

Value Engineering and Its Impact on Drainage Design Optimization for Penang International Airport Expansion

Authors : R.M. Asyraf, A. Norazah, S.M. Khairuddin, B. Noraziah

Abstract : Designing a system at present requires a vital, challenging task; to ensure the design philosophy is maintained in economical ways. This paper perceived the value engineering (VE) approach applied in infrastructure works, namely stormwater drainage. This method is adopted in line as consultants have completed the detailed design. Function Analysis System Technique (FAST) diagram and VE job plan, information, function analysis, creative judgement, development, and recommendation phase are used to scrutinize the initial design of stormwater drainage. An estimated cost reduction using the VE approach of 2% over the initial proposal was obtained. This cost reduction is obtained from the design optimization of the drainage foundation and structural system, where the pile design and drainage base structure are optimized. Likewise, the design of the on-site detention tank (OSD) pump was revised and contribute to the cost reduction obtained. This case study shows that the VE approach can be an important tool in optimizing the design to reduce costs.

Keywords : value engineering, function analysis system technique, stormwater drainage, cost reduction

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