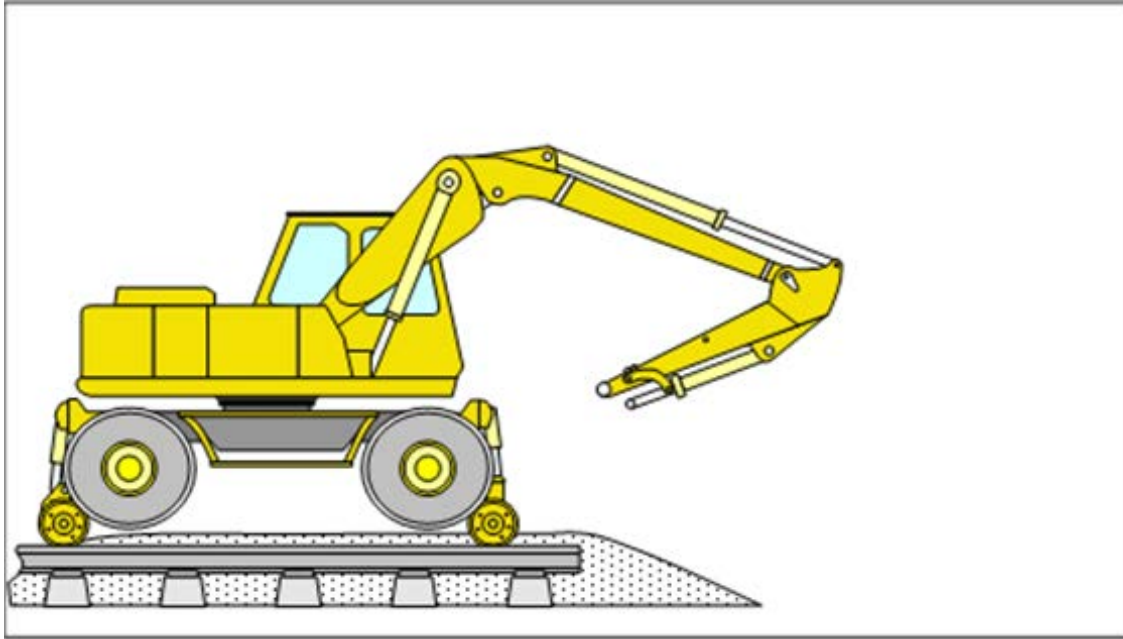
**Illustration 8 - Proprietary access equipment with rail head projectors**



**Illustration 9**

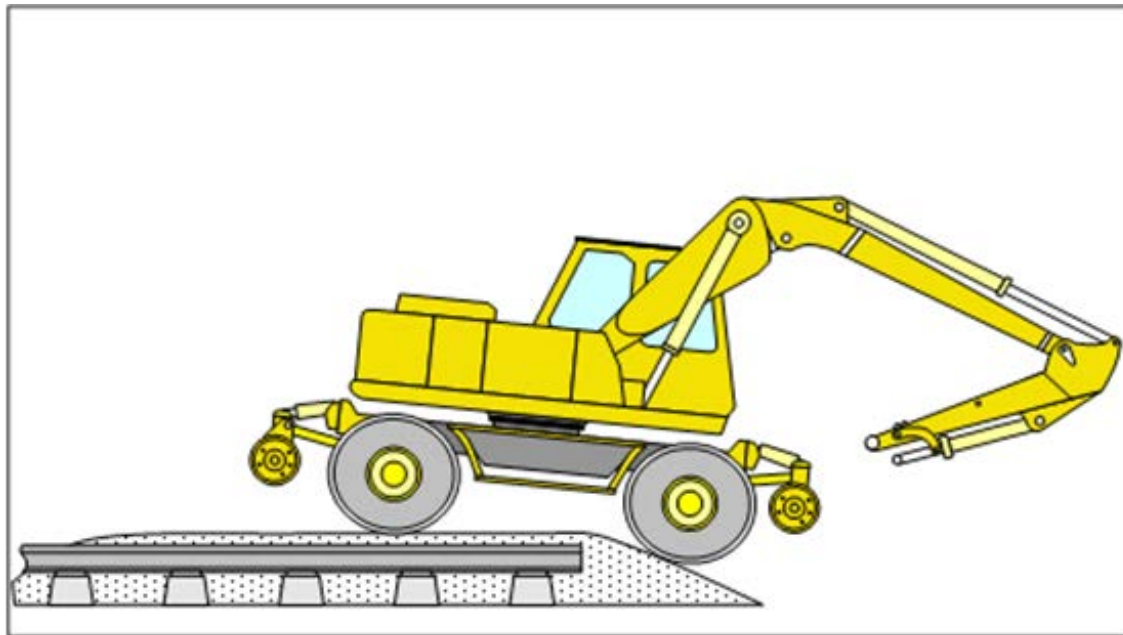
**Example of a machine with a system that can on/off track at locations other than those shown in illustrations 1 – 5**

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**Illustration 10**

**Example of ramp for entry/exit to dig. Machine approaches work area where track has been removed, ballast has been provided in four foot and over both ends of the sleeper (for the length of the machine) and as a ramp down into the dig.**



**Illustration 11**

**Machine is able to lift rail guidance wheels and drive on ballast ramp**

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**Illustration 12**

**Example of proprietary ramp for entry/exit to dig**



**Illustration 13**

**The use of the dipper arm is not permitted for adjustment whilst on and off tracking**

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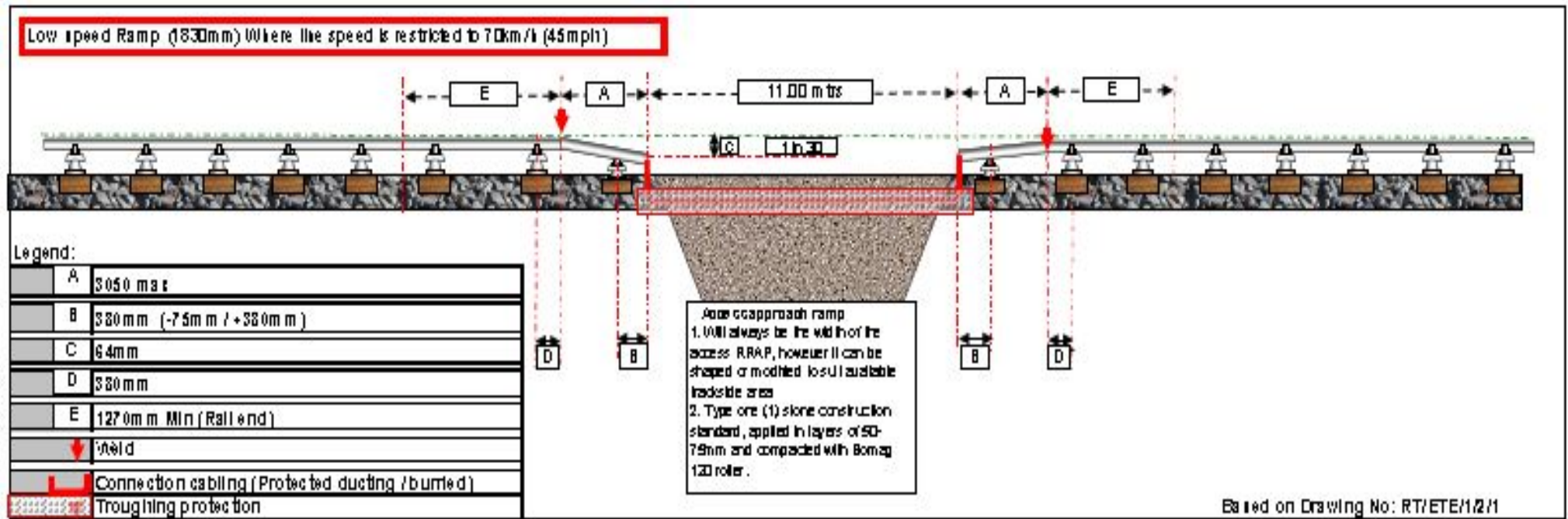
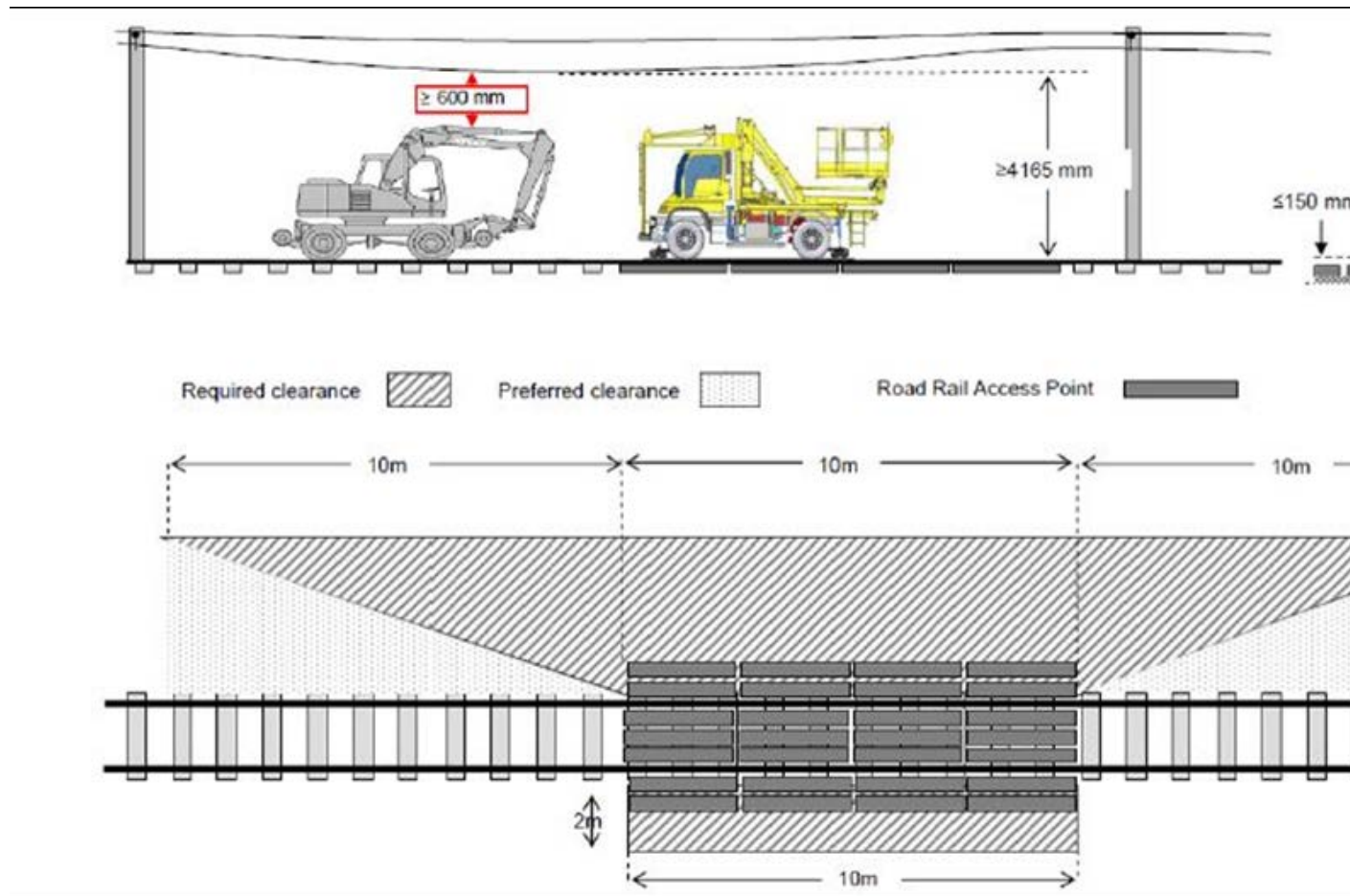


Illustration 14

Arrangements for third rail areas

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**Illustration 15 - OLE clearance at all road-rail access points.**

**6. DOCUMENTATION (OUTPUTS)**

None

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