Development of a Testing Device for Total Pavement Acceptance

ABSTRACT

A new, multi-function pavement testing device is being developed by the Texas Department of Transportation (TxDOT). This new device is called the Total Pavement Acceptance Device (TPAD). The TPAD is a single testing device that includes the capacities of: (1) Rolling Dynamic Deflectometer (RDD), (2) Ground Penetrating Radar (GPR), (3) global positioning system (GPS), (4) pavement surface temperature, and (5) digital video imaging of pavement and right-of-way conditions. The TPAD is being designed to measure continuous deflection profiles along the pavement at speeds in the range of 5 to 10 mph. The initial design and construction of the TPAD is completed and acceptance testing is underway. Example sets of RDD deflection profiles, GPR subsurface image profiles, surface temperature and video imaging are presently being collected at the TxDOT Flight Services Facility at Austin Bergstrom International Airport. This airport pavement is a jointed concrete pavement (JCP) for taxiing and parking of moderate to small aircrafts which has three different slab thicknesses, 16-, 10- and 8-in. thick concrete slabs. The 16-in. thick slabs are 25-ft long and 25-ft wide while the 10- and 8-in. thick slabs are 12.5-ft long and 12.5-ft wide. The JCP is underlain by 6 in. of base, 6 in. of cement treated subgrade and natural clayey subgrade. General specifications of the TPAD are outlined and examples of deflection profiles are presented.

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Figure 1. Photograph of Total Pavement Acceptance Device