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## **Breadth Areas Executive Summary**

The proposed changes to the mechanical systems in the Palestra will have an impact on the other systems in the building and must be accounted for in order to effectively increase the overall efficiency of the building. By adjusting the lighting, electrical and structural systems this also provides an opportunity to align these systems to increase the success of the redesign.

### Structural

The structural systems of the building will have to be checked where there is a significant change in the load. In a system such as DOAS this could result in lighter structural elements with first costs savings. However with gas-engine driven chillers there could be a need for additional reinforcement depending on the size and number of the units to be installed.

The maximum load of the basement slab will also need to be addressed if the proposed thermal storage is to be placed in the area currently designated for car parking.

### Lighting

With the installation of a radiant ceiling strong coordination with the existing lighting grids will be required. The current design includes recessed fluorescent fixtures throughout the office space. However to maximize the radiant ceilings it is best to suspend them from the ceiling in order to gain the benefits of the convection of air over the top of the unit in addition to the radiant qualities from below. This could hinder the lighting levels at the work level in the office. A lighting study will need to be completed in order to find the most efficient fixture for the space. The results of



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this selection could affect the structural member the fixtures hang from and the electrical power needed for lighting throughout the building.

### Electrical

Both proposed redesigns of the mechanical systems should decrease the overall electrical demand on the building, thereby decreasing the size of equipment needed. It is important to note that there is an electrical substation located in the basement of Palestra that services several surrounding buildings. Therefore there could be limitations on the possible savings.