



## Monitoring Solutions For The FAA



- **Objectives:** Evaluate concrete for new design standards
- **Solution:** Jewell Instruments **CSG-3000**
- **Benefits:** Highly adaptable and precise
- **Results:** Validate the new standards

### Case Study

The FAA operates a state-of-the-art, full-scale pavement test facility dedicated solely to airport pavement research. Located at the William J. Hughes Technical Center near Atlantic City, New Jersey, the National Airport Pavement Test Facility (NAPTF) provides high quality, accelerated test data from rigid and flexible pavements subjected to simulated aircraft traffic.

Construction of the facility was completed in April 1999. Major features of the National

Airport Pavement Test Facility are:

- Fully enclosed instrumented test track 900 feet long by 60 feet wide
- Computerized data acquisition system
- Rail-based test vehicle capable of simulating aircraft weighing up to 1.3 million pounds.
- Up to 20 test wheels capable of being configured to represent two complete landing gear trucks. Each truck having 1 to 10 wheels per truck.
- Wheel loads independently adjustable up to 75,000 pounds per wheel.
- Controlled aircraft wander simulation.

Test items are trafficked to failure and then reconstructed. Current plans are for the test pavements to be replaced and tested to failure on an 18-month cycle.

A construction cycle includes test pavement construction, instrumentation installation, traffic tests to failure, post traffic testing (trenching activities and other tests), and pavement removal. All pertinent data and information collected at the NAPTF is arranged by construction cycles (CC).



*Jewell Instruments CSG-3000 Concrete Strain Gauge*



**Phone :**  
+1 (603) 669-6400



**Email :**  
[info@jewellinstruments.com](mailto:info@jewellinstruments.com)



**Web :**  
[jewellinstruments.com](http://jewellinstruments.com)



## Project

For each of the construction cycles, sensors are embedded in the test pavement sections to collect data and document pavement performance. For CC6, Jewell Instruments provided 174 of their custom-built [dynamic concrete strain gauges \(CSGs\)](#) for the rigid pavement reconstruction.

## Results

These tests provide technical data needed to validate new design standards, and to assure compatibility between aircraft and airport runways worldwide.



## Project

[Jewell Instruments CSG-3000 Dynamic Concrete Strain Gauges](#) measure axial strain in the concrete under high frequency (dynamic) conditions. Utilizing four active elements of a Wheatstone bridge circuit, this concrete strain gauge compensates for temperature, rejects bending strain (may also be configured to measure bending and reject axial strains), compensates for lead resistance, and provides a sensor that is easily adaptable to most data acquisition systems without requiring additional signal conditioning. Owing to their low profile design, these sensors can be used in concrete pavements, columns, walls, bridge elements, or wherever dynamic strains need to be measured. They come with either 15 ft. or 50 ft. Truck Weight (22 AWG) cable, and other lengths are optional.

## About Jewell Instruments

Jewell Instruments is a world leader in the design, manufacture, and distribution of high-precision products. Our expertise includes acceleration and tilt sensors, electronic compasses, avionics components, solenoids, and panel meters. The extensive application knowledge we have obtained through decades of experience allows us to provide custom solutions for a diverse group of industries. In fact, customers from all over the globe contact us for solutions to aerospace, medical, industrial, and telecommunications applications - to name a few.

To find out more, visit our website!



**Phone :**  
+1 (603) 669-6400



**Email :**  
[info@jewellinstruments.com](mailto:info@jewellinstruments.com)



**Web :**  
[jewellinstruments.com](http://jewellinstruments.com)



CSGT6 Rev. A