

Effective way to reconstruct arch bridges using concrete walls and transverse strands

Ladislav Klusáček¹, Robin Pěkník¹ and Radim Nečas¹

¹Brno University of Technology – Faculty of Civil Engineering, Veveří 95, 602 00, Brno, Czech Republic

E-mail: klusacek.l@fce.vutbr.cz

Abstract. There are more than 500 masonry arch bridges in the Czech Road system and about 2500 in the Czech Railway system. Many of them are cracked in the longitudinal (span) direction. The barrel vaults are separated by the cracks into partial masonry arches without load bearing connection in transverse direction. These constructions are about 150 years old and they are also too narrow for the current road system. This paper presents a strengthening method for masonry arch bridges using transverse post-tensioning. This method is very useful not only for strengthening in the transverse direction, but widening of masonry arches can be taken as secondary effect especially in case of road bridges. Several bridges were successfully repaired with the use of this system which seems to be effective and reliable.