

Pennington County Jail Annex 2nd and 3rd Floors



This 41,500 SF project involved finish of the shelled spaces provided under the original Pennington County Jail project completed by Skyline Engineering in 2006.

The second floor was finished to include 58 beds of minimum-security configured in sleeping bays. The third floor was finished for 24 cells of medium-security and 8 cells of maximum-security space. Additional dayrooms, showers, recreation spaces, multipurpose spaces and support facilities were developed for each finished level. The Mechanical and electrical designs extended the existing systems to support the new spaces.

Project Data

Owner

Pennington County, South Dakota

Location

Rapid City, SD

Building Type

Institutional

Building Area

30,000 square feet

Mechanical Systems

- VAV Air Handling
- Smoke Control
- Vacuum Waste Collection
- Data and Security Cooling

Electrical Systems

- Normal and Emergency Power
- Lighting and Lighting Controls
- Fire Alarm
- Fire Fighters Smoke Control
- Data/Communications Cabling
- Video-Visitation

Construction Cost

\$5,800,000

Completion Date

2009

Mechanical Engineering

New HVAC systems were designed using the hydronic systems provided under the original building project. Modular air handlers were designed to be installed without removal of existing construction for minimal impact to ongoing operations.

Careful placement of smoke partition walls and the design of a new rated return air plenum in the mechanical interstitial space allowed the elimination of approximately 60 fire/smoke dampers that had been under the design of the original facility. A remote pressure differential pressure testing station was designed to expedite the testing of the smoke control system, which is now required on a yearly basis by the AHJ. These design enhancements greatly simplify the smoke control system for the entire facility.

The existing vacuum waste system was extended and modified under this project. Modifications are intended to reduce maintenance as a result of inmate abuse.

Electrical Engineering

High-abuse lighting was specified throughout the medium and maximum security spaces. In the minimum-security spaces, vandal-proof fixtures were utilized to minimize cost. Lighting levels were dictated by American Correctional Association. Lighting was modeled to supplement the required natural light components. New life-safety and egress lighting was supplied from fixtures powered from a life-safety branch on the emergency generator. Jail lighting control was integrated with the existing and new relay panels controlled from the security system.

HVAC systems are powered from the life-safety branch to support Smoke Control functions. Skyline Engineering also specified the firefighters smoke control, firefighter phones and fire alarm systems changes, along with their interface to the security electronics and HVAC control systems, satisfying the model codes for smoke control.