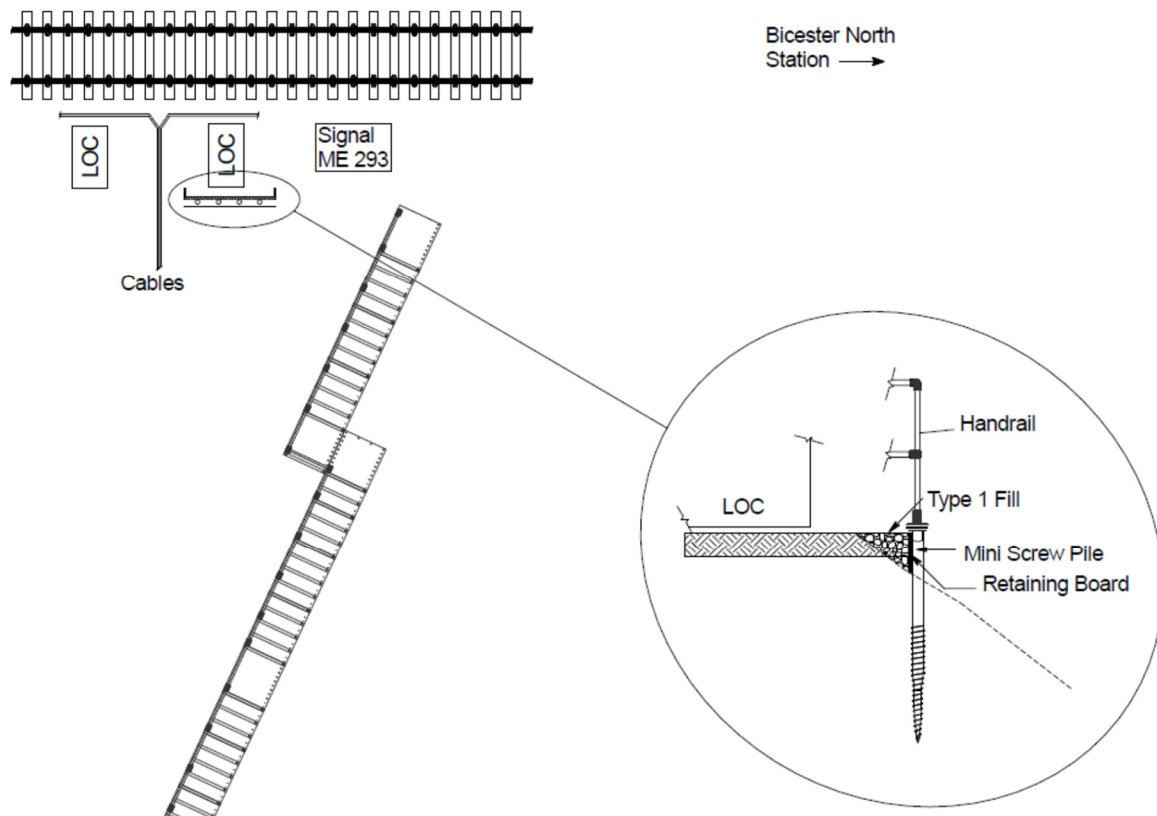


TRACK SCREW LTD

Case Study – Bank Stabilisation at BR13 LOC Access at Signal ME293 Bicester North Station – NAJ3



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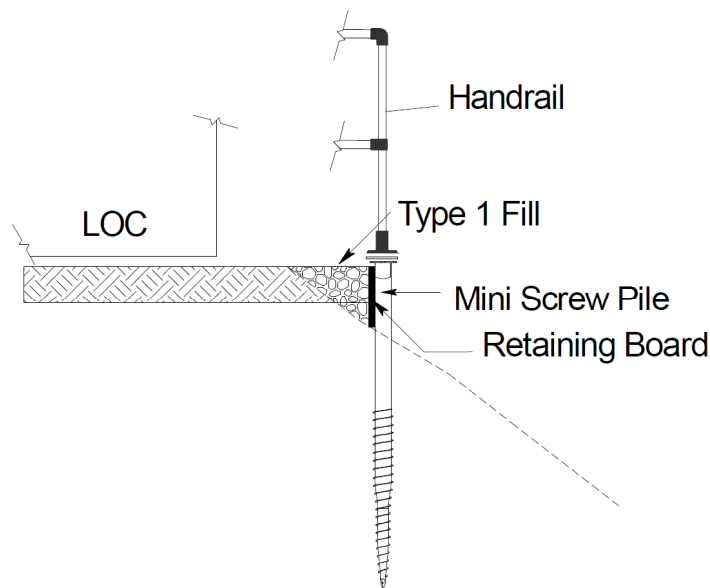
Brief Project Summary

The images shown above were taken during an asset survey and show the issue of collapsed gravel boards, leading to the collapse of the supporting ballast, at the BR13 LOC position 330m east of Bicester North Station. Due to the poor state of repair this LOC had been deemed unserviceable and this was prioritised as an urgent safety and maintenance issue.

Track Screw Ltd were contacted by the local NWR Reactive Maintenance team and asked if Track Screw Anchors could be used to both stabilise the bank, provide a back support for new gravel board and a foundation for new handrailing.

This was to be installed alongside a Kwik-Step stair case to allow access from a nearby secure access to a public highway.

The solution noted below was proposed and accepted by the NWR team.



This was seen as the quickest and safest solution to get the LOC back to operational status.

In addition, the Track Screw system with its light-weight materials and tooling made the install possible before the Kwik-Step stair was fitted.

Due to the need for the screws to not only stabilise the collapsing bank, but also retain new gravel boards and support new hand rail, it was decided to opt for $\varnothing 76\text{mm}$ screws with a minimum embedment of 1.0m into the embankment, due to the changing levels on the down slope section the following screws were supplied: -

KSF G 76x1600-3xM16 for higher slope positions

KSF G 76x2100-3xM16 for lower slope positions



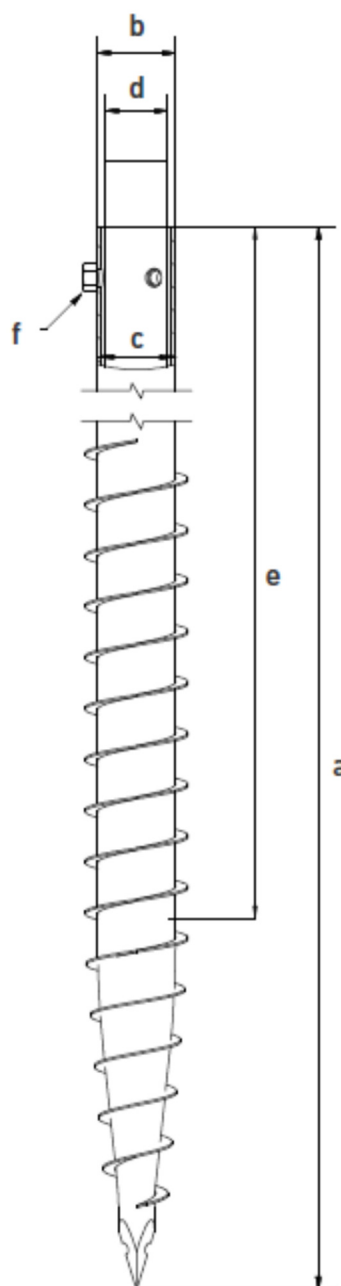
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Screw Information Technical Information – Krinner KSF G



Technical Data

	KSF G 76x2100-3xM16	KSF G 76x1600-3xM16
a	Length (mm) (± 25 mm)	
	2080	1580
b	Shaft outer diameter (mm)	
	76.10	76.10
c	Inner diameter (mm)	
	68.90	68.90
d	Diameter setting (mm)	
	60	60
e	Depth setting (mm) (± 25 mm)	
	1815	1315
f	Thread	
	3 x M16	3 x M16



e: enquiries@trackscrew.co.uk
t: 0844 798 1211

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Installation



A 4-man team installed the required 12 No screws, fixing both the gravel boards and handrail over a single 8-hr shift.

The was inspected by the NWR Reactive Maintenance team and the LOC listed as operational and maintainable again.



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Summary of the Benefits of Track Screw Over Concrete Foundations

Quicker & Safer – **Up to 90%+ savings in Labour**

Lighter Installation Equipment & Lighter Materials – **Nothing over 25kg in weight**

Less Manpower Required

No Excavation, No Spoil, No Wet Trades, No Curing Time

Quieter, No Generator, No Fumes, No Fuel, No Vibration

Environmental Savings, 1m³ of Concrete = 250kg of CO₂, 1 Track Screw = 20kg CO₂ – **Up to 85% less CO₂**

- **Survey Requirements**

- Traditional ground survey, e.g. bore holes, cost £1k+, require heavy plant & take 1-week+ to book
- For Track Screw, you only need soil density numbers & soil classification to 1.5m depth. This can be taken on the day of install using a hand held CBR probe and hand auger

- **Speed & Manpower**

- 1m³ concrete pad will take a 4-man team a day to construct and 1-week to cure
- One Track Screw can give same capacity, be installed in 10-mins by 2-men & loaded immediately
- 5m³ concrete pad will take a 6-man team 3-days to construct and 1-week to cure
- 4 No Track Screws with a transfer grillage installed by a 4-man team in 2-hrs & loaded immediately

- **Tooling**

- Installation contractors can hire TSL's unique 18V Lithium Ion battery powered screw installation tool, the kit includes all parts required to install screws from 600mm to 1800mm long in to any ground conditions
- Even installing the longest screws into the hardest ground, the tool will complete multiple screws with a single battery, shorter screws into softer ground will allow significantly more installs per battery, each tool is hired out with 4-batteries & a charger, each battery weighs less than 1kg
- The tool itself weighs less than 20kg in its transport box. All other elements of the installation kit weigh less than 18kg and so can be easily carried & handled
- TSL have exclusive licence from the global patent holder of the tooling for the UK rail sector
- TSL offer a full training course for installers and a technical assistance team to provide installation advice

- **Track Screw Anchors**

- Single piece screws, lengths from 600mm to 2100mm, final diameters from ø60.3 to ø139.7
- Maximum capacities from single screw 45kN tension & compression, 20kN shear & 15kNm moment
- Rail Spec screws have 110µm galv coating giving assumed service life of 40-years, 25-year warranty
- TSL can also offer screws made from 304 Stainless Steel giving 70+ year lifespan
- TSL offer a fully technically assured service, calcs & warranties
- TSL can offer on-site testing of installed screws or train operatives to complete testing
- TSL have exclusive licence from 2 largest manufactures for screw supply for the UK rail sector

- **Savings**

- Recent install of 56 screws in place of concrete showed 94% saving in labour & 85% saving in CO₂

