

## Executive Summary

Building A of the Xanadu Sports Complex is comprised of a retail section and an indoor ski resort. While the retail section's mechanical system is a fairly commonly used system the indoor ski resort's mechanical system introduces a more exotic system that needs to be examined in detail to fully understand how such a building will work. In order to maintain ideal temperatures for snow storage and production a large amount of energy and proper controls to control the process are needed.

This report will look at both the retail and ski resorts mechanical system and evaluate the current design. A brief summary of how the building will be used is included to provide an idea of what the mechanical system will be serving. The report also looks at some of the factors that affected the design of the systems, such as relevant codes, design conditions, and site conditions. With the design factors given, a description of both systems is provided to create an overall summary of the systems designed. In order to provide understanding of the control process for an uncommon system a control logics section the report has been written in a format which breaks all major equipment into individual schematics. These schematics provide a detailed looked at the controls involved and a narrative is provided to describe the processes involved. A summary of the ventilation system, design loads, energy use, and annual costs are provided in the final sections of the report.

Based on the findings from the findings of this report a critique of the mechanical system design is provided. The findings indicate that areas of improvement exist with the annual energy use, energy sources, indoor air quality, and equipment efficiencies. This critique will provide areas of improvement that will be fully explored in a future redesign project.

