



## SPIRIT GOLD

### 101<sup>ST</sup> AIRBORNE COMMAND & CONTROL HEADQUARTERS

- Project Type: Military–command headquarters
- Location: Ft. Campbell, Ky.
- Owner: U.S. Army Corp of Engineers–Louisville District
- Architect: The Mason & Hanger Group, Lexington, Ky.
- Engineer: The Mason & Hanger Group, Lexington, Ky.
- Contractor: Walbridge-Doster Joint Venture, Detroit, Mich.
- Precaster: Southeast Precast Corp, Knoxville, Tenn.



#### OVERVIEW

Nicknamed the “Screaming Eagles,” the 101st Airborne Division is justly proud of its air assault operations in World War II during D-Day and in the Battle of the Bulge, as well as its airmobile actions in the Vietnam War and in two deployments to Iraq. The Division is also proud of its famous shoulder sleeve insignia featuring the profile of a bald eagle head with the word “Airborne” above it.

Accordingly, a key requirement in the design of the division’s 97,000-square-foot Command and Control Headquarters was that a copy of the Screaming Eagle insignia be featured prominently on the building façade.

The main architectural precast concrete feature of the command center is a rotunda at the front of the complex. It is a 30-ft-diameter cylindrical element consisting of precast concrete panels in 60-degree segments, stacked three panels high, on a cast-in-place concrete structural substrate. The 101st Airborne logo was incorporated into this façade thanks to precast concrete formliner technology. A bas-relief sculpture of the insignia, measuring 14 ft 5 in. high by 10 ft 4 in. wide, was inset in precast concrete panels and is centered on the circular rotunda at the building entry.

“The custom made formliner,” says Allen Trotter, office manager, detailer and estimator for Southeast Precast Corp., “was manufactured by Fitzgerald Formliners of Santa Ana, Calif., in two curved pieces and assembled in our plant. The challenge was to match the slope of the rotunda cylinder and join the two segments without a visible joint line.”

The color of the panels selected was Alluvial Sand, which required the use of buff-colored limestone aggregates to match the color of the mortar portion of the mix. The finish of the panels is a light to medium sandblast, which was selected due to the size and shape of the panels. The largest precast panels measure 17 ft tall, 11 ft 9 in. wide and 6 in. thick.

Designed in a “V” shape to symbolize both eagle wings and the rotors of a helicopter, the two-story-plus-basement building features the cylindrical tower at the point of the “V.” A change in façade materials creates a formal-style streetscape and a less formal courtyard appearance.

The structure was named McAuliffe Hall after General Anthony McAuliffe who commanded the 101st Airborne Division troops defending Bastogne during the Battle of the Bulge in World War II. McAuliffe is famous for his one-word reply to a German surrender ultimatum: “Nuts!”

The 101st Airborne HQ features command suites, office space for 400, a division conference room, an auditorium, state-of-the-art communications and IT technology, secured classified areas, an emergency operations center, and a lower-level exercise and break room. Large bays on one side of the building are designed to hold equipment-carrying vehicles that can be quickly boarded on cargo planes.

**30** FEET

Diameter of central precast concrete cylinder containing Screaming Eagle insignia

**99** PERCENT

Amount of reinforcing steel from pre- and post-consumer recycled content

**100** PERCENT

Amount of materials in the concrete mix that were sourced regionally



Command center of the 101st Airborne Division features a central cylindrical tower.

Photo: Southeast Precast Corp.



Precast tower showcases the famous Screaming Eagle insignia of the 101st Airborne.

Photo: Walbridge



Interior of the cylindrical entrance to the Airborne Division Headquarters.

Photo: Aasiya McCoy, Mason & Hanger

The facility is basic building construction type IIB with a basement classified as an SCIF Facility, (a Sensitive Compartmented Information Facility), for the storage and dissemination of sensitive information.

Located near the Midwest's New Madrid fault, a highly seismic region, the project required special lateral force resisting systems. According to Day & Zimmerman the design also required Anti-Terrorism/Force Protection (AT/FP) measures and extensive security features, including secure vault, intrusion detection, access control, and secure communication systems, as well as TEMPEST technology to secure electronic communications equipment from potential eavesdroppers. The project was also value engineered for maximum cost efficiency.

The design-build team earned an "Excellent" rating from ACASS (Architect-Engineer Contract Administration Support System). The latter is a Department of Defense program to evaluate A-E contractor performance in the areas of accuracy, thoroughness, schedules, cost constraints, and technical capability.

The precast concrete cladding provides a high degree of durability and reduces long-term maintenance requirements. It also conveys a sense of strength and the large mass indirectly enhances the performance of the system in a blast.

"Architectural precast concrete was selected mainly for its aesthetics and symbolism," says Aasiya McCoy, AIA, LEED AP, project architect, The Mason & Hanger Group. "We wanted to give the building a sense of permanence. The strong entrance with the Airborne logo etched into the precast was designed to symbolize something solid and permanent. Precast concrete conveys this sense of strength and ties together the structure of the different wings."

## PRECAST CONCRETE'S CONTRIBUTION TO SUSTAINABLE CONSTRUCTION PRACTICES

The 101st Airborne HQ was built to meet the U.S. Army Corps of Engineers SPiRiT Gold certification standard, equivalent to a LEED Gold rating. The SPiRiT criteria includes the five major LEED categories but adds evaluation categories to rate the facility design potential to accommodate constant remodeling and adaption, typically required of military structures.

Environmental sustainability, life-cycle effectiveness, and energy efficiency were major project goals. Design emphasis was on a thermally-effective building envelope with strict attention to building leakage.

### Materials & Resources:

Reinforcing steel and embedded plates in the precast concrete are manufactured from scrap of domestic origin with an average post-consumer recycled content of 97% and an average preconsumer recycled content of 2%.

Aggregates, sand and limestone used in the precast concrete mix were sourced within 500 miles of the manufacturing site.

Diverted from the landfill was 75% of construction waste. Twenty percent of building materials contain at least 20% post-consumer and 40% post-industrial recycled content. Of all materials, 50% were manufactured within 500 miles. Certified wood was used.

### Sustainable Sites:

The project utilizes silt fencing, straw bales, storm sewer sediment protection and storm-water pollution prevention measures. The site was previously used and is located close to base facilities and alternative transportation. Bike racks are available for 5% of building occupants and alternative fueling stations for electric cars are provided. Credits were also received for restoring open area with native plants, landscaping to reduce the heat island effect, and light pollution reduction.

### Energy & Atmosphere:

The project features state-of-the-art mechanical and electrical systems that minimize energy consumption. Included is a low-temperature, hydronic boiler package and a raised-access floor system with under-floor air supply. Adjustable diffusers at each work station allow occupants to individually control the HVAC system.

Design energy use was reduced by slightly more than 10%. Operation management and control systems for lighting and HVAC system were installed.

### Indoor Environmental Quality:

Low-emitting paints, adhesives, carpeting, and composite wood were used. The project features operable windows, day-lighting design, and CO<sub>2</sub> sensors.

Under the SPiRiT program, the project also was credited for holistic delivery of the facility and for meeting current and future mission requirements. 



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