Executive Summary

This report is the culmination of a yearlong study performed on the Hunter College School of Social Work project located on Third Avenue between 118th and 119th street. It is designed to be both a college and university space. The structure is comprised of a composite steel floor system that utilizes steel braced and moment frames to resist lateral forces. Drilled caissons and spread footings make up the foundation system. The cellar floor is a reinforced slab on a mat foundation. The total height is 133ft above ground level.

The focus of this report is energy efficiency and how it can be implemented using facade and green roof redesign. It ties structural engineering concepts with existing enclosure installation methods to provide a secure barrier against water and the temperature of the outside world.

Enclosure design is important to ensure the life of a structure in addition to continual building maintenance. Simple and inexpensive measures can be taken to significantly improve the buildings energy efficiency. This project goal was inspired by the School of Social Work building's current goal of achieving LEED certification.

Along with the installation of a new LEED certified façade and the expansion of the green roofs, the structures supporting these systems were also analyzed. This includes the gravity framing system as well as the storm water management tank dunnage platform.

In addition to these changes, the lateral system was converted into a completely braced frame system instead of a combined system, the savings due to these changes would pay for the green roof additions four times over.

The lateral system used a combination of diagonal and chevron bracing, depending on the bay span. The chevron connection was detailed using the Uniform Force Method, and The diagonal member was analyzed as special case 2: Uniform Force Method.