

City/County Airport Builds CCP

Magnetically quiet zone enables airport to remain competitive.

By Brian Tompkins

The state of Kansas has a long and rich aviation history with more than 60 aviation and aerospace companies located within its borders. With more than half of these entities located within Wichita, the area presents many competitive opportunities for regional airports. One such airport is the Newton City/County Airport just 20 miles north of Wichita.

“The Newton City/County Airport has a long history of cooperating with local aircraft manufacturers and making our facilities available for numerous aircraft testing and certification flights,” said T. W. Anderson, airport manager. “In addition, this area is home to six active general aviation repair facilities. These pilots value the less complex airspace that our non-towered airport provides.”

To continue its mission of serving the needs of Wichita-area aircraft manufacturers, airport tenants, and the local aviation community, and to grow aeronautical revenue, the Newton City/County Airport contracted HNTB Corporation (www.hntb.com) to plan, design, and

oversee construction of an aircraft Compass Calibration Pad (CCP)—a paved area in a “magnetically quiet zone” where an aircraft’s compass can be calibrated.

Every aircraft has a magnetic compass, a simple self-contained device that indicates the aircraft’s direction or heading relative to magnetic north. It may be necessary to recalibrate the compass over the life of an aircraft. To do so requires positioning and turning the aircraft on a CCP, a specifically designated area devoid of any steel structures, underground pipes or cables, or anything containing ferrous materials that produces magnetic fields. According to FAA Advisory Circular 150/5300-13, Airport Design, a CCP needs to be located at least 600 ft from large magnetic objects such as buildings, railroad tracks, steel pipe, and high voltage power and communications cables both above and below ground. Were an aircraft’s compass to be calibrated in the presence of metallic objects or power/communications cables (which generate magnetic fields), the compass could read an incor-

rect magnetic heading when the aircraft is airborne—a potentially dangerous situation for the pilot and other flying aircraft.

In 2004, as part of its airport master plan update, HNTB and the Newton City/County Airport identified two sites that could accommodate a CCP. As all the airport’s tenants are located west of Runway 17-35, the main north-south runway, a site located on the west side of the runway would allow use of a pad without having to cross the active runway—a clear safety benefit. However, after reviewing utility records, the Airport Industrial Park’s 12-in. ductile iron water pipe was located directly beneath the center of the preferred site. Such a large ferrous structure made the site unsuitable.

The second site was located in farmland due east of runway 17-35 and met all FAA criteria. This location, 600 ft east of Runway 17-35, was free of magnetic interference and would not conflict with the glide slope antenna for the runway 35 approach, which is to be added at a future date.

Metal-Free Design

HNTB had to be sure the area on the site had no steel nearby or underground that would impact the magnetic field; so, the firm engaged Compass Rose Surveying to perform a magnetic survey of the site. The survey revealed a low magnetic signature, well below FAA requirements.

To maintain a magnetically free site, all construction materials were to be non-metallic. For odd-shaped concrete panels, the concrete pavement for the pad was reinforced with fiberglass rods instead of using traditional welded wire



Aerial view of the Compass Calibration Pad, which sits in a magnetically quiet zone where an aircraft’s compass can be calibrated at the Newton City/County Airport, just north of Wichita, KS.

fabric steel. As steel dowel bars could not be used, load transfer between concrete panels was accomplished through the use of smooth fiberglass dowel bars. The fiberglass materials had equivalent or better tensile strength and, because they are not made of metal, they would not corrode.

HNTB went to great lengths to ensure that no metal was used in construction. Traditional taxiway edge lights and the associated power cable were replaced with plastic retro-reflective edge markers. Instead of using wire mesh on the underdrain outlet pipes to keep rodents out while allowing water to leave, plastic pipe caps in which holes were drilled were used.

The new CCP provides Wichita-area aircraft manufacturers and Newton's six



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on-site active general aviation repair companies with the ability to perform compass and navigation equipment certification. It is also hoped that in attracting additional aircraft operations to the airport, fuel sale revenues will increase as well. The pad took three months and

cost \$693,600 to build.

“Two surprising side benefits have been derived from having this compass pad at our airport,” said airport manager Anderson. “The first is that the site lends itself to engine runs in a remote area of the airport, thus reducing the ambient noise affecting the facility’s 15 tenant businesses.

“The second is that in most cases aircraft not based here will perform the required tests and adjustments and then stop in at our main ramp to enjoy our modern terminal and transient pilot area,” Anderson added. “They’ll grab a quick bite to eat at one of our local restaurants and/or purchase fuel from us.”



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