

EXECUTIVE SUMMARY

BUILDING DESCRIPTION:

The Washingtonian Center is an eight story office building located in Gaithersburg Maryland. The building is an envelope and core design to allow for the tenants to tailor their spaces to their particular

needs and tastes. To accomplish maximum flexibility of the architectural plan, a structural steel framing system was used so that no columns would need to be placed in the tenant spaces. The lateral force resisting system in the building uses concentrically braced chevron frames located around the mechanical core of the building. The façade is a glass curtain wall combined with pre-cast concrete panels.



PROPOSAL:

Owing to the fact that the primary design goal of the structure was to provide open leasable space, it is proposed that this can be adequately achieved while offering many benefits by altering the column grid and converting the building to a concrete structure. This proposal will utilize a concrete post-tensioned floor system and concrete shear walls as the lateral system. This will drastically reduce the floor to floor heights and potentially allow for an additional floor to be added to the building while maintaining the same overall height of the structure.

SOLUTION:

To accomplish this proposal, the entire structure of the building will need to be redesigned. This includes the lateral system, which will become concrete shear wall. Additionally an entirely new floor system will need to be designed. The design will use a post-tensioned two-way flat plate system to hopefully limit the slab thickness to eight or nine inches. The columns will also need to be designed in concrete to support the newly calculated loads. Finally the footings of the building will need to be redesigned to ensure adequate stability of the structure.

BREADTH TOPICS:

To complete the scope of the proposal, an architectural investigation will be done to show that the impact of the additional columns that will be required can be minimal to the flexibility of the leasable space. Additionally a study on the scheduling impact and cost of the new design will be conducted.

BREADTH OPTIONS

To compliment the scope of the redesign, the breadth studies will focus on two main factors playing into the validity of idea. The first will be an architectural study in which the impact the new columns will have on the tenant space will be evaluated. The goal of this breadth study will be to show that the leasable space in the building will not be greatly impacted by the additional columns that will need to be added. The second bread study will focus on the cost difference between the new concrete design of the building and the current steel design. Hopefully it will be shown that the additional space that the redesign yields (in the form of an additional floor) can be justified based on a cost analysis of the two designs.

The focus of the architectural study will be spacial arrangement. Several potential layouts will be developed to show that even though there will be columns within the space, it can still remain open and flexible. Revit will be used to develop virtual tours of the layouts and to help show the different possibilities.

The cost analysis will feature a detailed take-off on the different designs including scheduling. RS Means will be referenced to help develop these numbers, in addition to the current cost estimates of the steel structure. Hopefully the this analysis will show that the concrete option is a very viable option.