



M27 PARK GATE BRIDGE,  
FAREHAM

BEARING REPLACEMENT AND  
FLAT JACKING WORKS

PROJECTS

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## CONTRACT SERVICES - HIRE - SALES

### PROJECT DESCRIPTION

Hydra Capsule have recently completed a major pre-loading and bearing replacement on the M27, junction 9 for the Highway Agency. The works consisted 84 number 50 tonnes capacity flat jacks, elastomeric / fixed and uni-guided bearings with additional temporary and permanent structural steel support works.

Both bridges consist of a central concrete pier with 19 nr. reinforced concrete beams (38 nr. in total), which spanned 22 metres per side of the M27 motorway. A total of 78 nr. beams were sat onto existing bearings and concrete piers which were bearing badly corroded and in need for reconstruction due to structural fatigue concerns.



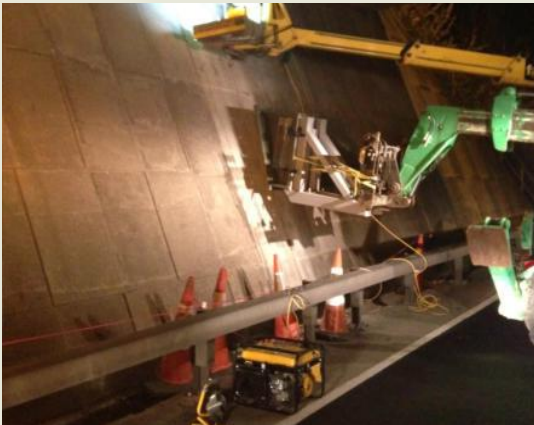
*“Hydra Capsule were employed to pre-load and load transfuse all replacement bearings under live traffic conditions and accuracy to 0.25mm”.*

### PROJECT WORKS

Due to the restricted working space, 50 tonnes flat jacks were supplied to pre-load the newly installed elastomeric bearings, all carried out by Hydra Capsule. The concrete bridge deck was synchronously pre-loaded in stages, and lifted only by +2.00mm, controlled by digitally electronic displacements gauges (LVDTs) and a pumping system. To be adjustment and pre-loaded from a central control point, working within a tolerance of 0.25mm differential between adjacent beams.

Hydra Capsule were commissioned to offer a full bearing design proposal for the existing 76 nr. beams and additional 8 nr. fixed and uni-guided bearings for the bridge abutment and central concrete piers.

This allowed reinstatement of the central bridge piers (East and West) while the flat jacks worked under “live” loads throughout the 9 month project.



Once the works had been completed. Hydra Capsule transfused the temporary work loads into the flat jacks, maintaining the 0.25mm tolerance, ensuring the total loads to each bearing(s) had been distributed equally. Once achieved, all the flat jacks were individually grout transfused, maintaining a gradual load and movement tolerance, until the jacks were fully filled with high-strength cementitious grout.

Further work that Hydra Capsule complete at the Park Gate project, included additional temporary steel-work supports at the central piers and abutment parapets. Due to the nature of the bridge and temporary propping system, Hydra Capsule were required to install lateral and longitudinal supports to reduce the risk of the bridge structure twisting at the abutment locations and reduce any potential cantilever loading in the central supports, whilst hydro-demolition was completed.

### Client

Highway Agency

### Type of Works

Bearing Replacement  
(Elastomeric, Fixed and Guided)  
Transfusion Flat Jacks  
Stressing and Testing  
Temporary Support System(s)  
Manufacturing of Permanent  
Support Steelwork

### Commence Date

March 2013

### Completion Date

December 2013



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