Shared Learning

COSTAIN

The Thameslink Programme

Issue Date: 30th Nov 2015 - For further info contact sharon.fink@networkrail.co.uk

Issue Number: TLP046 Title: Potential to Strike and Damage an Underground HV Cable

Overview of Event:

While machine excavating in the arches, at London Bridge to install a catch pit for drainage remedial work, the machine Operator and Supervisor noticed warning tape and pea shingle. These were surrounding a high voltage 20KV cable duct. The ducts and cable had been installed by the project earlier in 2014. There was no damage to the cable itself, but the pea shingle and warning tape were exposed and the works stopped immediately.

General Key Messages:

- Installed services should be included in as built drawings
- Buried services information should be sought as part of the planning stage
- Prior to breaking ground the appropriate checks and CAT scans should be undertaken to confirm there are no live services

Causes:

Immediate - Digging without knowledge of the presence of underground services, namely a 20,000 Volt electrical cable.

Root and Underlying Causes

The principal causes of the incident were failure to follow established Permit to Dig processes at an individual level and inadequate recording and provision of service information at an organisational level.

- Procedure: Failure to use a Cable Avoidance Tool (CAT) to scan for buried electrical services; this is a mandatory Permit to Dig condition. This was a joint decision by the Engineer [Permit Raiser] and Supervisor [Responsible Person]. The Permit Raiser had made 2 No. entries on the Permit to Dig, at Part A, clauses 9 and 10, that a CAT scan was required.
- Procedure: Failure to check service drawings. The Engineer did not pursue all options available to him - the engineering drawings and records to identify the presence of underground services. The Engineer [Permit Raiser] made an entry on the Permit to Dig, at Part A, clause 10, that 'All relevant up to date service plans - drawings had been checked'.
- Communication: There was a failure to record the location of the 20kV cable on the 'As built' drawings and on the 'model', there was consequently a lack of information available to the Engineer.
- Procedure: The works proceeded at risk on an assumption, based on the Supervisor having worked previously in that same general location [Arch 65], that underground services were not present. This was an unsound decision making process, factually incorrect and counter to standard procedure.
- Organisation: the Permit to Dig has clauses in Part A that are open to misinterpretation. Clause 6 in particular implies the work can be assessed as 'low risk' and this may be [was in this case] interpreted as not requiring a CAT scan and Clause 10 allows the option of selecting no CAT scan.
- Training; The inaccurate, inconsistent and contradictory entries by Permit Raiser and Responsible Person on the Permit to Dig is evidence of a lack of understanding and / or a behavioural shift to lack of adherence to the established process. This resulted in non-compliance with the permit conditions.

Photo of Event : Excavation in Arch

Actions Taken As a Result of the Investigations:

- The Permit to Dig will be revised to make clearer the requirements for obtaining up to date service information.
- The process for making service information available to Permit Raisers and others will be improved to make this more readily accessible.
- The process for recording the location of services introduced by project works will be improved to ensure this is recorded before backfilling operations are undertaken.
- Permit Raiser and Responsible Person will be retrained in the use of the Permit to Dig and safe management of excavation operations.