Military Design for the Space Age

Reducing its force structure to better meet military mission needs and operate more efficiently, the U.S. Air Force needed to move all major Air Force Research Laboratory (AFRL) Space Vehicles activity to one location at the Kirtland Air Force Base in Albuquerque, N.M. The relocation and consolidation provides greater synergy and increased security, improves cohesiveness of operations, reduces the footprint while updating facilities, and saves costs.

Burns & McDonnell provided design-build services for the new 145,000-square-foot, two-story Battlespace Environment Laboratory (BEL) using building information modeling (BIM) and integrated project delivery. These approaches allowed Burns & McDonnell design engineers and design-assist subcontractors to find the most efficient, well-coordinated solution for the project. “We could perform clash detection between systems to catch interferences before they were fabricated, saving expensive and time-consuming field changes,” says Steve Cline, senior structural engineer for Burns & McDonnell. “The BIM 3-D environment also allowed our team to find innovative solutions to challenging design issues.”

The lab and engineering spaces will support necessary science and technology for high-vacuum environments, computer modeling, processing space data, space operations, quantum computing and other space-related operations.

“The interior design is dotted with collaboration spaces that encourage people to interact away from the laboratories and cubicles,” says Tom Hawkins, Burns & McDonnell project manager. “The laboratory location and design is strategic to meld execution of the research and collaboration of the Battlespace Environment Lab’s personnel and management.”

The BEL was designed to pursue a Leadership in Energy and Environmental Design (LEED®) Silver rating with a reduction in heat island effects and light pollution; controlled water usage, including efficient landscaping; energy conservation and recycled materials; and other sustainable features.

For more information, contact Mark Zimmerman, 816-822-3847.
Filling the Void with Innovation

An abandoned mine 200 feet beneath a 100-acre site in Kansas City, Mo., made development of the land above it infeasible, as most of the mine roof was unstable. The parcel was a wasteland until Charles Garney, founder of Briarcliff Development Co. and USC Technologies, a residuals management company, teamed with Burns & McDonnell with an idea to use non-commercial grade, chemically inert fly ash from local power plants as a recycled material to backfill the mine. When mixed with water, the flowable ash slurry sets up as a self-cementing solid to fill the mine void, making the surface stable for development, while finding a sustainable use for a product otherwise wasted in landfills. “Although this technology has been attempted in a few mines elsewhere, this successful, creative adaptation to Kansas City mines showed tremendous foresight and persistence,” says Bill Shefchik, project geologist for Burns & McDonnell. “Literally tens of thousands of individual, 25-ton truckloads were required to fill the mine void, layer upon layer, over a span of more than 15 years.” The site is now home to office space, boutique retail shops and high-end housing.

For more information, contact Bill Shefchik, 816-822-3138.

New Life for an Old Charm

Known as the heart of Chicago’s north side, the North Center Community is known for its small-town charm. Established in the late 1800s, it grew to a bustling industrial area and today remains a destination for cultural events and concerts. With thousands of pedestrians taking to the streets during these events, city leaders recognized a need for improvements to the roads and sidewalks to comply with the Americans with Disabilities Act. The solution was a new streetscape featuring sustainable surfaces, enhanced design and added amenities for pedestrians. Burns & McDonnell is leading the design effort for part of a streetscape project along West Irving Park Road. Green space increased by narrowing the width of the sidewalk and adding curb bumpouts with landscaping planters at the intersections. “The bumpouts help slow traffic and provide more space at intersection corners to make pedestrian travel safer and more pleasant,” says Jennifer Morales-Tolentino, Burns & McDonnell project manager. Permeable pavers improve site stormwater runoff, and the aesthetic improvements include benches, landscaped gardens, pedestrian lighting and other features to make the commercial district a desirable place to shop and relax. The project is scheduled to be completed in summer 2011.

For more information, contact Jennifer Morales-Tolentino, 630-724-3281.