

## Case Study

### TRITON EPOXY GROUT HELPS STRENGTHEN OLD PINE BEAMS IN CITY OF LONDON

An epoxy structural grout, manufactured by Triton, has been used to help strengthen centuries old pine structural beams in historic Watermen's Hall in London. Trimol 36, is a three component system designed primarily for timber repairs to rotten, insect or fire damaged timbers and to remake joints or breaks.

Bryhill Technical Services, of South East London, carried out the design and strengthening works to the two 6m x 250mm x 220mm beams, with the approval of English Heritage. Bryhill were called in by the client's surveyors to investigate ways of strengthening the floor beams. The investigation was prompted by a dipping floor in the first floor court room, together with evidence of splits and shakes along some sections of each beam. A Bryhill surveyor carried out a site inspection and the company's in-house structural design office then calculated the reinforcement necessary to remedy the situation. After supporting the ceiling below and removing steel restraining straps fitted across the top of the beams and floor joists, the Bryhill team marked and cut a channel along the length of each beam. The Trimol 36 system was then mixed on site and the first 50mm layer poured into each channel before inserting four 25mm steel reinforcing bars.

A total of 14 steel bars had been specified for each beam which were inserted in stages after each layer of Trimol 36 was poured. (The Trimol 36 is poured in layers which should be allowed to gel, so as to avoid excessive build up of exothermic heat.) Before pouring, Triton's lightweight epoxy mortar was used to plug cable holes etc. in the beams.

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The splits and shakes were also repaired by stitching with steel dowels set in Triton's Trimol 23 epoxy resin. Trimol 23 is a thixotropic, 2-component gap-filling adhesive which forms a strong bond to wood, metal and plastics. (see right)

After completion of the works, an in-situ load test was carried out on one of the beams at the request of the 'City of London District Surveyor's Office.' A load of 17.35 kn was applied over the centre of the beam with a span of 4.6M. The beam deflected 3.6mm under this applied load (permissible deflection limit is 13.8mm). As a result the District Surveyor expressed his satisfaction with the performance of the strengthened beams. (see below)



The Company of Watermen and Lightermen was established in 1555 to control the Watermen on the River Thames responsible for the movement of goods and passengers. The present Hall dates back to 1780, remains the only original Georgian Hall in the City of London, and has Listed Ancient Monument Status.

Triton manufactures a comprehensive range of timber and masonry preservation and repair products and more information can be found at [www.triton-chemicals.com](http://www.triton-chemicals.com) or by telephoning Triton's technical department on 020 8320 3929.



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