

Hartsfield Jackson Atlanta International Airport (HJAIA): Pavement Management System

Project:	HJAIA Non Destructive Testing Pavement Management System
Clients:	United Consulting/Materials Managers & Engineers, Inc
Location:	H-JAIA
Completion	Complete



Objective: To evaluate the entire pavement network of the airfield at HJAIA.

The HJAIA Pavement Management System is a comprehensive network-level pavement evaluation program that is performed as a component of cyclic evaluations at the airport every three (3) years. The program consists of tests, surveys and analysis conducted to evaluate the entire pavement network using state of the art techniques and methodologies. MME had been involved in the 2007 and 2010 cycle evaluations. MME's responsibilities included:

Pavement Management Evaluation History

Table 1-1 - Pavement Evaluation Program History

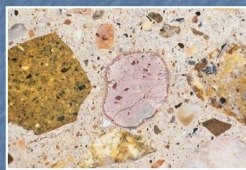
TECHNIQUE ¹	1984	1987	1991	1994	1997	2001	2004	2007	2010
Falling weight deflectometer (FWD)	X	X	X	X	X				
Falling weight deflectometer (FWD)						X	X	X	X
Rolling dynamic deflectometer (RDD)						X			
Visual condition ratings (runways)	X	X	X	X	X	X	X	X	X
Visual condition ratings (taxiways)						X	X	X	X
Photographic documentation	X	X	X	X	X	X	X	X	X
Slab numbering convention ²					X	X	X	X	X
Concrete cores and soil borings	X	X	X	X	X	X	X	X	X
Concrete materials studies			X	X	X	X	X	X	X
SEM/EDX (concrete)							X	X	X
Smoothness assessments ³					X	X	X	X	X
Video imagery (runways)						X	X	X	X
Geographic information system (GIS)						X	X	X	X
MicroPAVER						X	X	X	X
Airfield Marking Audit									X

1. The techniques are described in detail in Section 2 – Investigative Procedures.
 2. Aviation Consulting Engineers (ACE) retained the services of Cover Morehead Systems from Plano, Texas to establish a slab layout grid with a logical naming/numbering convention in 1995.
 3. Pavement Smoothness Index (1997-2007), Boeing Bump Index introduced (2010).

- Visual Survey to establish the Pavement Condition Index (PCI)
- Video Survey to Document and Archive the Condition of the Primary Pavement System
- Non-Destructive Structural Evaluation to Collect and Analyze Data by Computing Stiffness Modulus and Transfer Efficiency
- Smoothness Evaluation of the Primary System to Compute the Pavement Smoothness Index (PSI)

MME also participated in the microscopic analysis of concrete slabs for Alkali-Silica Reaction (ASR) and Secondary Ettringite in addition to performing subgrade evaluations to 10 feet depth below the pavement layers.

Alkali-Silica Reaction (ASR)



- Polished section view of an alkali reactive aggregate in concrete.
- Observe the alkali-silica reaction rim around the reactive aggregate and the crack formation.
- Influencing Factors
 - Reactive forms of silica in the aggregate,
 - High-alkali (pH) pore solution
 - Sufficient moisture

If one of these conditions is absent — ASR cannot occur.