



Public Private Partnership Approach to an Integrated Life-Cycle Management of Highway Infrastructure in Hong Kong

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Summary

Transport infrastructure system is central to economic activities and important to economic growth. The rapid economic growth of Hong Kong, especially in last two decades, leads to high demands of a comprehensive and effective highway networks. Conventional procurement approach without the integration of probabilistic life cycle cost model induces substantial long term maintenance cost. The main idea of this paper is to develop a research framework for predicting the service life by using appropriate corrosion deteriorating model on reinforced concrete structures. The deteriorating model will then be integrated into life-cycle cost analysis in dealing with long term maintenance and repair strategy. Once deteriorating and life-cycle cost models of highway structures have been established, proper public private partnership procurement strategies and associated financing method and project period determination could be established.

Keywords: PPP, DB, MOM, Life-cycle, Concession, Financing, Procurement

1. Introduction

Transport infrastructure system is central to economic activities and important to economic growth. The rapid economic growth of Hong Kong, especially in last two decades, leads to high demands of a comprehensive and effective highway networks. To upkeep the safety and serviceability level of the existing highway transport system, Hong Kong spends near HK\$800 million each year to maintain our highway assets, comprising over 1,900 km of roads and the associated highway structures, roadside slope and street furniture. Hong Kong's roads have one of the highest vehicle densities in the world. In December 2005, there were over 540,000 licensed vehicles and only 1,955 km of roads - 436 km on Hong Kong Island, 449 km in Kowloon and 1,070 km in the New Territories. Furthermore, there are 11 major road tunnels, 1,129 flyovers and bridges, 649 footbridges and 398 subways to keep people and goods on the move. ^[1]

The conventional mode of highway maintenance follows a deterministic approach that is a highly labour intensive, consuming much manpower in site inspection, estimating, checking, measuring and so forth. Whereas, the newly introduced public-private partnership (PPP) procurement approach could not only alleviate the government financial burden but also transfer the project risks properly to the private sector entities. With the integration of life-cycle cost model, the financing strategy and the project period can be better developed and estimated. The following sections will focus on the relationship among life-cycle cost model, PPP procurement approach and project financing strategy.

2. Definition of Public Private Partnership

Public-private partnership (PPP) is a system in which a government service or private business venture is funded and operated through a partnership of government and one or more private sector companies. In general, it is a medium to long-term relationship between the public and private sectors including the voluntary and the community sectors, involving the sharing of risks and rewards and the utilisation of multi-sectorial skills, expertise and finance to deliver desired policy