

## **EXPERT RAIL PRESS BRIEFING –**

### **Infrastructure Projects (IP) Track achieving right first time / higher speed handbacks**

With the continued focus on improving rail passenger safety and performance, IP Track have been focusing on delivering more work in core work campaigns with right first time handback. The increased focus on right first time quality has enabled higher speed handback, improved asset reliability and reduced whole life costs of the installation.

Over Christmas and New Year a number of higher speed handbacks took place. Handing back the railway at 125mph following major plain line renewal works is a first for the modern day railway.

Although limited high speed handback has been achieved in the past, monitoring and installation practices have improved significantly in the last few years and handing back at higher line speed is increasingly becoming the norm. In fact IP Track High Output is already pushing the boundaries with increasing volumes of work handed back at high speed including Ballast Cleaning System (BCS) core work campaigns at Hatfield Peverel and Track Relaying System works in Wessex (both handed back at 100mph which is the prevailing line speed.)

The key to achieving higher handback speeds across our full programme of IP Track works includes making sure track is installed at each stage to its design tolerances, that care is taken while tamping to get the track to its final co-ordinates, and that welding and stressing is completed as part of the core works where sufficient access is available.

### **Innovation and Engineering techniques**

The IP Track team, working with the Network Rail Safety Technical and Engineering group and with the Principal Contractors, has developed a number of advanced engineering techniques to assist higher speed handback including:

1. 3D and 2D dozing and excavation to get the bottom stone right first time to absolute design co-ordinates - saving the tamper from undertaking large alignment lifts which undo the consolidation of the bottom ballast. (3D dozing was used on the majority of IP Track S&C sites over Christmas and the New Year.)
2. Improved consolidation of the ballast through:
  - a. Dynamic Track Stabilisation (DTS) currently in use by High Output. This was used by Plain Line at Langley over Christmas and is currently being trialled and developed for S&C.
  - b. Use of the Variomatic Bomag roller to deliver measured, uniform consolidation.
  - c. Placing the ballast to design, so that the tamper does not undo the work of the triple wackers or Bomag rollers.
  - d. Implementing a short period of traffic under a temporary speed restriction (TSR) to gain consolidation under traffic before raising to line speed following a SPATE (speed

restriction terminated early) tamp, as used at both Doncaster S&C and Marshgate S&C.

3. Placing the track panels to their absolute design position using total station or GPS - rather than placing them using a tape measure and expecting the tamper to make large alignment slues.
4. Making sure the constructed track position is measured accurately using total station or GPS so that accurate off set files against the actual design can be generated for the tamper.
5. Manual packing using hand held tampers on areas of track that cannot be tamped.
6. Improved clamping systems including:
  - a. Back hole drilling up to 80mph.
  - b. High Speed Clamping System up to 100mph.
7. Fully welded and stressed for line speed as delivered at Langley, Purley, Doncaster and Marshgate.

Future engineering techniques in development include: high speed, consumption free welding for S&C, fully controlled automatic excavators and improved clipping up tools.

#### **Benefits of high speed handback**

- Workforce safety benefits; where we can eliminate the need for TSRs and remove the requirement for staff to work trackside to set up and remove speed boards and other equipment.
- Improved passenger experience; delays reduced, journey times improved.
- Significant schedule 8 savings; reduction in delay minutes.
- In order to achieve high speed handback we have to deliver high quality installation, right first time. Track installed to a high quality has greater longevity, improved reliability, performs better and therefore has a lower whole life cost.

#### **IP Track right first time / high speed handback successes**

##### **Langley, East Coast South**

The site, located between Stevenage station and Langley junction, is on a stretch of the East Coast main line where access is notoriously difficult. The IP Track Plain Line team, working with the principal contractor, Carillion, safely delivered 330yds of Cat 11 complete renewal, handing back the job at the line speed of 125mph. Relaying was completed on Christmas night, prior to undertaking three passes of the tamper and three passes of the Automatic Finishing Machine (AFM) using its Dynamic Track Stabiliser (DTS) capability (effectively the original method from British Rail inter-city days.) In avoiding the 50mph TSR, the team saved c630minutes of direct delay and c210 minutes of reactionary delay – a schedule 8 saving in the region of £150k-£175k.

### **Doncaster and Marshgate, East Coast**

The IP Track S&C North Alliance handed back Doncaster and Marshgate worksites on the East Coast main line (LNE/EM) at line speeds of up to 120mph following successful completion of the S&C renewal, OLE upgrades and plain line renewal programme of works over the festive period. Following the overruns at Holloway / Kings Cross last year, the team at Doncaster were determined to "slay the ghost of Christmas past" and apply the many lessons learnt to this year's programme to safely deliver high speed handback.

### **Purley**

Purley was one of the highest risk IP Track programmes of work over the Christmas period. It was successfully delivered by the S&C South Alliance to full scope which included renewal of 17 S&C units with full conductor rail and 9 new track isolating switches with associated signalling. With 19 engineering trains all arriving and leaving on time, and 22000 man hours safely delivered, successful delivery included line speed handback on the slow lines at 60mph. The fast lines will be returned to line speed of 90mph this weekend.

### **Acton Wells Junction**

Acton Wells junction delivers to a high demand for passengers and almost 24/7 freight - carrying most retail, coal and food in the UK. Vital works to this critical junction included refurbishing four bridge decks and installing 13 point ends involving in excess of 20,000 working hours over a 10 day period - during which time Marks and Spencer had to divert half a million bottles of wine! All works were fully completed with on time handback with 30 trains passing through in the first hour at full line speed.

### **Cost savings**

#### **Doncaster / Marshgate**

Schedule 8 savings £417k

*(Saved £19870 per day and TSR speeds were removed 21 days earlier than planned.)*

#### **Langley, East Coast South**

Schedule 8 saving in the region of £150k-£175k

*(In avoiding the 50mph TSR, the team saved circa 630minutes of direct delay and circa 210 minutes of reactionary delay)*

#### **Purley and Acton Wells junction**

To be confirmed. Please [contact Dan Donovan](#) in the press office.