

 **Miscellaneous****Reference Details:**

**Owner** Highway  
Agency / Devon County  
Council +++ **Specialist  
Jacking Contractor**  
Hevilifts Limited +++

**Main Contractor**  
Hochtief +++ **Designers**  
Tony Gee & Partners

**DSI Services** Supply of  
DYWIDAG  
THREADBARS® dia.  
36mm.

**Biggest sideways bridge slide in the world****England, Plymouth: Marsh Mills Viaduct**

**Jacked sliding of a massive nine span flyover in Plymouth was completed successfully in one of the world's most complex civil engineering projects of its kind. The 410 metre long x 5,500 tonne Marsh Mills dual carriageway road deck was jacked sideways 12.2 metres into position using Ø36mm DYWIDAG THREADBARS®.**

The overall £12.25 million, 22 months design and build contract was awarded to replace the two viaducts which carry sliproads for the A 38 trunk road at Marsh Mills. The viaducts had to be replaced because their concrete had

been rotted by alkali-silica reaction.

Sliding was chosen as it minimised traffic disruption and saved £12 million in carriageway lane rental charges; replacing the busy slip roads in the normal way by demolishing them and building new structures would have caused severe traffic disruption for 18 months.

The new deck initially carried traffic while resting on temporary supports. After demolition of the old viaduct, eight new concrete piers and two abutments were built to support the new deck. Road closure was limited to a weekend - eight hours for the slide, 24 hours to allow bearing grout to set and the remainder for asphaltting and traffic re-routing.

The operation began at 02.00 hours on the Saturday morning and a problem emerged after the very first 600 mm jacking stroke. The merge slide was downhill on a 2.85 per cent slope which required four braking points. Unfortunately, the non-stick PTFE coated sliding surfaces had less friction than expected and one end skewed out of line.

The deck had to be realigned to prevent the parallel sliding tracks from jamming and all the precise planning gave way to on-site engineering judgement. The solution was to restrain movement at the eastern end by placing chocks in the slide track. Polishing of the slide tracks was abandoned and site grime left undisturbed to increase friction slightly.

Pulling recommenced at 06.00 hours and the deck was realigned shortly afterwards.

At 14.50 hours the deck was inched into position completing civil engineering's biggest ever bridge slide. The repositioned bridge opened to traffic on schedule at 06.30 hours on the Sunday.