

EXECUTIVE SUMMARY

The purpose of this proposal is to describe the proposed scope of analysis to be performed on 303 Third Street during the spring semester of thesis research. The end result of the analysis will provide an alternative structural system as well as investigations into the feasibility of meeting at a minimum a LEED Bronze rating.

BUILDING DESCRIPTION:

303 Third Street consists of a north and south building, ranging in story number from five to eight, which are joined below grade by two parking levels spanning nearly the entire area of the site. The building is a mixed use facility planned to offer 485,227 SF of rentable residential space and 7,500 SF of retail space. 303 Third Street is situated on a 3.3 acre urban site a short distance from the Massachusetts subway system as well as the Massachusetts Institute of Technology.

PROPOSAL:

Since the purpose of 303 Third Street is to provide rentable residential space, a great way to draw potential renters/owners to the building would be to achieve a LEED rating of at least Bronze. "Going Green" is an extremely popular phrase right now and by achieving a LEED rating, 303 Third Street will attract environmentally conscious and more educated clients. Additionally, the floor system will be redesigned using open web steel joists since an analysis performed in Technical Report 2 showed potential cost savings.

SOLUTION:

By switching the floor system from a steel composite system to a system supported by open web steel joists, the reduction of weight of the system should translate into lower cost and decreased member sizes throughout the framing. Using finite element programs such as ETABS and RAM, a model will be created of the new system to determine whether or not the alternative floor system will be best choice. To achieve a LEED rating of at least Bronze, breadth study investigations into the mechanical system as designed to evaluate the energy efficiency of the proposed design and a second breadth investigation into the utilization of renewable materials for both energy efficiency and conservation.

Breadths

Along with the main study of the alternative floor system, two individual breadth studies will also be conducted. The goal of the two individual breadth studies is to achieve a LEED Bronze rating. A detailed look at the energy efficiency of the mechanical system will be performed to determine whether an alternative system is necessary to reach the goal. Also, a second breadth study will be performed to incorporate the use of renewable energy and resources.

The first breadth study will focus on the energy efficiency of the current mechanical system. Often, costs are saved during construction by installing standard mechanical system without consideration of future operating costs of the building. Equipment efficiencies will be analyzed and compared to alternative equipment as well as alternative system types. Projected energy savings calculations will be performed to conform to USGBC The New Construction and Major Renovation Reference Guide v2.2 – Second Edition September 2006.

The second breadth study will involve research into methods for using renewable energy and materials. Time will be spent researching readily available renewable materials in the New England area. Additionally, research into renewable energy sources will be performed to cut down on grid energy consumption and increase the point total towards a LEED rating.