

Commerce Trust Building Entrance Repair

Kansas City, MO

Submitted by Structural Engineering Associates, Inc.



The Commerce Trust Building was built in 1906 by the Fuller Company, which also built the Flatiron Building in New York, NY. Upon its completion, it was the tallest building in Kansas City, MO, and its first skyscraper.

While the façade remained in good condition through the majority of the 20th century, by the start of the new millennium, it was showing signs of corrosion to the steel frame and cracking of the granite used in the construction of its grand main entrance.

The project's engineer recommended long-term corrosion protection to the steel frame using impressed current cathodic protection (ICCP) as a controllable solution for providing a durable and aesthetically pleasing repair strategy for the building.

A novel system was developed with the aim of providing ICCP by replacing the existing bed joints with a low-carbon mortar with electrical current carrying capability. The new anode technology incorporated alkali-activated binders from recycled and industrial by-products blended at ambient temperature to provide a carbon footprint some 80% less in carbon dioxide emissions than its equivalent OPC manufactured binder.

To prove the viability of the system, a trial installation was carried out on a steel-framed, ashlar-clad heritage structure in the UK, in need of repointing and showing early signs of steel frame corrosion. Following the successful site trial application, a design was produced for the Kansas City building using the new anode system.

In the winter of 2013-2014, installation of the anode system was successfully undertaken by the contractor in combination with other restoration works. Much of the anode placement was performed in the cold months without the need for additional heating.

The completed system is now remotely controlled and performance monitored with a proven online network management system. The choice and implementation of this technology is sustainable in its materials, operational control, and lifetime economics.

Commerce Trust Building

OWNER
Commerce Bank
Kansas City, MO

PROJECT ENGINEER/DESIGNER
Structural Engineering Associates, Inc.
Kansas City, MO

REPAIR CONTRACTOR
Chamberlin Contracting
Kansas City, MO

MATERIAL SUPPLIERS/MANUFACTURERS
C-Probe Systems Ltd.
Cheshire, UK
Mott MacDonald
Cheshire, UK