

EXECUTIVE SUMMARY

On completion of the Technical Reports, the overall design of the building complied with all of the applicable codes however it was concluded that it may not be the most economical solution. After modeling the building, it was found that the existing moment frames were oversized in the original design and if the lateral design is altered, the overall cost of the project may come down. To approach this, gravity loads will be analyzed alone to get initial members, then lateral loads will be added according to code. A comparison of different lateral systems will be completed including checking different locations of moment frames, connection types and the possibility of lateral braces. By optimizing the original design the goal of a more economical structure will try to be obtained.

For the purpose of this thesis the building will occupy a hypothetical client of government or 'high profile' stature. With the building now being considered 'performance based' or high profile it could be subject to abnormal loading from an explosion or blast from a terrorist attack. Following recommendations from the GSA, the building will be analyzed and designed structurally to mitigate progressive collapse and architecturally to prevent and/or withstand a blast from a terrorist attack. A cost analysis will then be conducted to compare the original design to the optimized design and the design for an attack. The architectural redesign and cost analysis will fulfill the breadth requirements.