

### Millenium Bridge

Embankment, LONDON - UK

#### Measurement of the tilt of the bridge during simulated live loads



*Above : The Millennium Bridge spanning the River Thames*

The London Millennium Bridge is a 330m pedestrian bridge, spanning the River Thames between St. Paul's Cathedral and the new Tate Gallery. The winning design was awarded in 1996 after an international competition, to Ove Arup (Engineers), Foster & Partners (Architects) and sculptor Sir Anthony Caro.

At least 150,000 people used the Bridge in the first three days of its opening weekend. On Saturday June 10<sup>th</sup> 2000, a larger than expected movement of the bridge structure was recorded. In order to further investigate this problem, the bridge was closed on June 12<sup>th</sup> 2000 and a series of tests were developed.

Sol Data were approached to measure the tilt of the mid-section of the bridge decking in two separate scenarios:

- Bridge unloaded
- Bridge loaded with pedestrians (120 people, standing in an area 120m long x 2m wide).

Our engineers had a time frame of only 20 minutes to record readings and register the final 'load applied' results.



*Above : Loading test with 120 people*

Tilt was measured at 6 different bridge sections, firstly, whilst the structure was unloaded, and then after the pedestrians had been placed in the standing zones. The two readings from each cross section would indicate any lateral changes in tilt to the bridge deck.

The results were immediately entered into a spreadsheet on site and the overall tilts were computed in less than 5 minutes. The data was presented to the client in digital format on site and then faxed as an official copy the following day.

<b>CONSULTANT :</b>	OVE ARUP & PARTNERS
<b>PROJECT DURATION :</b>	JUNE 2000
<b>SCOPE OF WORKS :</b>	
	<ul style="list-style-type: none"><li>• Manual measurement of tilt with 1m electolevel beam.</li><li>• Reporting.</li></ul>