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**DENSITY OF BITUMINOUS CONCRETE USING NUCLEAR
METHODS IN THE CONSTRUCTION OF THE NEW ATHENS
INTERNATIONAL AIRPORT**

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ABSTRACT

Density of the flexible airfield pavements, during the construction of the New Athens International Airport, was calculated from cores taken from the finished mat or joint for each lot. The Job Specifications followed the FAA guide specifications and specified statistically based acceptance criteria. The Contractor's (Hochtief Athens) Asphalt Lab searched for an alternative to the time-consuming method of taking cores, in order to have readily available density results and be able to establish a more effective quality control program. This alternative was to use nuclear methods for density measurements.

This paper describes the methodology for calibrating the nuclear apparatus for the Project. The readings of the nuclear device needed to be correlated with the density obtained from the cores, as described in the ASTM D 2726-test method. These measurements were corrected using simple linear regression. The results were very satisfactory and measurements, using the nuclear device, were taken regularly as part of the Contractor's internal quality control system, in order to evaluate each lot's production in a more representative way than the classic one of taking cores. Variation in the readings limited the measurements to the top layers and only for the mat.

KEY WORDS: Nuclear Gauges, Pavement Density, Core Density, Correlation, Quality Control, FAA Specifications