

Precast concrete pavement – systems and performance review

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Abstract. Long-term traffic restrictions belong to the key disadvantages of conventional cast-in-plane concrete pavements which have been used for technical structures such as roads, parking place and airfield pavements. As a consequence, the pressure is put on the development of such systems which have short construction time, low production costs, long-term durability, low maintenance requirements etc.. The paper presents the first step in the development of an entirely new precast concrete pavement (PCP) system applicable to airfield and highway pavements. The main objective of the review of PCP systems is to acquire a better understanding of the current systems and design methods used for transport infrastructure. There is lack of information on using PCP systems for the construction of entirely new pavements. To most extensive experience is dated back to the 20th century when hexagonal slab panels and system PAG were used in the Soviet Union for the military airfields. Since cast-in-situ pavements became more common, the systems based on precast concrete panels have been mainly utilized for the removal of damaged sections of existing structures including roads, highways etc.. Namely, it concerns Fort Miller Super Slab system, Michigan system, Uretex Stitch system and Kwik system. The presented review indicates several issues associated with the listed PCP systems and their applications to the repair and rehabilitation of existing structures. Among others, the type of manufacturing technology, particularly the position of slots for dowel bars, affects the durability and performance of the systems. Gathered information serve for the development of a new system for airfield and highway pavement construction.