

Design of Highway Bridge

Executive Summary

Bridges are one of the main roadway structures that are used all over the world. Designs for most highway bridges in the United Arab Emirates are governed by the Standard Specifications for Highway Bridges of the American Association of State Highway and Transportation Officials (AASHTO) or by the British Standards.

The main objective of this graduation project is to reflect the students' in-depth learning and to involve them in the analysis and design of a real life project. By participating in the Bridge design project students get a flavor of what it is to be a structural engineer, designing bridges to a set of specifications and standards to ensure their serviceability and safety, as well as public safety, while performing their function to accept loads in any position and permitting them to travel across the entire bridge.

Dubai is an important city in the United Arab Emirates and in the entire Arabian Gulf region. It has become a center for trade and tourism. With that, traffic jamming has become a growing and persisting problem that needs solution. Dubai municipality has planned a number of big projects to relief and facilitate the traffic flow. One of these projects is the construction of the Al Garhood Bridge corridor.

Because of the complexity of the AASHTO Specifications with which designers must be familiar to ensure adequate design, this project was divided into two parts, analysis and design. It was found that this project was a long project, tedious, and time consuming. However, students have learned and acquired the skills and experience to apply the Standard Specifications for Highway Bridges (AASHTO), been able to recall, describe, and apply the elements of analysis and design that they have taken in the academia and explain why they are important to typical Civil projects, acquired active listening to maximize understanding of other team members' ideas and competencies, identified different design alternatives which address the project's design criteria and other design issues, acquired organization skills to allocate work among team members and conduct timely exchange of data among different tasks in order to complete the project effectively, been able to create a professional quality final technical report with Executive Summary to inform non-technical readers, report body to inform technical readers, and appendices containing technical details, and finally gained presentation skills to professionally deliver oral presentation of the final design product, with supporting presentation-quality visual aids.

By Dr. Bilal El-Ariss