TPA
Rapid Rail Access

User Guide

STRAIL Tap-Strail RRAP System

(Operations and Installation)

Important Notes:

All installation work must be thoroughly planned before work commences on site to identify hazards and assess risk.

These instructions form guidance for the operation and installation of the STRAIL Tap-Strail RRAP System
. Non-standard applications should be approved by a suitably qualified engineer.

Ensure all personnel engaged in installation operations are properly briefed and adequately supervised by a competent person.

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24 HOUR HELPLINE: 0370 240 2381

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Introduction

Network Rail Approved semi-permanent RRAPs provide a versatile track access solution for long term projects.

TPA's extensive fleet of Strail (TAP Strail) and Rosehill semi-permanent RRAPs provide the perfect solution for longer term projects and worksites where the track needs to remain open to rail traffic at all times.

Both the Strail and Rosehill systems offered are independent of sleeper type and spacing. This means they can be installed across the majority of the network, only requiring different packing quantities and sizes to suit specific sites.

STRAIL® consists of vulcanised rubber mixtures, coming almost exclusively from tyre retreading.

Weights Table

Item	Size (mm)	Approx Weight* (kg)
Inner panel	600	135
Inner panel	1200	270
Outer panel	-	107

*Weight varies according to gauge and superstructure type.

A check list needs to be filled out in advance by the responsible **STRAIL**® representative, or by the railway construction company.

Preparing for Installation

Requirements, preparation work and checks to be made prior to the installation of STRAIL®

- Concrete sleeper, hollow steel sleeper or smooth wood sleeper? (Please check compatibility with your **STRAIL**® representative)
- When the baseplates have worn into or been milled into the wood sleeper surfaces, it is possible to have the sleeper surface levelled to match by **KRAIBURG / STRAIL**®
- Measure the length of the level crossing and mark off the beginning, end and middle.
- Check the entire level crossing area with a long measuring tape and see if there is an exact sleeper spacing of 600mm + 10 / -10mm. If necessary create that exact sleeper spacing. Under no circumstances should the sleeper distances be measured and corrected individually. Tamp track as required to adjust it to correct horizontal and vertical alignment. Always consult your **STRAIL**® representative in special cases, such as small radii, cant (super-elevations), turnout sections, etc.
- Fill up track ballast to the top edge of the sleeper and compact it.

Tools Required

Hand truck (sack cart)
STRAIL® lubricant + brush*
Angle gauge
Ratchet* with 27mm Allen key socket*
2 plastic sledge hammers (5 kg)
2 crow bars
1 small vibrating compactor for use between sleepers
1 vibrating roller for the creation of the road connection (minimum working width: 600mm)
Hand hammer 250 g
Broom

*Normally incuded in delivery (if requested/ordered)

Manual installation
No. of people required to ensure a smooth installation:
600mm inner panels (IP): approx. 4 - 6 people /
1,200mm inner panels (IP): approx. 7 - 9 people

Installation with excavator
Approx. 4 - 6 people are required to ensure a smooth installation.

Note: Protective caps for the bucket teeth are required to avoid damage to the panels.

Store wooden pallets upright and do not place them on top of each other. It is essential to stack the panels flatly (in a horizontal position). Avoid any deformation of the panels and do not store in direct sunlight (in extreme temperatures) prior to installation due to thermal expansion of the rubber panels.

Removal of the Old Pavement Surface

- Remove the old pavement surface up to approximately 1,800mm from the outer rail of each track over the entire length of the level crossing to the required depth (request installation drawing).
- When using kerbstones, excavate soil for making the foundation to a depth of approximately 600mm from the top edge of the rails. When using a prefabricated foundation excavate soil to a depth of approximately 700mm.
- Clean the track bed, so that no residual material from the old pavement surface remains.
- If necessary, retighten fastenings and replace any missing and/or damaged fastening hardware.

Road Connection with Kerbstones

Notes:
To save time, if kerbstones as well as prefabricated foundations have to be rebuilt, always begin with the following excavation and installation work.

Concrete foundation with site-mixed concrete (requires a lengthy road closure time)

- Remove the old pavement structure; up to approximately 1,800mm from the outer rail over the entire length of the level crossing in the required depth (note installation drawing).
- To separate the track ballast from the foundation, set up a shuttering in front of the sleeper heads. Remove the shuttering when the concrete is dry.
- The foundation strip now has to be installed using concrete with strength class C20/25: height approximately 300mm, width approximately 400mm with reinforcement according to relevant standards. This serves as a support for the kerbstones.

Note: Ensure the foundation has enough time to fully cure.

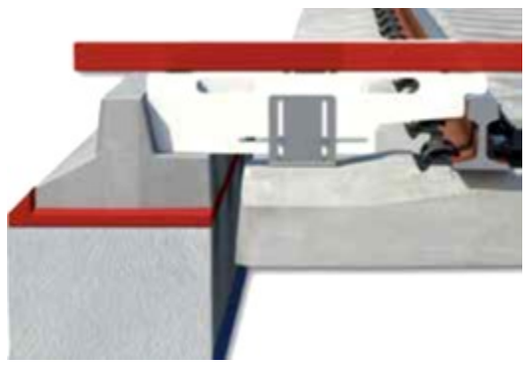
Prefabricated concrete foundation (requires a shorter road closure time)

- When using a prefabricated concrete foundation, place it approximately 260-280mm below the top edge of the rails. (see installation drawing)

- For the sub-base we recommend a firmly compacted crushed rock/clay mixture (100 – 150mm thick) or dry lean concrete.

Placing the Kerbstones

- Moisten the foundation and the kerbstones.
- Apply a levelling layer of mortar (thickness 10-30mm) over the foundation (using **STRAIL® bed mortar***).
- Using two installation gauges, position the T-kerbstones at the correct distance, angle and height. (upper edge of the rail).



Important: The gauges must lie exactly against the rail, kerbstones and sleepers.

- Always use a straightedge to check the correct height since even sleepers are subject to dimensional tolerances.
- Fill 'back support' behind the kerbstone with mortar if possible.

*Always follow the respective installation instructions

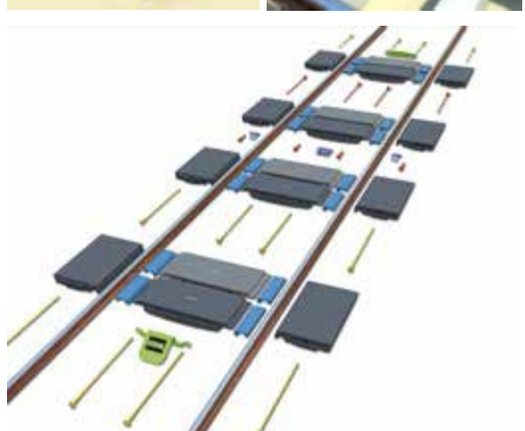
Important: only mix 1 bag of mortar at a time, since working time is limited (depending on the ambient temperature) **Note:** Pay attention to the processing guidelines written on the bags of mortar.

Adjusting the installation gauge

- Make sure the straightedge is resting on both rails.
- Fit the installation gauge tightly to the straightedge and the outer side of the rail. (see picture)
- Loosen the screws on the installation gauge.
- Put the sheet of the installation gauge against an even point on the sleeper.
- Tighten the screws: the installation gauge is now adjusted.
- Use the adjusted installation gauge to install the T-kerbstones.

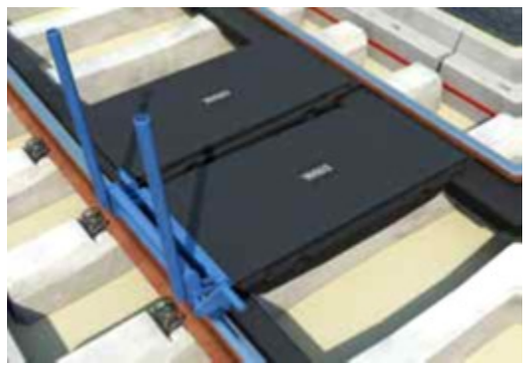
Installation Process

- Clean the sleepers and the rails and check the sleeper spacing with a measuring tape.
- When installing the first two inner and outer panels always start **in the middle** and then continue to both sides (to the left and to the right).
- To make installation easier and to ensure more effective compression of the panels lubricate the rail base, kerbstones, and the **STRAIL®** panels with **STRAIL® lubricant*** (after cleaning them first).

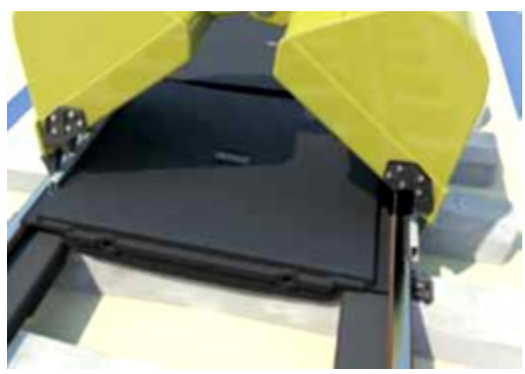


Installation Process Cont...

- **For wood sleepers:** Nail **sleeper protectors*** under the inner panels (using at least 6 of the steel nails supplied). The outside (using at least 4 of the steel nails supplied) so that they are flush with the sleeper surface. Protect the material from strong sunshine and place and nail it according to the ongoing work progress.
- Insert filler blocks. Note that the inner parts are marked with an (I) and outer parts are marked with an (A) .
- Insert the movement stopper. It encompasses the sleeper from above.
- The vertical plate at the centre protrudes between two **STRAIL**® panels and thus prevents movement of the panel row.
- To avoid excessive abrasive wear do not install the movement stopper directly under the wheel paths (lane grooves of the truck traffic) but between them.
- Release possible tension by tapping on the surface of the panels with the plastic hammer in the course of the installation process and when installing the tie rods.
- Press the lip of the inner panel under the rail head using the installation lever. Alternatively, use the excavator bucket to do this (with protective caps for the bucket teeth).
- Screw together with the designated tie rods (centre piece, marked in red). Make sure that the panels are under equal tension and that there are no gaps in between them.



*Always follow the respective installation instructions



- Check the position of the first (two) panels in place using an angle gauge and if necessary, correct with a sledge hammer (90° to the rail).
- When connecting to roads with kerbstones, the outer panels must first be inserted at the filler block or the rail base and then knocked down against the edge of the kerbstone.
- Install the next (two) inner or outer panels.
- Connect these panels with a plastic sledge hammer and screw them together with tie rods.
- After installing the last inner panel, put the deflection plates for the tongue or groove profile in position before the last tie rods are screwed in.
- If the crossing ends up with an odd number of 600mm panels, the last three panels must be fastened with special 1,800mm long tie rods.
- Between the kerbstones and the road connection there has to be a grouting joint (40mm) in which hot material has to be cast. Alternatively, insert **Tok band**.
- The asphalt must always be 3 – 6mm higher than the kerbstone.

Installation Process Cont...

End lock tight system (last tie rod)

- Install **tie rod end pieces*** at straight level crossings (crossing angle 90° +/- 15°)

Or

- install **end restraints*** at skewed level crossings (crossing angle< 75 ° and > 105 °)

Or

- In special cases install an **end bracket***.

*Always follow the respective installation instructions

Level Crossing with Cant (super elevation)

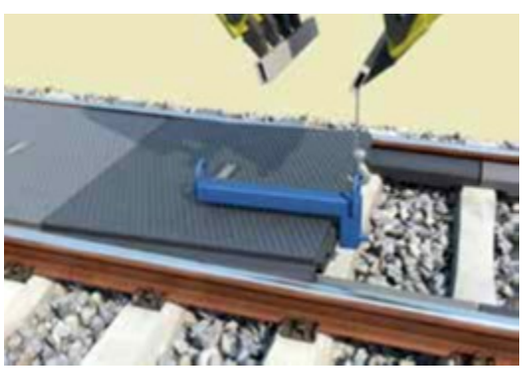
With wood sleepers
At level crossings with cant (super-elevation), lift up **STRAIL®** outer panels with plastic wedges which are screwed on the sleeper or mill sleepers on the opposite side skew as far as necessary in order to adjust it to the incline of the road **(if allowed by the owner of the rail infrastructure)**.

With concrete sleepers
Special design (please ask for manufacturers special detail drawing).
Adjust the installation gauge according to the panel geometry.

Removal for Track Maintenance Work

- For the rotational track maintenance work, proceed in reverse order of the installation. Removal is carried out by removing the tie rods and lifting the panels using the **STRAIL® dismantling tool*** or crowbars.

Note: Ensure that the panels in the middle are re-installed at the same place and mark this spot. **Additionally**, ensure that with installed radius panels, all related parts are marked together accordingly to prepare them for re-installation.



- Let water with soap run between the rail head and the panels.
- Use the **STRAIL® dismantling tool** when using an excavator (with teeth caps).
- Remove the panels gently.
- Clean all parts after removal and prepare them for re-installation.