

Soil Corrosivity in the Western Thailand: Impact on Concrete Structure

Nantawat Khomwan

**Department Of Civil Engineering, Faculty of Engineering, Kasetsart University,
Kamphaengsan Campus, Nakhonpathom, Thailand 73140, fengnwk@ku.ac.th**

Reinforced concrete structure has long been widely used in Thailand for a century. It is because of some advantages over well-known structural materials, such as cost-effectiveness, ease of production, and durability under various conditions. However, the aging concrete structure is a dynamic process strongly influenced by the environmental exposure conditions.

Corrosion in reinforced concrete structure is the degradation of a metal (steel reinforcing bar) as a result of a reaction with its environment, affecting almost all metals. The cost of corrosion for all over the countries is assumed to be approximately 3-5% of the gross national product. It is therefore an important and real hazard to critical infrastructure.

The first attempt to initiate corrosive soil survey mapping in Thailand, the impacts of soil corrosion on severe infrastructure in the western region of Thailand have been considered. It reveals that the increasing number of concrete structures in Nakhonpathom province area suffering premature deterioration due to corrosive soil. Visual distress was severe for these structures. Most of these structures were constructed for over 30 years but it is not all of them damage at the same damage level. The deterioration of these structures is an urgent issue for government sector to cope with the problems. However, there is insufficient information in published literature about salt attack on long-term exposure of building in Thailand.

The objective is to assess the cause of damage due to soil salinity. This research focuses on an investigation into salt in soil in the area of Nakhonpathom Province. Soil survey data were collected in entire area. Then, all of these soil samples were analyzed the chemical components. This valuable data set has revealed as one of an important key parameter affecting the degree of deterioration and the alternative corrosion prevention technique.