



Technical risks to major infrastructure development

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Abstract

There are a number of different classes of risk that must be addressed in the development, execution and operation of any major infrastructure project. Should the proponent fail to address all of these risks, the project may be a failure.

In this paper, the Authors discuss technical risks, highlighting cases where the initial formation and composition of the Project Team provided the conditions for failure to occur, sometimes with loss of life.

The Authors will discuss several Australian examples, including the Royal Canberra Hospital demolition, Melbourne's West Gate Bridge collapse, and also the San Francisco Oakland Bay Bridge construction. In each case, the Authors show that organisational design of the Project Team played a significant part in the technical failures and the consequences. In Canberra Hospital demolition case, that the technical failure resulted in a death, is largely attributable to the design of the Project Team and political interference.

The Authors compare these failures to the successful completion of the Øresund Bridge, identifying those aspects of the Project Team design that ensured a high likelihood of success.

Keywords: demolition; implosion; bridge collapse; bridge design.

1 Introduction

Projects have a number of classes of risk including:

- Choice of project;
- Project Team Formation;
- Incorrect prioritisation of project objectives;
- Conceptual risks in the project, including excessive emphasis on innovation and cost competition over standardisation, the use of proven materials and expert team members;
- Technical risks in design, including modelling, materials choice and insufficient detailing;

- Technical risks in execution, including inadequate understanding of the technical aspects of the project.

At each of these points in the project life cycle, a poor choice can lead to problems. The earlier in the project that the risk is inadequately addressed, the greater the likelihood of adverse consequences for the project, and greater the possibility of project failure.

This paper looks at each of these areas of risk, except for choice of project, in respect of real projects, and considers how this influenced the ultimate success or failure of the project.