

South Dakota Community Transition Center



The project consisted of renovations and additions to an existing manufacturing building to create the South Dakota Department of Corrections West River Community Transitions Center. The design incorporates special mechanical and electrical systems such as ground-source geothermal heating and cooling, ventilation heat recovery, and a standby generator capable of maintaining building function during extended power outages. The facility includes a 3,000-square-foot parole office, 18,200 square feet of inmate housing, 15,800 square feet of inmate support space (storage, offices, programs area, visitation, etc.), 8,300 square feet of kitchen and dining room, 2,500 square feet of on-site laundry, and 4,800 square feet of warehouse. This project is certified LEED Silver. The Department of Corrections acted as their own general contractor, adding complexity to the construction administration portion of this project.

Project Data

Owner

SD Department of Corrections

Location

Rapid City, SD

Building Type

Minimum Security Corrections Facility

Building Area

55,600 square feet

Mechanical Systems / Features

- Ground-Source Heat Pumps
- Ground Loop Well Field
- Ventilation Heat Recovery
- Commercial Kitchen HVAC & Plumbing
- Commercial Laundry HVAC & Plumbing
- Large Domestic Hot Water System
- Wet-Pipe Fire Sprinkler Systems

Electrical Systems / Features

- High Abuse Detention Lighting
- Occupancy Sensors Throughout
- 500KW Standby Diesel Generator
- Multiple Emergency Power Branches
- Security CCTV & Access Control
- Telecommunications and Cabling
- CATV and Fire Alarm Systems

Construction Cost

\$4,200,000

Completion Date

February 2012



Mechanical Engineering

Application of ground-source heat pumps was configured to serve a variety of space types, uses, and schedules in this facility. This type of system facilitated easy heat recovery from spaces with excess heat to spaces that need heat. Energy recovery was utilized to reduce the cost of ventilation for the large occupant loads. The mechanical design takes advantage of high efficiency gas water heating and cooking appliances. The duct and pipe routing was complex since the height of the existing structure was fixed, and clearance were very tight in certain areas. Energy modeling for LEED reporting was performed considering multiple utility sources and multiple rate structures per source, which exceeded the capability of normal energy calculation software.

Electrical Engineering

To accomplish the power density limitations mandated by LEED, the lighting design utilized high efficiency fixtures including a mixture of high abuse luminaires typically associated with detention facilities and more standard commercial products. Lighting design implemented the application of occupancy sensing lighting controls in nearly all spaces.

The emergency power system required a multi-branch emergency power system with on-site generation via a 500KW, 208V, 3 phase diesel generator.

The systems design included Cable TV (CATV), Phone, Data, Detention Closed Circuit Television (CCTV), Detention Access Control and Fire Alarm.