

Executive Summary

The Gateway Commons building in Ithaca, New York is a mixed-use development building being used for retail and residential apartments. It has a basement floor below grade and six floors above grade at a height of 62 feet. CMU walls supporting precast concrete hollow core planks make up the building structure. The building façade uses a combination of brick, an Exterior Insulation Finish System (EIFS), and metal panels.

This report starts off by describing the foundation, walls, floor system, roof system and lateral system. However, the main purpose of this report is to discuss the problem of not being able to create an effective redesign of the interior spaces due to the layout of the load bearing CMU walls. The owner might want to redesign the building as smaller student apartments or change the use to an office building due to future demands.

A more open floor plan will make these redesigns possible. Changing the structure to a pan joist system is the proposed solution. This system is supported by columns instead of walls and will allow for more of an open floor plan. The structure is laterally supported by concrete shear walls but these walls are located around the elevator and stair towers so that they do not interfere with the open floor plan. ETABS, SAP2000, and PCA programs will aid in the design of this structure.

This report also discusses the architecture and cost/schedule breadth topics. Architectural plans for office spaces will be developed to show that the new structure allows for versatility in design. The cost of the current structure and the proposed structure will be determined. Profitability of housing compared to office spaces will be studied and analyzed along with the cost of the structures to determine if the increase in price for the new structure is worth having the ability to redesign the interior. Schedules for the construction of both structures will be used to determine how the cost will be affected by the time of construction.

This report concludes with a list of tasks to be accomplished in order to complete the project along with a schedule breaking down the tasks to be accomplished on a weekly basis. The project should be completed and finalized by April 11th in order to be ready to present during April 14th -18th.

Breadth Options

Along with the main study of redesigning the structure two breadth studies will also be completed. They will include a study on the architectural layout of the interior spaces and corresponding changes to the façade due to the new floor layouts. Also a cost study will be done to determine if the increase in cost of the new structure is worth the versatility of the interior spaces.

The architecture study will focus on an office building redesign. These changes to the building's interior layout will also greatly affect exterior architecture. The first floor will stay retail spaces but the spaces will have to be adapted to the new structure. Floor plans and exterior elevations will be created to show the changes made to the architecture.

The second breadth topic will examine cost analysis and the schedule impact between the new and existing structures. The cost study will use any available information that can be obtained from the project engineer. This information will be used along with RS Means to determine the overall cost of the current building structure. RS Means will be used again to determine the cost of the new concrete structure. Profitability of the office spaces will be studied and analyzed along with the cost of the structures to determine if the increase in price for the new structure is worth having the ability to redesign the interior. The schedule created in Microsoft Project will be used to determine how the cost will be affected by the time of construction.