



**PDC INC. ENGINEERS**

Transforming Challenges into Solutions



## Joint Military Mall Elmendorf Air Force Base

The Joint Military Mall, a 300,000 square foot mall facility, gives new meaning to the phrase “fast track.” Just a year after notice of contract award, the facility saw beneficial occupancy. The flexibility and speed demanded by this project could only be brought about under a design-build construction format.

The Commissary and Base Exchange act as “anchor stores,” with mall shops to enliven the space and make it a truly one-stop shopping center. These smaller shops include a General Nutrition Center (GNC), barbershop, beauty shop, flower shop, film processing store, optical office, alterations store, game arcade, and food court offering multiple menus of several concessionaires.

PDC was challenged to design mechanical and electrical systems which met the unique standards and requirements of both owner agencies, while meeting the cold regions demands impacting all building systems. A highlight of our design was the commissary refrigeration system, which we developed in close conjunction with the supplier, Tyler Refrigeration. The refrigeration system serves the food display cases along with the walk-in coolers and freezers. Four refrigeration racks that range in capacity from 200,000 to 550,000 BTUH's are located in a central refrigeration room with roof top condensing units for heat rejection. Rejected heat is also directed to the facility's HVAC system and domestic hot water heating system for heat recovery.

The refrigeration systems also incorporate the DECA-required RMCS system, a PLC-based RMCS system that provides monitoring and control of the refrigeration systems and display cases. It also integrates with the HVAC system controls to maintain target space RH (minimizing process energy loads) while minimizing HVAC energy use in dehumidification, heating, and cooling. A complete life-cycle cost analysis was performed to optimize system selection. Given the project's sub-arctic environment, dehumidification was found to be most cost-effective when accomplished using outside air with a conventional economizer control instead of the desiccant alternatives more commonly applied in temperate and tropical zones.



**Client:**  
AAFES  
(Army and Air Force  
Exchange Service)



**Location:**  
Elmendorf AFB, Alaska



**Project Completion:**  
1999

**PDC Involvement:**

- Mechanical Engineering
- Electrical Engineering

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