

# THE APPLICATION OF CONCURRENT ENGINEERING IN THE INSTALLATION OF FOAM FIRE EXTINGUISHING PIPING SYSTEM

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## Abstract

Although the concept of concurrent engineering has been widely applied in the manufacturing industry, there is growing awareness and interest in the adoption of Concurrent Engineering (CE) in the Construction Industry because CE has the potential to make construction projects less fragmented, reduce project duration, improve project quality, reduce total project cost and increase project competitiveness. The integration of a variety of complicated and even some trivial construction processes is the key issue to improve the efficiency in the construction industry. The concurrent engineering plays a key role in the integration of the construction process. The construction of the traditional fire extinguishing piping system is generally fabricated and installed in the job site. This has the tendency to waste a lot of piping materials and in turn increases construction cost, time and labor and will cut down construction quality. This research, based on the concept of concurrent engineering through the use of the Delphi questionnaire analysis first establishes an evaluation framework for the piping installation. Issues and factors for each issue in the framework are determined. Then, for their practical applications, a seven determination management model (type determination, size determination, quantity

determination, time determination, location determination, route determination, personnel and equipment determination) is proposed to consider these factors. Finally, the model is applied to verify three study cases. The obtained results indicate that 18% to 38% of the construction cost can be saved and 32% to 52% of the construction time reduced.

Keyword : Foam fire extinguishing piping, Concurrent Engineering, Delphi Method