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A Paper on Sewer Upgrading in Highly Urbanised Cities: Case of Hong Kong

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Abstract

Highly urbanised as it is, Hong Kong presents a serious challenge to engineers tasked to upgrade its aging sewers to cope with the ever-increasing demand from new developments and re-developments. Underground space is just as densely packed as one can see above ground, if not worse; and the long history of underground space competition amongst various utilities has made the actual underground layout far more complicated than shown on record drawings. Although thorough site investigations are carried out during detailed design in order to identify feasible solutions, they seldom fully unveil the full picture of underground constraints. In addition, the limited above ground road space, coupled with the need to minimise traffic disruption and nuisance to the public and nearby shops, restricts the number and extent of construction work fronts that can be opened at any one time. These factors, if not properly addressed, can derail the works, because they are socially unacceptable. Sewer upgrading works in Hong Kong have proved to be a type of civil engineering works that varies significantly in design during the course of its construction.

Facing the challenge, engineers in Hong Kong have utilized all the latest available technologies from investigation to design to construction, and have introduced a type of contract which enables greater flexibility for coping with the prevailing site and traffic conditions as the work progresses. Restrictions that are more stringent than those stipulated in the legislation are sometimes specified in contracts to address specific concerns.

The paper discusses: (a) the site investigation, traffic scheming, environmental assessment, and options of rehabilitation and construction that are generally considered during the design stage; (b) the merits and demerits of works order type contracts which have been drawn up to suit the characteristics of such upgrading works; (c) tapping into the expertise and available resources of the contractor during the construction stage to minimize the impact of the works; (d) proactive reviews of the design to suit the actual site conditions and constraints; and (e) public relations.

Keywords

Utilities, Impacts, Socially Unacceptable, Works Order Type Contract