FORTH ROAD BRIDGE

North West Main Tower expansion joint . Removal and re-instatement of plate Main-span west No. 3.

On Sunday the 12th of October 2014, a programme of works operational procedure was carried out, the objective, to inspect and report the current status of the North main tower expansion joint plate MW 3. and to carry out any requested repairs or remedial works if required before being reinstated back into position.
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Pre- removal . : Prior to the removal of the north west main tower expansion joint plate Mw.3. Bridge inspector carried out the required dimensional checks. All required information recorded.

Engineers removed required plates rocker & tongue plate bolts & springs. Prior to removal bridge inspector recorded measurement of tensioning on springs to ensure exact tensioning restored following reinstatement of plate. In conjunction with this, the emergency failsafe system connection plates and associated fixings attached to underside of Rocker & sliding plates were removed. Bridge inspector carried out a spring measurement on both Tongue & Rocker plates. It was agreed prior to commencement of works that both rocker and tongue plate springs would be replaced regardless of condition of existing springs. Therefore it was found that there was no requirement to record in situ spring dimensional diameter checks and supply survey sheets. Although it should be recorded that sizes were taken on spring lengths only. Condition was satisfactory, no visible cracks. corrosion evident through breakdown of the protective coating.
Pre – removal photographs.

Rocker Plate spring.

Tongue plate springs (East & West)

Post – removal photographs.

Rocker plate spring

Tongue plate springs (East & West)

Positioning of lifting equipment & crane usage : Crane positioned on site .

Tongue plate removal.

Tongue plate on MW3. lifted and laid down as specified as per Drawings. Note. : During lifting it was found that plate movement combined with the build up of corrosion scale, detritus on the edges of the plate created resistance. This was located in the north west corner of the plate. This was overcome by applying impact by means of a heavy hammer. This combined with the continual lifting force being applied by the crane was enough to free up and release the plate to allow removal .

Rocker & shuttle plates on MW3. lifted and laid down as specified as Per drawings. No problems were encountered during removal . Post removal , plates, radius arm girders and underdeck steelwork were pressure washed so that dimensional checks could be carried out. This would incorporate bush & pin wear on the rocker / sliding plate, wear-down depths on the radius arm girders & the visual inspection of all welds on the plates bearing pads. Following the completion of removal and lay – down of plates , employees from consultants Atkins attended the site. It should be recorded that no guarantee of complete 100% accuracy with regards to bush thicknesses can be given. Some bush wear has receded back into the pin location making it difficult to obtain an exact measurement. The pin internal bore in itself has areas of corrosion, detritus.

On completion of their inspection, it was agreed that plate MW3 could be reinstated. Whilst carrying out pre removal dimensional survey the mismatch recorded between the tongue plate and bitumen plate would require 5mm packer plates to be welded to the existing bearing pads. This was completed . Prior to the reinstatement of the tongue plate, all faces of the plate were cleaned by engineer using a grinder to remove all corrosive material to ensure no problems occurred with the refitting.

Packer plates welded to existing tongue plate bearing pads.

Following completion rocker, shuttle & tongue plates were reinstated without any problems. Emergency failsafe system connection plates and associated fixings attached to underside of sliding plate.

Bridge post removal dimensional checks completed on plate MW3 following reinstatement.

Bridge Inspector. :

Note.:
It should be recorded that following completion of works, tarmac removed defective area of surfacing as instructed from bitumen plate No1.west.Previous repairs had been carried out previously by FRB using cold laid material. Reinstatement was carried out using mastic asphalt.