

Tilt-Dam Press Release

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World First for Sheffield – Tilt-Dam Gravity Powered Flood Defence

In the summer of 2007, Sheffield was badly hit by flooding. Riverside Exchange, where two office buildings were being constructed around 0.5m above the recommended level for occupancy by The Home Office, flooded to a depth of around 0.6m. For the second building, developer/contractor Wilson Bowden Developments had the opportunity to implement an additional flood defence strategy and chose to include the innovative Tilt-Dam system.

Tilt-Dam is a unique, permanently installed, gravity powered, manually operated demountable flood defence - a concrete trench with counterbalanced tilting lid. From being a path or roadway, the lid – also in concrete in this case - is rotated by hand to the vertical, forming a defence wall with perimeter seals. Tilt-Dam can be a single unit at an access point or a series of adjacent units forming an extended wall. It is quick and easy to mobilise, self-contained and no power systems are required – gravity does the work. The design principles are reliability, safety, simplicity, robustness, rapid mobilisation and easy maintenance.

Planning permission at Riverside Exchange was granted in December 2007, based on 96m of Tilt-Dam in various lengths distributed on all four elevations, with the remainder of the flood defence in fixed brick walling. It was also stipulated that the upper surface of the Tilt-Dam lids (in the horizontal dormant position) should match the adjacent paving.

The scheme was then developed in principle, the Tilt-Dam Ltd team including Littlehampton Welding Limited as main contractor with ThermoneX Ltd as subcontractor for precast concrete works. On 7th January 2008 Wilson Bowden Developments placed a contract with Littlehampton Welding for the design, fabrication, installation and commissioning of Tilt-Dam, with a start on site of 25th March for completion on 25th April.

Design started immediately, based on standard 3m long units, with drainage from both wet and dry sides of the trenches, using non-return valves on the latter. Offsite production of concrete units and steelwork elements (galvanised and stainless) followed, whilst Wilson Bowden undertook preliminary work on site. In one area, a clash with existing services led to redesign on alternative principles.

The main installation challenge was limited access. Trench units weighed 3 tonnes and lids 2 tonnes. After trench grouting, support steelwork was installed, followed by lids and ancillary steelwork. Commissioning was achieved on time, thus meeting the challenging 16 week programme.

Operation of the self-contained Tilt-Dam system entails using special keys to release the lids for rotation to the vertical. Props then provide horizontal seal pre-compression. The vertical seals between units are lowered down stainless steel slots and held in position by turn-buckles. A handrail prevents falling into the wet side trench during a flood. Any leakage is retained in the dry side trench and can be pumped out if necessary. After flooding, the system is cleaned out and a reverse process returns it to the dormant state. Inspection and maintenance takes place at determined intervals.

For further information please contact –

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