

Robert Gould Shaw and Massachusetts 54th Regiment Memorial, Boston, MA, USA

The Robert Gould Shaw Memorial, located at the North end of Boston Commons in Boston, MA, USA has been a top priority on both a local and national level, due to its significance as the first monument to celebrate the involvement of the first federal black African American regiment from a Northern State in the Civil War.

EChem Consultants contribution focused on the corrosion assessment of the embedded steel frame. Their report detailed the corrosion behaviour, deterioration mechanisms, durability, and the results of an impressed current cathodic protection (ICCP) system trial.



The condition of the brick arch floor slab system, a typical design that was a common architectural and engineering method used at the time, was in need of some attention. Above this, an early, lightly reinforced concrete topping slab, sand bed and pavers finished the plaza deck. The waterproofing methods employed in the past had failed, and as a consequence, significant water infiltration into the crawl space from the slab had occurred. Since this is a pedestrian zone, the use of de-icing salts are employed in the harsh winters, leading to high levels of salts within the slab.

The steel framing needed to be treated and repainted if it was going to achieve the desired design life of the repair. The inclusion of the ICCP system would protect the steel from corrosion, from the salt contaminated bricks.

EChem Consultants worked with the design team to design and oversee the ICCP work. Allegrone was the General Contractor and construction team who completed the necessary masonry repairs, steel painting and construction components required. The ICCP system was designed by Echem Consultants and incorporated a bespoke Duvine Ltd Power Supply Unit. The system was installed by specialist corrosion contractor, Duricorr.



Duvine was asked to design a 2 output ICCP system, which could fit into the smallest possible enclosure whilst maintaining the required number of outputs and monitoring capabilities.

Duvine selected their new CP30 power modules, due to their small size. With the use of the “hinge system” on the CP30 rack, this allowed the enclosure to be only 200mm deep. The ICCP system provides a centralised control with ‘plug & play’ capability, plus the necessary connections for the network of protective anodes inside the Steel structure.

The advanced telemetry systems in the CP30 system also allowed for centralised monitoring and command of the ICCP, ensuring maximum efficiency and performance.

The system comprises 2 zones with up to 8 reference cells per zone, all controlled by one user interface.

Enclosure – 600mm x 400mm x 200mm, IP65

KEY BENEFITS

Using Duvine’s CP30 ICCP solution, the customer benefitted from:

- A truly compact and space saving installation.
- Duvine Ltd’s ability to work within the tight deadlines and contract restraints.
- 2 x 12V 2A outputs, with 1mV and 1mA step control
- Ongoing protection against corrosion, safeguarding this historic monument
- Centralised monitoring and control capability.
- Plug and play with hot swap modules.
- A cost effective, scaleable and easy to install solution.



Access to the memorial’s interior