Shared Learning

COSTAIN

The Thameslink Programme Issue Date: 12th June 2017 - For further info contact sharon.fink@networkrail.co.uk

Issue Number: TLP076 Title: Arch Penetration

Overview of Event:

At approximately 0100 hours on Saturday 1st April, the shoulder of an arch on the London Bridge Station Redevelopment Project was breached when excavating overburden for the formation of a pin for a structural ground beam. Approximately 5kg of fragmented masonry fell into the gallery area below. There were no injuries and no persons in the immediate vicinity. The incident was initially classed as a close call however, on reflection the project team have now decided that this should be treated as significant due to the potential to undermine the structure.

General Key Messages:

- An appropriate level of engineering detail, including the type and purpose of access systems such as scaffolds, should be made available to the WPP author and included in the WPP and associated permits.
- Exclusion zones around or below work areas should be determined as part of the planning process.
- Unexpected conditions encountered should result in works stopping and the necessary people being consulted to determine risks and controls needed to manage these.

Photo of Event : Arch that was penetrated

Actions Taken As a Result of the Investigations:

- Engagement session held with Engineer about his role and process.
- Engineers and Supervisors have been reminded of their safety responsibilites.
- Weekly audits will review the accuracy of engineerind detail in the Permit to Dig with a dedicated resource allocated.
- Permit to demolish has been rebriefed to the team.

Causes:

Immediate Cause – The unplanned breach off Arch 1008 by the action of the machine mounted breaker.

Underlying Causes

- Procedure: Failure by the Engineer in charge of the works to take the appropriate action and stop the breaking out activity and consult with the appropriate people, namely the Temporary Works Co-ordinator (TWC).
- Organisation: Failure by the senior manager (Project Manager), when consulted to take the appropriate action and stop the works and assess the risk. A culture existed whereby the works detailed in handover from days to nights were pursued, with great rigour, to completion. The nightshift team were carrying out their 'first' pin in this area; the dayshift were familiar with the arch levels. There was a programme benefit to be gained by transferring this work to nightshift.
- Design/Procedure: The information on the Permit to Dig stated arch levels that were inconsistent with the actual levels of Arch 1008, it therefore lacked adequate detail to identify the various pin positions relative to the Arch (arched) profile.
- Procedure: The Supervisor did undertake a Point of Work Risk Assessment (POWRA) but this was not suitable and sufficient with respect to the identification of penetration risk and correlating control measures. This resulted in the break out continuing without an accurate control of depth and thereford increased the risk of penetration. There was a direction form the senior manager to continue which overrode the decisions made by the Supervisor.
- Training / Procedure: WPP Hold Point was to carry out the works under a Permit to Proceed with Demolition if the excavation involved dealing with 'Minor demolition of structures'. The mass concrete encountered was a situation that should have triggered this step. This was a missed opportunity to reassess the works and then better control the dig.
- Procedure: The Task Briefing was not adequately detailed to warn of the likelihood and danger of breach. The PoWRA carried out by the Supervisor identified the need for an Exclusion zones below.
- Procedure: Post-incident management was inadequate. In placing a cover over the hole and mass pouring the concrete the incident scene was not preserved. This decision was made by the nightshift PM and the engineers.