Project MIKE 2, Dublin Airport

Contractors on an airfield paving project at Dublin Airport have opted for steel drainage to speed up installation times and reduce costs

A number of airfield pavement projects are ongoing as part of Dublin Airport's €2 billion capital development, early in which was the bypass taxi-way codenamed MIKE 2, was due to be fitted with a concrete system. But based on previous experience of installation times, handling, convenience and cost, the main civil engineering contractors C&M Construction of Duleek, County Meath recommended a Tubosider corrugated steel solution.

The original design and tender were for a 1500mm diameter concrete pipe system in a three leg design with four chambers on each run, the chambers interconnected by 700mm diameter pipe to help the flow between runs. Tubosider's design called for a 1400mm diameter pipe system, giving a significant saving on transport costs alone. Nearly 30 more 40ft trucks would be required to deliver the same system in 1500mm concrete pipe. Steel 1400mm pipe weighs only 460kg for a 7m length, whereas 1500mm concrete pipe weighs over 7 tons per 2.5m length – around 35 times heavier.

A concrete system would also require a concrete slab poured directly over the pipe to increase its strength, whereas with its high loadbearing capacity, the Tubosider tank uses only granular fill grade 804 (3" down material) compacted in layers up to the apron build-up. With a 1442 cubic metre capacity, the Tubosider stormwater attenuation tank and pumping station approved for use cost in excess of a quarter of a million euro and took only about a week to install on a prepared trench bed, being loadable immediately. Very few men and no heavy lift equipment are required, meaning fewer people and smaller machines in the working areas during airport operations. Even though the taxi-way project is away from daily operations, it is still in air traffic controlled space and is covered by high security and control.

The system had to be designed to the specific traffic expected airside at Dublin, which is particularly four aircraft types: the Airbus 330 & 340 including all variants, and the Boeing 747 & 777, again with all variants. The Boeing 777 has the highest wheel loading, and by calculating the expected loads and contact areas specified by the engineers and applying them to its design, Tubosider achieved a design life of over 90 years on its tank system.

The system offers other advantages over alternative products in addition to price, manageability and strength. The jointing systems allow two men to fully seal a joint mechanically in less than 20 minutes, and with Tubosider's new fast thread bolting system, this can be completed in as little as 10 minutes by an experienced fitter. The chambers incorporated into Tubosider's design have a 1200mm shaft complete with ladder for access, all fully fabricated directly into the pipe or manifold. Also included in this project is a large pumping station of 2.2m diameter and 4.3m depth with duty/standby pumping systems operated by complete control and monitoring systems.

Since the MIKE 2 project, Tubosider has been awarded and completed contracts for a smaller system for the New City Jet Hangar, followed by a large 2783 cubic metre tank with nine parallel legs of 1400mm diameter pipe with complete fabricated manifold ends and all access chambers with access ladders incorporated. Most recently, it has completed the Apron 6 Project with Clare Civil Engineering and is involved in a further project with Balfour Beatty Ireland for a 4500 cubic metre tank. ■