REHABILITATION OF OLD CONCRETE PAVEMENTS USING CRACK AND SEAT TECHNIQUES

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ABSTRACT

Part of the old concrete pavements in Copenhagen Airport have been rehabilitated during the years of 1989 and 1996, these concrete pavements were primarily constructed during the Second World War. The pavement consisted of undowled and unreinforced concrete slabs with slab sizes of about 7 m long and 5 m wide and thickness of about 300 mm. The slabs have been constructed on layers of sand.

Investigations were performed in order to find the right rehabilitation methods. It was decided to crack and seat the concrete slabs and use these layers as base for an asphalt pavement. The preliminary investigations showed that several of the concrete slabs had insufficiently support in the corners.

A preliminary design with estimated E-values of 6000 MPa for the stress relieved concrete resulted in a designed asphalt overlay thickness of 100 mm.

Based on the HWD measurements of the cracked and seated concrete slabs before the construction of the asphalt layers the design E-values were calculated to be about 2000 MPa for the cracked and seated concrete and about 70 MPa for the unbound subsoil.

After construction of the 100 mm asphalt layer back calculation of HWD measurements carried out after the construction of the asphalt layers showed layer B-modulus of about 8500 MPa of the cracked and seated concrete layer.

KEYWORDS:

AIRFIELD / PAVEMENT / ASPHALT WEARING COURSE / MAINTENANCE / QUALITY CONTROL