

## 2.0 Executive Summary:

This report develops the proposed ideas for re-design and modification of South Jefferson High School. In order to provide orientation and makeup of the building, a short summary of the general building background is provided at the beginning of the report. Followed by, information on the original mechanical systems. The analysis of the existing mechanical systems shows specific areas in which the building can be improved with possible re-design or modification. After several alternatives are discussed, the proposed redesign is described.

The proposed re-design includes replacing existing direct expansion equipment with a more energy efficient chilled water system. A ground source heat pump system with energy recovery will be researched and compared to the existing VAV system. Humidity controls will be incorporated into the system to improve indoor air quality.

In addition to the main depth area of the thesis proposal, two breadth areas are also developed. The first deals with the replacement of existing lighting fixtures with more energy efficient models while maintaining the original light output. The second revolves around the added cost and scheduling concerns derived from installing chillers and a ground source heat pump well field and loop.