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**ERIN M. FAULDS**  
**MECHANICAL OPTION**  
**TRY STREET TERMINAL BUILDING**  
**THESIS PROPOSAL**

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## **EXECUTIVE SUMMARY**

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For the spring semester thesis work, several alternatives for the mechanical redesign were considered. It is important to note that these alternatives considered were for educational purposes only. Neither the alternatives discussed, nor the redesign chosen imply that there were any problems with the original design or that another design should have been pursued.

Therefore, after careful consideration I have proposed to design a geothermal heat pump system for the Try Street Terminal Building. More specifically, a groundwater heat pump system will be designed to replace the existing conventional heat pump system. With the GWHP system, I will evaluate the energy savings associated with this environmentally friendly system by performing an energy analysis with Carrier's Hourly Analysis Program. A first cost and life cycle cost comparison will also be completed.

In addition, a computational fluid dynamic (CFD) analysis and air quality study will be performed for the breadth analyses. For the CFD model, I plan to look at the effect of air distribution on the temperature in the two story lobby and exercise room. In terms of air quality, I am looking to use a special air cleaning system in which the apartments will be freed of all contaminants.

Overall, I am hoping to look into many issues some of which include: energy consumption, thermal comfort, air quality, operating cost, construction cost and maintainability.

Regardless of the outcome and final recommendation based on my spring semester study, I expect that this educational experience will prove to be a valuable one.