

Executive Summary

The Residence is designed as a light gage metal stud bearing and shear walls which support the Hambro floor system. This thesis proposal is to pursue the development of concrete and seismic resistive systems and implement that design to The Residences. The Residence is to be redesigned with a concrete superstructure.

The floor system is to be redesigned using a concrete system. A one-way and two-way concrete floor system will be investigated and designed for the building using ACI310-08. The gravity loads are determined using ASCE 07-05. The lateral load is to be determined using the equivalent lateral force method and modal response spectrum analysis as prescribed in ASCE7-05 for the current location and a high seismic region. Research is to be conducted on the use of seismic resistance system and the lateral loads of the building are to be resisted by such systems.

The change to a concrete system leads to other changes throughout the project. An in depth cost analysis and schedule impact study is to be performed to determine the changes that are imposed by the changes in the structural system. The scheduling changes that would involve the additional construction time for the formwork and placement of the concrete.

To achieve a sustainable building, a green roof is to be designed instead of the current roofing system. The design of the green roof is to consist of a study of the layers that make up the system and the flashing and membrane involved. Also, the green roof is to be designed with the intention of retaining water, the drainage and flow of water to a central gray water collection tank is to be considered and designed. The loads from the green roof will be applied to the design of the gravity and lateral systems.