

PROJECT RESERVOIR ROOF REPLACEMENT



Stonbury were recently contracted to install a bonded membrane system to a service reservoir roof. However, following further investigation, it was clear that with the configuration of the existing structure, this would not be possible.

The reservoir was made up of two cells, following an extension to the west and north side of the original tank. The walls were cast in situ concrete, which required the passive restraint from the surrounding earth embankment to ensure structural stability, and the roof was finished with precast hollow core concrete planks and a loose lay membrane. This design did not meet the current standard set by the client.

Following a 3D scan of the reservoir, it was decided that a new roof slab would be the best solution, and a scope of works was put into place. During the works, the live cell needed to remain watertight at all times, this was achieved with the use of temporary batten strips, mastic and liquid membrane seals. The joints were regularly inspected and maintained throughout the scheme.

Works began with the removal of the existing overburden, the loose lay membrane and the profiled polystyrene insulation boards. This included hand digging to safely expose the telemetry cables. The roof joints were then filled, the existing membrane on the live side was sealed down and the roof was cleaned in preparation for the new screed.

To form a solid structural foundation, sections of the existing slab were cut into, and the voids were infilled with concrete. This created the base for the support pads, which would support the weight of the new roof. A lightweight screed was then pumped between the pads to profile the roof to a 1 in 100 fall. Once cured, collapsible fill was used to level the surface and protect against the potential effects of ground heave.

Repairs were completed on all of the upstands, including rendering and fillets. However, two of the upstands were in deplorable condition and required breaking out. Overbanding was applied to the remaining upstands, followed by a waterproof liquid membrane. The redundant drainage and pipes were also removed and replaced with a new impermeable drain and new drainage chambers.

Steelwork was lifted onto the roof and tied into place, once secure, concrete was pumped onto the roof in sections and left to cure. To ensure a tight seal between the old and new roof slabs, the void was filled with polystyrene and made watertight using bonded membrane.

To complete the roof, a bitumen primer was applied, followed by a bonded membrane system, which successfully passed a spark test. Following the completion of a flood test, geotextile fleece will be laid, and the overburden will be reinstated.