



Transportation Aviation

Client

City and County of Denver

Location

Denver, CO, USA

Denver International Airport, New 6th Runway (Runway 16R-34L)

CH2M HILL designed the grading, drainage, paving, and lighting for the new sixth runway at Denver International Airport (DIA), a 16,000-foot-long facility. We provided services during construction, working closely with airport staff to avoid project impacts on existing operations.

The runway design accommodates Airplane Design Group VI (New Large Aircraft [NLA]), is 200 feet wide with 100 feet wide taxiways.

The new runway pavement section is 17-inch Portland cement concrete, 8 inches of cement-treated base, 12 inches of stabilized subgrade, and 5 feet of select fill material, to meet FAA's "full-strength" classification. Asphalt shoulders, included for both the runway and taxiways, are 40 feet wide.

The project included 7.4 million cubic yards of embankment placement and grading, a new tunnel designed for emergency and maintenance vehicles under a cross-field taxiway, and modifications to the deicing fluid/stormwater drainage system.

CH2M HILL's lighting system and signage design included runway edge, threshold, centerline, touch-down zone, and guard lights; taxiway edge, centerline, and lead-on/lead-off lights; and stop bars and clearance bars. CH2M HILL also is providing planning and implementation support for Surface Movement Guidance and Control Systems (SMGCS), for low visibility operations.

Grading

The mass grading for this runway was partially completed as a result of various projects since the early 1990s. The original design criteria for this 16,000-foot-long runway were for Airplane Design Group V (Boeing 747-400 type), with a 150-foot-wide, full-strength pavement section and 75-foot-wide taxiways. The project included plans and specifications for reworking the top of the existing embankment and placement of select soil material.

Drainage

The previous design was reviewed for compliance with the new deicing collection and ponding requirements. The backbone drainage system was determined to be adequate for handling typical storm drainage; however, some modifications were required to provide for the collection of the deicing fluid from the southern one-third of the runway and taxiway complex. Because of the importance of minimizing large crossings under the runway, and due to the length of this runway, crossing locations were designed to be large enough to provide room for several utilities, such as force mains for spent deicing fluids.

Airfield Lighting

The project required runway edge lights, runway threshold lights, runway centerline lights, runway touch-down zone lights, taxiway edge lights, taxiway centerline lights, taxiway lead-on/lead-off lights, stop bars, clearance bars, runway guard lights, taxiway guidance signs, and runway-distance-remaining signs. CH2M HILL developed a method to design the location of in-pavement runway and taxiway lights so they can be installed with minimal conflicts with the concrete pavement joints.