

Galvashield® XP Embedded Galvanic Anode

Galvashield XP is a patented sacrificial embedded galvanic anode that provides localized galvanic corrosion protection in reinforced concrete structures. The anode consists of a zinc core surrounded by an active cementitious matrix. The 63mm diameter x 28mm high embedded anode is quickly and easily fastened to reinforcing steel. Once installed, the zinc core corrodes preferentially to the surrounding rebar, thereby providing galvanic corrosion protection to the reinforcing steel.

In the mid 1990s, Vector Corrosion Technologies, through research and development and in partnership with Fosroc International Limited, a UK company, developed the Galvashield XP embedded anode as a breakthrough in the corrosion protection of concrete structures. The design philosophy behind the Galvashield XP embedded anode was to create a simple product that could be incorporated within a patch repair to minimize ongoing corrosion and extend the life of concrete repairs. Without protection, corrosion continues in the reinforcing steel immediately adjacent to the repair and results in premature failure. The anode has been designed to focus protection in the narrow zone directly adjacent to the repair.

The size and discrete nature of the anode makes it convenient to install in a wide variety of repairs, and provides the specifier with complete control when targeting the areas that should receive protection. The anode is suitable for large or small repairs; a large repair will simply require the incorporation of multiple anodes. The convenience of the anode makes it a cost effective method of extending galvanic protection to repair scenarios that were not practical just a few years ago.

The Galvashield XP embedded anode is a non-hazardous product. Manufactured of common construction materials it is installed simply without complex equipment or processes. Depending upon a project's design parameters the anode will normally operate for a period of 10 to 20 years. Once installed its zinc is converted into a stable, non-hazardous zinc corrosion product. After its service life is complete, the anode remains dormant and concealed within the concrete, having no maintenance or special disposal requirements.

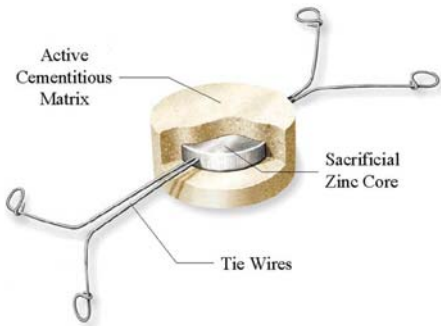
The Galvashield XP embedded anode has been in use in North America since 1998 in a wide variety of applications: deck repairs, joint replacements, pre-stressed and post-tensioned repairs and interface applications between new concrete and existing chloride-contaminated concrete where accelerated corrosion can occur. The anode reduces on-going corrosion activity and also reduces the effect of ring-anode corrosion commonly associated with concrete patch repairs in reinforced concrete.

In order to verify the performance of the Galvashield XP embedded anode, periodic evaluation by various research and education foundations is conducted to provide an unbiased opinion of the effectiveness of this innovative technology. In July 2001, following evaluation of the anode, The Concrete Innovations Appraisal Service issued CIAS Report 01-1 Galvashield Embedded Galvanic Anodes for Repair of Concrete. The principal use of this report is as neutral documentation to help technical committees of the American Concrete Institute (ACI) and users of the anode to better understand the technology. As stated in the report "The technology offers an easy-to-understand concept, which gives the client confidence in the capability of the repaired structure to perform its intended use." In July 2002, the ASCE/CERF Highway Innovative Technology Evaluation Center (HITEC) commenced evaluation of the Galvashield technology.

For many contractors and engineers perhaps the greatest benefit of the Galvashield XP embedded anode is the fact that installation requires little or no change from existing concrete repair practices, and only a minimal addition in cost. Normal patching procedures simply shift the corrosion reaction to adjacent concrete areas, thus creating a continual battle in which repair crews chase the corrosion problem around the structure. The Galvashield XP embedded anode prevents this from occurring by mitigating the corrosion problem using a maintenance-free, cost-effective strategy.

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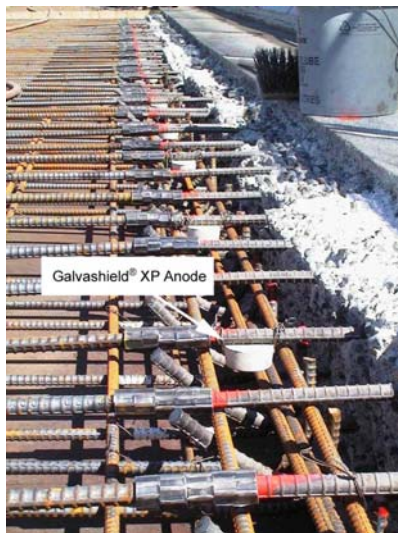
Galvashield® XP Embedded Galvanic Anode



Cut-Away of Galvashield® XP Anode



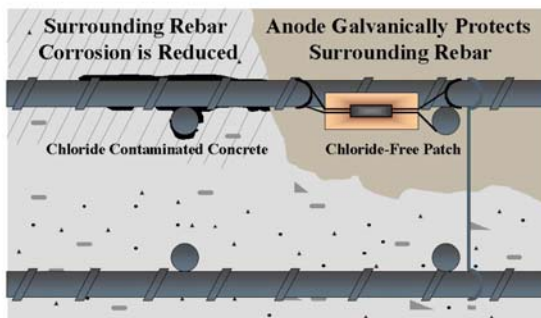
Concrete Girder Repair – Anodes tied to steel inside girder repair



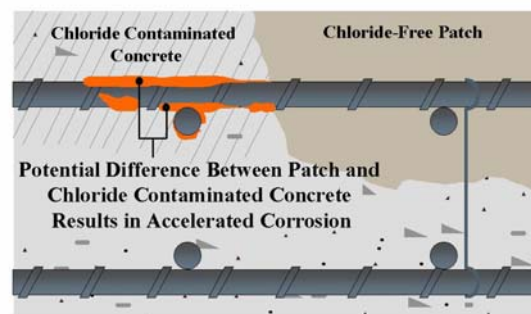
Bridge Widening Project – Anodes tied to reinforcing steel at joint between new and old concrete



Concrete Patch Repair – Anodes tied around perimeter of repair



Galvashield® XP Reduces "Ring Anode" Corrosion



"Ring Anode" Corrosion (without Galvashield® XP)