



Continuous Galvanized Reinforcing Steel in Concrete Structures

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Abstract

Corrosion of steel reinforcing bar (rebar) is the most significant cause of concrete failure, resulting in expensive repairs, reduced load carrying capacity and premature replacement of concrete structures. This paper will discuss continuous galvanized rebar now available for concrete structures. The properties of this zinc coated rebar and its contribution to improvement of concrete performance will be presented together with the status of related national and international standards and applications in China. The Continuous Galvanized Rebar (CGR) coating process improves product consistency, increases throughput and reduces costs. The zinc coating is durable and resistant to abrasion that is routine during transport and construction but is also highly ductile and can be formed after galvanizing to further reduce cost and speeding construction schedules. Once in the concrete, the zinc coating protects the rebar both as a barrier coating and with the well-known sacrificial properties of a galvanized coating.

Keywords: corrosion; galvanizing; rebar; reinforcing steel bar; zinc; continuous galvanized rebar.

1. Introduction

Hot dip galvanizing is by far the most effective way to protect steel from corrosion. The zinc coating acts first as a barrier protection, isolating the base steel from corrosive elements, and secondly by cathodic protection, acting as a sacrificial anode to protect the steel from corrosion should the coating be compromised.

The excellent corrosion protection provided by zinc will also extend the life of steel-reinforced concrete

structures exposed to aggressive environments that promote corrosion of steel reinforcement. Galvanizing increases resistance to chloride corrosion both by increasing the threshold chloride level where corrosion begins and by slowing the rate of corrosion after that threshold is exceeded and is also very effective in combating the effects of carbonization-induced reinforcement corrosion [1].

Field studies highlight the excellent performance of galvanized reinforcing steel as a successfully