ne of the most intricate of the Channel Tunnel Rail Link contracts is unquestionably no 103, immediately to the north of King’s Cross Station.

Within a few hundred metres, joint venture contractor Kier/Edmund Nuttall has to deal with the East Coast Main Line, Midland Main Line, North London Line, Regents Canal and York Way.

And as the high-speed line nears its destination of St Pancras, there is very little room to play with in terms of vertical alignment.

Set against the scale of the overall project and almost heroic nature of much of the engineering on contract 103, you might expect geotechnical contractor Ritchies’ novel use of carbon fibre soil nails to be on an epic scale too.

But as is often the case with geotechnical innovations, its ground-breaking subcontract is rather low-key. Tucked away at the northern end of the section, in a nailing scheme designed by CL Associates, Ritchies is using the carbon fibre nails to reshape the abutment wing-walls of a Victorian bridge that carries the North London Line railway over York Way.

The work is needed because Kier/Nuttall JV is realigning a section of York Way as part of the elaborate CTRL enabling works.

The realigned York Way rejoins the existing road immediately south of the North London Line; but, as Kier/Nuttall sub-agent Fiachra Page explains, the carriageway needs to be lowered by 2m as it passes through the bridge, known on the contract as Bridge 126.

Not only does the bridge have to be underpinned, but the square brick abutments on its south side are being cut back to improve sight lines, in particular for traffic exiting the adjacent Camden Depot.

The two resulting 9m high vertical wing-walls are constructed top-down. Soil nails are covered by mesh and the whole face covered in sprayed concrete, fully encapsulating the nail heads. A cosmetic brick facing should, over time, visually merge with the original brickwork.

Nothing too dramatic in that, but Ritchies’ business development manager David Gibson believes it is only the second use of carbon fibre soil nails in the UK, and certainly the first use of a flat strip ‘nail’.

Nail is a somewhat misleading term, as the 30mm wide, 4mm thick flat bars are similar in profile to a plastic ruler. The nails, supplied by Italian geotechnical equipment manufacturer Sireg, are made up of longitudinal carbon fibre strands within a vinyl ester matrix and have tensile strength of 250kN. The outer surface of the bar is coated with a coarse sand to ensure a good mechanical bond with the surrounding grout.

Installation is similar to conventional soil nailing, albeit easier. Left: end plate detail.

Flat strip carbon fibre soil nails are making their UK debut on CTRL contract 103.