

Executive Summary

Building Description

The Temecula Medical Center is a 6-story hospital which features a 2-story Drug and Therapy center (D&T) as well as a 6-story bed tower. The engineers decided to resist the heavy west coast lateral forces with various concrete shear walls placed systematically throughout the plan. By using this approach, along with a concrete floor system, money was saved while still provided more than adequate force resisting systems. Hospital designs come with additional safety factors which had to be taken into consideration throughout the design of the structural system.

Proposal Summary

Due to the hospital's location in South-Eastern California, many conservative design values had to be taken. The lateral force resistant system stayed fairly conservative by using a series of concrete shears walls as the main resistant system. This proposal includes a study of a design using steel to resist both the gravity and the lateral forces. The current gravity system is concrete flat plate so steel will require significant changes.

Also relevant to the medical center's location is the architecture motif used which is that of many other buildings in the region. Plaster is used for the exterior façade with few windows besides on the bed tower. This proposal will explore the idea of placing predominant windows around the entire bed tower. This proposed change will come with many additions to accommodate the incoming light and heat. These additions will directly affect the architecture and most likely make a very unique change to the current surroundings.

The AISC Steel Construction Manual, 13th edition and ACI 318-05 will be used as a basis for the design of the new structural system. To supplement hand calculations, an ETABS model will be used to develop a computer model which can be used to compare results and design values.

Along with the structural breadth study of the new gravity and lateral systems, a study will be performed on the building envelope. This will include a look at the architectural changes and the affect on the surroundings. Along with changing the building envelope to glass, simple force resistant calculations will need to be performed on the exterior façade.