



## Transportation

### Client

USACE Alaska District

### Location

Elmendorf Air Force Base, Alaska

*“Thank you for producing such a truly outstanding proposal (35% Design) within our budgeted amount..The quality of your proposal has received notoriety at the Major Command level of the Air Force and they are requesting a digital copy of your 3-D rendering.”*

**—Keith Fleisher,  
USACE Alaska District**



## Elmendorf Air Force Base Large Aircraft Maintenance Hangar

### Project Description

Continuing with the design-build success for similar hangars in Alaska, the Kiewit/CH2M HILL Team was contracted by the U.S. Army Corps of Engineers (USACE) Alaska District to deliver a 62,183-square-foot (SF) Large Aircraft Maintenance Hangar (LAMH) at Elmendorf Air Force Base (AFB), located near Anchorage, Alaska. The facility consists of a 38,783-SF Maintenance/Fuel Cell Hangar that can support a variety of aircraft (C-17, E-3A, KC-10, B747, and B767), a nose dock for C-5 aircraft, and a 23,401-SF Administrative/Maintenance Shops that include a hydraulics shop area, communications/mobility storage/shop, administrative office spaces, conference rooms, and mechanical spaces.



Because the Owner had strict budget constraints, we focused on providing the client with an optimum Large Aircraft Maintenance Hangar (LAMH) at the best value. This means that functionality, ease of maintenance, life cycle costs, and overall cost effectiveness were balanced against aesthetics and level of finish to achieve a design solution that provides the owner with a fit-for-mission facility.

As the architectural-engineering designer, CH2M HILL developed a highly effective design solution that minimized costs because of our experience designing similar hangars for the USACE throughout the country. We incorporated Elmendorf AFB’s architectural theme, known as the “Alaska theme,” which includes arctic entries with steeply pitched gable roofs and expressed truss structures. This base theme establishes continuity amongst all base structures with a campus color palette of natural earth tones.

The design for the LAMH was completed using an integrated architectural and structural 3-D modeling. This integrated 3-D model enabled interference checking before onsite construction, and increased both the speed and accuracy of delivering extracted 2-D drawings for review and construction. Through the use of 3-D modeling, the structural steel frames were able to be shop fabricated, to the largest extent possible, taking into account shipping constraints. This minimized field fabrication costs and sped up construction in the field, which is particularly needed in a cold climate when the construction time frame is limited.



## Value CH2M HILL Brought to This Project

To demonstrate our commitment to value-added delivery, we successfully accomplished the following:

**3-D Modeling**—Used 3-D modeling to meet an aggressive design and construction schedule, gain senior leadership support, and provide accurate estimates of construction materials

- ◆ **Innovative Design Concepts**—Provided a hangar with C-5 aircraft docking capabilities, and optimized site layout, building exterior, and layout while addressing arctic engineering needs
- ◆ **Constructability**—Used industry-standard construction assemblies that conform to all applicable design and building codes with no questionable or unproven construction techniques required to construct the facility
- ◆ **Met Aggressive Design Schedule**—Employed large experienced pool of technical resources adept at completing similar design projects for the USACE Alaska District to achieve aggressive schedule

### About CH2M HILL

Headquartered near Denver, Colorado, USA, employee-owned CH2M HILL is a global leader in consulting, design, design-build, operations, and program management for government, civil, industrial and energy clients. The firm's work is concentrated in the areas of water, transportation, environmental, energy, facilities and resources. With US\$6.3 billion in revenue and 23,000 employees, CH2M HILL is an industry-leading program management, construction management and design firm, as ranked by Engineering News-Record and named a leader in sustainable engineering by Verdantix. The firm has been named a FORTUNE 100 Best Companies to Work for five times. Visit us at [www.ch2mhill.com](http://www.ch2mhill.com), [twitter.com/ch2mhill](https://twitter.com/ch2mhill) and [facebook.com/ch2mhill](https://facebook.com/ch2mhill).