

Shared Learning

COSTAIN

The Thameslink Programme

Issue Date: 16th Sept 2015 - For further info contact sharon.fink@networkrail.co.uk

Issue Number: TLP040 Title: Acoustic Panel

Overview of Event:

An acoustic panel became detached from its stillage frame and fell over. The panel, weighing approximately 350kg, had just been lifted as one of a pair contained within a purpose-designed support frame [stillage], direct from the delivery wagon onto the Western slab of the site. As the stillage holding both panels touched down onto the slab one of the panels detached from its fixings and fell to one side. Persons, including the Slinger / Signaller, were in the vicinity however no one was injured.

Causes:

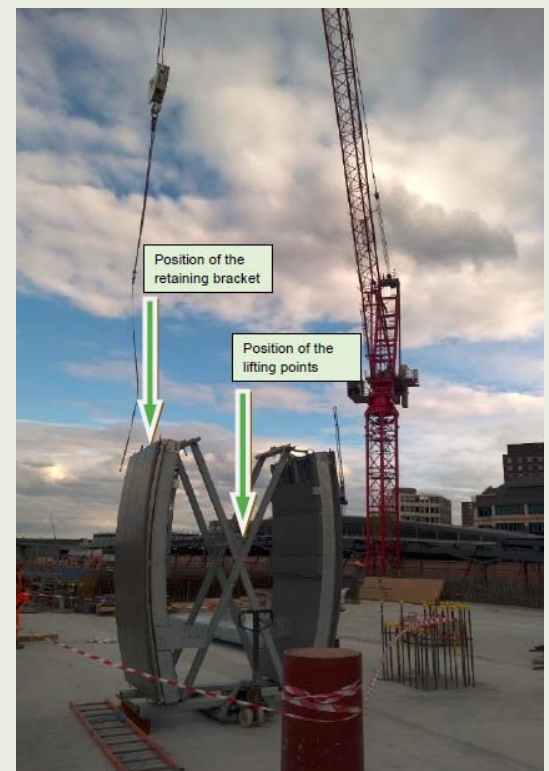
Immediate - The failure of the 'nut and bolt' fixing arrangement that captivates the acoustic panel to the stillage frame. The nut became loose allowing movement, loss of vertical and lateral restraint and subsequent detachment. It is concluded that the restraining arm was loosened during the transport to site. The security of the load [the restraining arm – panel arrangement] was not checked by the Slinger / Signaller before the lift commenced. An unsafe load was therefore lifted.

Root and Underlying Causes

- The panel was held in the stillage at 3 No. points: 2 No. on the bottom and 1 No. on the top. These fittings are safety critical. Two design failures flow from this: first, a reliance on the single top restraining arm i.e. there was no back up should this fail. Secondly, the type of fixing specified was not adequate: the [formally unspecified] nut and washer design did not prevent the nut 'unscrewing'. A Nylock nut would not have 'unscrewed' [allowing movement and failure].
- The failure to develop and implement an inspection methodology to check the safety of the 'load' i.e. the security of the bolts. There was no formal check to verify the load was safe to move or lift. It is significant that the intended 'single use' of the stillages did not trigger a LOLER inspection requirement.
- The inspection methodology identified above was not specified in the WPP, TBS or Lift Plan.
- The bolt used to secure the stillage restraining arm to panel was not the correct bolt. There is no evidence that a washer was used. The nut became loose on the bolt allowing movement and failure.

Photo of Event:

Pair of Acoustic Panels in the Stillage



Actions Taken As a Result of the Investigations:

- Revised bolted fixing arrangement implemented, including a Nylock nut system.
- Introduction of a secondary means of securing the load; this includes the use of 2 No. ratchet straps installed before dispatch from the Delta works.
- Development of a stillage safety and load security checklist and monitoring regime that includes mandatory sections for: pre-loading of the panels to the stillage, pre-loading to the transport, pre-lifting off of the wagon and final check before lifting to location.
- Revisions to the WPP and TBS to include more detail on the requirements attached to the transport and associated lifting operations.
- Briefing sessions to all of the London Bridge delivery team on security of loads when transporting and lifting.
- Briefing sessions to all relevant Delta Fabrications operatives, including site installation and works yard loading teams.

General Key Messages:

- Project teams should ensure all loads are checked before they are lifted
- Measures should be taken to provide an adequate exclusion zone around any lift