

Maintenance of the Deteriorated Infrastructure in Thailand

Pakawat Sancharoen^{a,*} and Somnuk Tangtermsirikul^b

^a *Construction and Maintenance Technology Research Center (CONTEC), Sirindhorn International Institute of Technology (SIIT), Thammasat University, Pathum Thani, 12120, Thailand*

^b *School of Civil Engineering and Technology, Sirindhorn International Institute of Technology (SIIT), Thammasat University, Pathum Thani, 12120, Thailand*

*pakawat@siit.tu.ac.th

Keywords: Infrastructure, Deterioration, Maintenance, Corrosion

Infrastructure has been aged and deteriorated by various causes such as loading, severe environment, corrosion, fatigue, etc. Maintenance of its safety and serviceability are crucial. Many countries have increased the maintenance budget for the existing infrastructure. Although, many fatal failures of structures are evidenced and caused by corrosion. Infrastructure in Thailand has been also aged. This paper addresses important of a current infrastructure condition in Thailand and needed of research and development to prepare for the deteriorated infrastructure. Inspection of the existing infrastructure was conducted by both visual and non-destructive testing showing many deteriorations, and damages. In Bangkok, most of deterioration is caused by small concrete covering depth and water leakage. In some areas, chloride attacks are observed on structures exposed to the ground. While in marine environment, chloride attack is the main cause. Studies have been conducted to evaluate the corrosion rate of reinforcing steel in reinforced concrete structures in different deterioration mechanisms and environmental conditions. Together with inspection results, service life of structure can be predicted, and maintenance can be well planned. Performance of various repair materials such as sacrificial anode, patching repair, or hydrophobic coating have been evaluated. Selection of suitable repair methods and materials can be considered. Finally, examples of life cycle cost analysis of structural maintenance are discussed. Moreover, as limited resources but a huge amount of infrastructure, a new technology to support structural maintenance works is proposed.