

## **D. Breadth Topics**

### **D.1 Structural Breadth**

The current façade is made up of ground faced CMU with metal stud backup, sheathing, insulation, and a vapor barrier. Changing the CMU façade out with a prefabricated wall system will add extra loads onto the current structure.

This change is going to be analyzed to determine the effects of these loads on the existing structure. After the added loads are determined, I will compare these loads to the existing structure to determine if more supports are needed. Any additional supports that are determined to be required will be designed and evaluated for cost and schedule impacts.

### **D.2 Mechanical Breadth**

Currently the building consists of 8 Energy Recovery Units, 70 heat pumps, and 14 electric unit heaters. When the current CMU with metal backup wall system is replaced with the prefabricated wall system, less error between all the different trades will occur causing the wall to have better thermal efficiency.

This change is going to analyze the wall system that achieves the best thermal properties for the building by testing different types of prefabricated wall systems. I will then select a wall system and determine the thermal efficiency of the selected wall system. Finally, new loads will be calculated to determine if the mechanical equipment can be resized and evaluated for cost and schedule impacts.