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Issued By: Thameslink Programme, HSEA Team, James Forbes House, 27 Great Suffolk Street, London SE1 0NS

Issue Number: TLP 027

Title: Railway Approach Viaduct – Rivet Head Removal (26th November 2014)

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Overview of Event:

Whilst undertaking structure strengthening works on the underside of the bridge, an excessive number of rivet heads were removed at the same time which was a deviation to the plan.

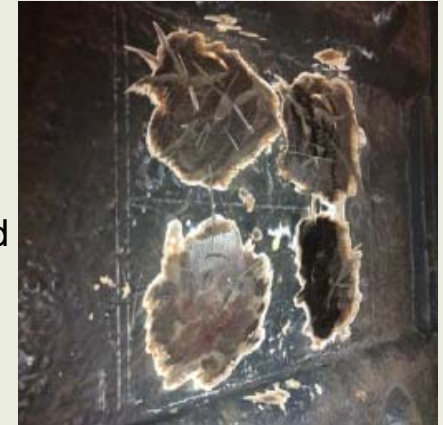
The method of work during operational hours was to remove the rivets one at a time and replace them one at a time with a new bolt, at no point should any more than the single rivet be ground down or removed.

During an inspection, the Skanska engineer noticed that 16 rivet heads had been ground off. The work was suspended and the issue reported to Skanska's Engineering Manager.

Following discussions between the Skanska Engineering Manager and NR Senior Construction Manager it was agreed to mobilise a night shift gang to fully remove the rivets one at a time and replace with new bolts. There was no impact on the running of operational trains on the tracks above.

Diagram/Photo of event:

Rivet Heads removed



Underlying Causes:

- **Behaviours** - The fitters decided to grind the rivet heads off the 16 rivets even though the Task Briefing clearly stated to use the "one in one out" technique, & the PM had briefed them specifically on this that morning.
- **Planning / Communication** – The TBS did not mention the heads as a separate entity. It just stated that the rivets would be replaced on a "one in one out" basis and therefore it is believed there was an assumption that removing the heads would be acceptable.
- **Perception of Railway Risk** – The operatives are specialists in this field and have done this type of work for many years including previous NR Structural repair jobs. They were of the opinion that the rivets would not budge as the process requires the use of a rivet buster (compressed air) and a drill to remove the rivets. This can take approximately 5 – 10 minutes to knock out each rivet. The historical installation technique required the rivet to be heated to a high temperature and the rivets almost form part of the structure. N.B. Technical Note: They are in fact installed when red hot and the head formed by the use of an air powered cup headed hammer which forces the rivet to fully fill the hole and as they cool they contract effectively clamping the plates together.
- **Trying to make the job easier** - Even though there was no pressure to get the job done a few of the operatives had said they had to have the work completed for the following nightshift. They also stated that it is a quicker process to grind the heads first to avoid having to use two sets of tools at any given time i.e. the use of a grinder and rivet buster.

Actions Taken As a Result of Investigation:

- Future WPP / TB requiring similar activities are to be more task specific and to state "Each rivet will have the head ground off before being punched out and replaced in it's entirety before moving on to the next rivet".
- WPP's to be updated and agreed as and when the TB's are revised as per NR Policy.
- Specific Life Saving Rules are to be included within the Risk Section of the WPP & TB. All live TB's are to be reviewed to ensure latest LSR are included.
- NR and Skanska on call reporting procedures being rebriefed to all staff to refresh peoples understanding.

General Key Messages:

- Make sure the method of work is clearly documented and briefed to those undertaking the task. Check understanding by questioning.
- If a task cannot be achieved as per the plan, works must be stopped and re-assessed by competent person(s).
- Site teams including personnel supervising the works should be aware of the significance of events such as this and their impact on assets / operational infrastructure and should also understand the escalation process for advising the relevant route teams as necessary.