

## *Arctic Region Calls for Cold Weather and Seismic Planning*

**Challenge.** Rolf Jensen & Associates (RJA) was commissioned to consult on the fire and life safety systems for a new hospital near Fairbanks, Alaska. The new 269,000-square-foot U.S. Army Hospital, which opened in June 2007, replaces Bassett Army Community Hospital, which was constructed in 1951. The new hospital serves military personnel at the Fort Wainwright and Fort Greeley Army bases, Eielson Air Force base and remote military sites north of the Alaska Range, plus military dependents and retirees in a 46,400-square-mile range around the greater Fairbanks area for a total patient base of about 25,000.

The 32-bed U.S. Army Hospital is designed to accommodate modern changes in medical care, as well as the increasing use of automation equipment in both clinical and administrative areas of the hospital. During the past 50 years, healthcare emphasis has shifted from inpatient care to outpatient and ambulatory care, and the new hospital had to adapt to serve the changing needs of its expanding demographics.

**Solution.** The extreme weather conditions in the Arctic region, which is also prone to earthquakes, posed the greatest design and construction difficulties. The cold weather and the need to address heightened security in this post-9/11 era, coupled with rebids and the typically slow design pace of government projects, led to numerous delays. In fact, about 10½ years passed from the initial design meeting until the opening of the completed facility in June 2007.

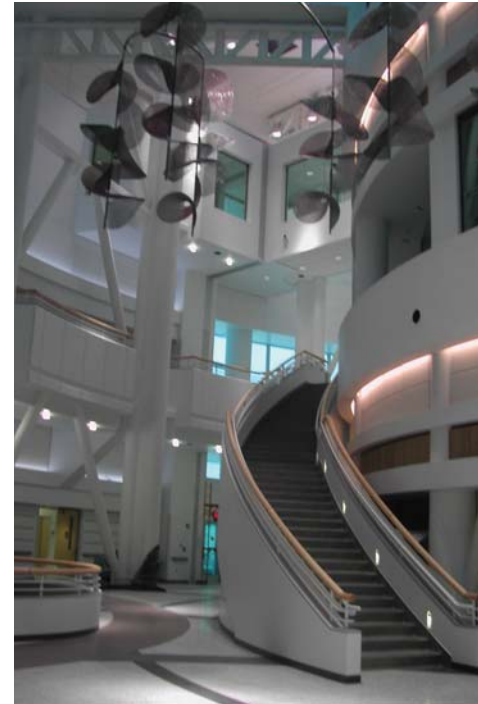
As part of its full-service role of consulting on life safety, sprinkler and fire alarm system design to enable proper exiting from the U.S. Army Hospital, RJA always had to keep the hospital's unique geographic challenges in mind. That entailed staying on top of climate-related issues, both during the actual construction process, as well as in planning redundant fire protection and heating systems and an emergency central energy plant to enable the facility to be self-sufficient.

Timing was especially crucial: the region only has about 16 weeks of decent weather for construction each year. Crews had to maximize outdoor work time and close off areas to enable indoor work to occur the rest of the year.

RJA's oversight was required on a larger scale than most similar projects in the contiguous U.S. That was due to the fact that there was little healthcare fire protection expertise in the Alaska district of the U.S. Army Corps of Engineers, so RJA had to step up to manage fire protection responsibilities from an official healthcare capacity, which included doing a great deal of site support with the Corps.

**Result.** To meet seismic code, the design required that all critical building components, including exterior walls, interior partitions, mechanical, electrical, and plumbing, be anchored and braced to the structure to minimize damage and provide for continued operation after a major earthquake. RJA determined that an interstitial deck design, which calls for a 7- to 8-foot walk-on floor with separations from floors and stairs, would be appropriate for this facility. This type of design, which is deployed mostly by government hospitals, is highly flexible because areas don't have to be shut down during construction. This was key to efficient construction in these cold-weather conditions, as well as for simplifying fire-protection issues and enabling future expansion.

RJA's emergency power back-up plan also called for storing 75,000 gallons of diesel fuel in NFPA-compliant vaults in the basement, which can run the hospital's generators and boilers. Having planned for both potential seismic events and the possibility of power shutdowns, RJA has prepared this hospital to stand up to natural disasters and continuously serve the community.



### ■ Fire Protection Design



[rjainc.com](http://rjainc.com)

