

Richard Unruh

Introduction

Concrete has been used as a construction material for many centuries. The Babylonians used a form of concrete using clay as a bonding agent. British scientist John Smeaton invented modern concrete using hydraulic cement in 1756. Further advancement was made in 1824, when English inventor Joseph Aspdin created Portland cement. Joseph Monier invented reinforced concrete in 1849. In more recent times there have been advances in aggregates, admixtures and other concrete components. The introduction of high strength concrete mixtures, fiber reinforcement, and other improvements has had a dramatic effect on concrete analysis and design.

Statement of Proposal

The introduction of high performance concrete materials has brought new possibilities and challenges to the design and analysis of concrete structures. The author proposes to research these advancements and the resulting changes to concrete design procedures. Particular attention will be paid to changes to reinforced concrete design and analysis as it relates to buildings and bridges. The author will research and report on design practice changes that have already been implemented by groups such as ACI, PCA and ASCE, as well as opportunities that are being explored through current research. The report will be titled “The Influence of Higher Performance Materials on the Analysis and Design of Concrete Structures.”

Resources

A variety of resources will be used to locate material for this report. As the most current research is often not yet published, the Internet will be a major source of information. In addition, conference proceedings, professional journals and trade publications will also be utilized. Formal or informal interviews with researchers and professors will be sought.

Timeframe

To meet the assigned deadline of May 6, 2004, the author proposes the following schedule:

Outline of topics and section headings	March 12
Rough Draft / First progress report & presentation	March 30
Research completion /Second progress presentation	April 22
Final report & project presentation	May 6 / 11