

## RECOVERY BEHAVIOUR OF ASPHALTIC MATERIALS

**H. Taherkhani \***

Lecturer, Civil Engineering Department, Zanjan University, Iran

**A. C. Collop**

Professor of Civil Engineering, University of Nottingham, Nottingham, UK

\* Department of Civil Engineering, Zanjan University, Zanjan, Iran

Htaherkhanik@yahoo.com

### *ABSTRACT*

Understanding the recovery behaviour of asphalt mixtures improves the understanding of their permanent deformation behaviour and rutting in asphalt pavements. The recovery behaviour of pure bitumen using Dynamic Shear Rheometer (DSR) is investigated and related to that of two asphaltic mixtures which use the bitumen as binder. Creep recovery tests have been conducted on the binder at 10°C and 20°C over a range of stress levels for a series of total strains prior to unloading. The recovery behaviour of the mixtures has been investigated using the compressive uniaxial creep recovery tests over a range of stress levels, temperatures and total strains prior to unloading. For the bitumen and the mixtures, it is found that the recovered strain increases with increasing total strain prior to unloading. This behaviour continues up to a level after which the recovered strain remains constant. While for the bitumen it is found that the recovered strain increases with increasing stress level, the recovered strain for the mixtures, over the range of applied stress in this research was seen to be independent of the stress level. The rate of recovery in asphaltic mixtures is found to depend on temperature, type of mixture and accumulated damage in the mixtures, and is independent of stress level.

*KEY WORDS:* Bitumen, mixtures, DSR, creep, recovery.