

## //MAINTENANCE //REFURBISHMENT //NEW BUILD

### PROJECT APPLICATION OF BONDED MEMBRANE TO CYLINDRICAL COLUMNS



A client approached Stonbury to complete a routine flood test as a part of a flood test and cleaning programme. The flood test was carried out over five days due to the roof's size - approximately 12500M2. The flood test revealed points of ingress and internal coatings that had failed.

External investigation works were carried out, including the removal of small sections of the overburden to assess the condition of the existing overbanding and roof joints. Unfortunately, localised repairs were not possible; therefore, the client decided to remove all of the overburden for a full roof refurbishment. The scope included:

- Removal and replacement of the existing overbanding
- Concrete repairs to the roof slab
- Installation of a new drainage system including outfalls from the roof and low level perimeter drainage – designed inhouse
- High-pressure water jetting to the substrate
- Installation of new bonded membrane system and geotextile
- Reinstatement of washed gravel

Due to the client's tight deadlines and the size of the roof, Stonbury proceeded to install the membrane system by operating fully supervised day and night shifts for maximum productivity. Once complete, a full inspection regime was carried out, including spark and flood testing.

Following internal inspections, the client agreed a scope and the internal works commenced.

Internally, the scope included:

- Removal of the existing overbanding and aqualine
- High-pressure water jetting to the floor and walls
- Application of concrete fillets

- Installation of new overbanding system
- Removal installation of new safety rails and posts

The team were required to carry out the application of bonded membrane to over three hundred cylindrical columns. This was an extremely time-consuming task which could have been costly for the client. In addition, due to the number of welds required, the risk in terms of potential points of failure was much higher.

Following discussions, the delivery team suggested a watertight, pre-formed ring to save time and money whilst maintaining the required quality standards. Stonbury developed several prototypes in-house, which were specifically designed to suit the reservoir's needs whilst maintaining the original thickness and strength of the existing overbanding strip.

The prototypes were trialled inside the tank and proved to be extremely successful, making the job much quicker, and reducing the time spent inside a confined space. The team also found the quality to be much better than the traditional method, in making the columns watertight and providing a neat and tidy finish.

The handrails, posts and safety chains were replaced with new, improving design quality and longevity and providing safer access inside the tank. Working to a bespoke design, the steelwork was welded into position inside the reservoir - this guaranteed a great fit and watertight tubing.

During the internal works, climate control was used and monitored throughout, with the use of data loggers. On completion, the overbanding was spark tested and signed-off by the client, and the reservoir was cleaned and chlorinated ready for return to service.