

## EXECUTIVE SUMMARY

This senior thesis report is a result of an in-depth study of the design and construction of the Silver LEED<sup>®</sup> Rated Columbia Heights Community Center. This report is broken down into five main sections.

The beginning of this report is to provide a background of the Columbia Heights Community Center that will aid the reader in the latter analyses sections. This section of the report includes a project design overview, a project team overview, existing conditions report, and project logistics details. This bulk of this information was composed during the fall semester, prior to start of our analyses.

As mentioned above, the Columbia Heights Community Center is LEED<sup>®</sup> Silver Rated. Maintaining this level of LEED<sup>®</sup> certification throughout the project's design and construction is generally a difficult task. In the spring semester, research was conducted to identify building owners' initial goals for how and why they wanted to achieve LEED<sup>®</sup>. The intent of this study was to provide owners with a tool during the planning phase to help identify potential LEED<sup>®</sup> points in hopes that the certification level can be maintained throughout the project. The results of this study can be found in the second main section of this report.

The three remaining sections cover analyses that are geared towards minimizing material quantities in the building, ultimately supporting the goal of LEED<sup>®</sup> to minimize environmental impact. First a façade redesign (also addressing mechanical impacts) looks to minimize waste quantities by using an architectural precast system. Next, a structural redesign in the gymnasium looks to reduce the amount of steel. Finally, an evaluation on the foundation placement method will look to minimize the amount of soil to be removed.