

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 moment frames were oversized in the original design and can be optimized to a smaller member if the lateral design is altered. To approach this, gravity loads will be analyzed alone to get initial members, then lateral loads will be added according to code. By adding simple moment connections around the entire perimeter and making the building more rigid, the original member sizes of the moment frames will decrease. By optimizing the original design the goal of a more economical structure will 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.