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Educating and Inspiring the Future Designers of Major Bridges

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Abstract

This paper outlines some of the aims, methods and outcomes of the Long Span Bridges module of the MSc course at the University of Surrey. It outlines the development of the current course and some of the key issues to be addressed to be able to produce the young designers required by industry who can think both technically and creatively and also articulate their designs to others. The paper also looks at some of the research innovations resulting from the course.

As part of the 'educating, inspiring and developing creative and innovative designers' topic a number of important issues are looked at in more detail, these include: The ability of students to sketch and draw by hand in the age of CAD. The importance of having an historic perspective of the development of long span bridges, their design and designers. Approximate methods vs. computerised methods for design. Bench-marking design proposals using data from existing bridges. Lastly, but not least, keeping up with modern developments. .

Keywords: Bridges; Education; Sketching & Drawing.

1 Introduction

The author, a practicing bridge designer [1], has been involved with the University of Surrey MSc programme for a number of years, initially teaching steel-concrete bridge design from which a book [3] was produced. The format of the book was influenced by feedback from students, with sections being relatively short and self-contained. More recently the course content of the Long San Bridge (LSB) Module has been developed. A key aim is to inspire our future bridge engineers by looking at the engineering involved in our longest spans, by looking at the latest modern developments. History is also important, understanding the development of modern LSB. The course concentrates on suspension bridges and cable stay bridges (CSB) as these are the forms where the rate of change of span length is still increasing (figure 1). The spans for arches trusses and girder bridges by contract have remained relatively static.

Another aim is to produce graduates of the course who will be useful to industry and contribute to the design and construction of major bridges. Having come across a former student in my fist meeting on the design of the Penang Bridge [1] and in other locations around the world this aim also seems to be achieved. Papers such as the popular 'Suspension Bridges Past and Present' [3] by a former student and the extradosed bridge research [4] based on the research for a dissertation tends to confirm this.

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