



GRINNELL, IOWA AIRPORT

Project Report #2

July, 1987

Aviators and air travelers will soon find a new airport facility with a Portland cement concrete (PCC) runway in Grinnell, Iowa. Grinnell, located 50 miles east of Des Moines, is a progressive community with a population of 8,868. In 1985, recognizing that transportation is a key to economic development, the Grinnell City Council approved the Mayor's appointment of an Airport Committee to study and plan a new airport for the community. An existing grass runway, 1,375 ft. long is located 2 miles southeast of the city. The community is accessible via U.S. Highway 6, Iowa Highway 146 and Interstate 80. The Chicago and Northwestern Railroad Company and the Iowa Railroad Company provide rail freight service to Grinnell.

The new airport is situated approximately 2 miles south of Grinnell, northwest of the junction of Interstate 80 and Iowa 146. Constructing a modern, hard surfaced general aviation airport, Grinnell is providing a comprehensive transportation system to serve existing businesses and attract industrial development.

The total cost of the airport runway, hangars and terminal building is estimated at \$2 million. Funding was obtained through Federal Aviation Administration (FAA) and Iowa Department of Transportation (IDOT) grants, city funds and private donations.

Grading for the airport was completed in May of 1987, providing a 5,000 ft. grade to allow for future expansion. In April of 1987, a PCC bid letting attracted 9 bidders interested in paving the new runway. Bids ranged from \$597,999 to \$868,942. The engineer's estimate was \$721,504. The contract was awarded to the low bidder, Flynn Company, Inc. of Dubuque, Iowa. The price for 45,790 SY of 6 in. thick PCC pavement was \$9.77/SY.



The runway and apron pavements were designed as 6 in. thick, unreinforced concrete pavement (FAA Spec. P-501) with a crushed limestone base 4 in. thick (FAA Spec. P-209). The runway is 4,000 ft. long by 75 ft. wide. Design of the airport runway will accommodate a 30,000 lb. GVW. Most large twin engine aircraft and business jets will be able to utilize the Grinnell facility. The FAA tension ring design was specified for load transfer. Longitudinal joints were either constructed or sawed at 12.5 ft. spacings. A male keyway was used at longitudinal construction joints. Transverse contraction joints were sawed and sealed at 12.5 ft. intervals perpendicular to the edge of slab.

FAA specifications required that the concrete mix be designed to assure a minimum 28 day flexural strength of 620 PSI. Compliance with this specification was determined by testing 6 in. x 6 in. x 20 in. beams at third points. Pavement thickness was monitored with core samples. Water/cement ratio was specified not to exceed 0.53. Air content was targeted at $6\% \pm 1.5\%$. Slump range for slipform pavement procedures was specified at 0.5 to 2.0 in.

The subgrade and subbase were compacted to 95% and 100% standard Proctor density respectively. The grade was trimmed to proper elevation with a CMI 225 subgrader referenced to a stringline. Elevation control stakes were provided at 25 ft. intervals. Flynn Company, Inc. erected a portable CON-E-CO batch plant on site. Concrete was delivered to a Pav-Saver spreader by transit mix trucks. A new GOMACO GP 2500 slipform paver finished the concrete and constructed the main keyway. The contractor initially constructed the 25 ft. wide outer lanes. When the concrete exceeded a flexural strength of 550 PSI, the center 25 ft. lane was constructed. A white liquid membrane curing compound was applied at a rate of 0.06 gals./SY. The pavement was given a transverse broom texture.

Mainline paving was completed in 13 calendar days and it is expected that the Flynn contract will be completed by August 1, 1987.

During the planning stages the Airport Committee considered alternative pavement surfaces. Bill Grabe, project engineer for Clapsaddle-Garber Associates, Inc. of Marshalltown, Iowa, presented facts on the quality of pavement types and life-cycle costs. After reviewing the pavement alternatives, the Committee voted unanimously to specify Portland cement concrete. PCC was considered the best buy on a life-cycle economic basis and it provided the city with a low maintenance product that possessed superior load-carrying capacity, reserve strength for overloads, resistance to deformation, maximum runway visibility and resistance to contamination. City Manager/Engineer Theodore Clausen stated that Grinnell is very pleased with the new runway. The new airport will provide service to Grinnell for many years into the future -- a future that will hopefully realize economic growth and prosperity for the community.

Additional information may be obtained by contacting the Iowa Concrete Paving Association at (515) 278-0606.