

UIC WORKSHOP ON MASONRY ARCH BRIDGES

18-19 October 2018

The Mansion House, Bristol, UK



Assessment of Masonry Arch Bridges

Railways in Europe possess more than 200.000 masonry arch bridges and culverts on their lines which represent almost 50% of their total bridge stock with an inestimable asset value. Many of them have reached the end of their theoretical service lives when judged against current codes.

Replacement of these old structures shows difficulties due to economic reasons and to the fact that many of them belong to the civil engineering heritage of the railways. Good solutions are therefore needed in optimised management and maintenance strategies and better assessing of the bridge stock.

UIC has performed the project "Masonry Arch Bridges" to respond to this requirement. The principal objective of the workshop is to present the results, i.e.:

- 1. Development of an assessment framework that enables bridge owners to determine the safe working load and residual life of Masonry Arch Bridges;**
- 2. Development of tools for a predictive Life Cycle Management and Maintenance Planning of Masonry Arch Bridges;**
- 3. Best practices, case studies and new developments regarding maintenance and repair of Masonry Arch Bridges.**

The results of the project are of interest for railway infrastructure owners, asset managers, bridge engineers responsible for the inspection, assessment or repair of masonry arch bridges as also for contractors involved in masonry arch bridge projects.

Programme - Day 1 – 18/10/2018

10.00 – 10.30 **Arrival, registration**

10.30 – 10.50 **Welcome & introduction of invited speakers** UIC

General information on the UIC Masonry Arch Bridges project

10.50 – 11.10 Background, organisation of work, participants, project phases, tasks, deliverables, dissemination of results
Introduction of IRS 70778-3 (Recommendations for the inspection, assessment and maintenance of masonry arch bridges)

Z. Orban,
project manager

11.10 – 11.50 **Behaviour, inspection and assessment of masonry arch bridges**

General principles

W. Harvey

11.50 – 13.00 **Lunch**

Inspection and testing for assessment

13.00 – 14.40 Defects of masonry arch bridges & Defect Catalogue J. Martín-Caro
Testing methods Z. Orban, A. Tomor
Load tests on arches N. Gibbons

14.40 – 15.10 **Coffee Break**

Analysis tools for assessment

15.10 – 17.00 Simple first level tools W. Harvey
Archie-M
LimitState:RING M. Gilbert
Finite Discrete Element Modelling M. Gilbert, N. Gibbons
Assessment of arches with defects J. Martín-Caro

Programme - Day 2 – 19/10/2018

8.30 – 10.30	Serviceability, permissible load, life expectancy	
	Ultimate and permissible limit state behaviour	M. Gilbert
	Degradation of arches under service loading conditions	J. Martín-Caro
	Dynamic behaviour of arches	N. Gibbons
	Deterioration due to fatigue & monitoring with acoustic emission	A. Tomor
	Life expectancy & SMART assessment	
10.30 – 11.00	Coffee Break	
11.00 – 11.45	Maintenance and repair	J. Martín-Caro
	Case studies, new developments, discussions	All speakers
11.45 – 13.00	Retrofitting of arches in Zaragoza – Alsasua line. An example of increasing the load capacity by injecting the backfill	J. Martín-Caro
	Assessment of a viaduct in Brixton	W. Harvey
	Extending the service life of arch bridges with precast load dispensing slab	Z. Orban
	Case studies on non-destructive testing of arches	
13.00 – 13.30	Discussions	

Information and contact:		
University of the West of England	UIC	UIC
<p>Ms. Adrienn Tomor Geography and Environmental Management Adrienn.Tomor@uwe.ac.uk</p>	<p>Mr. Harald Sattler Rail System Department SATTLER@uic.org</p>	<p>Ms. Christine Hassoun Rail System Department HASSOUN@uic.org</p>

An event co-organised by:



PÉCSI TUDOMÁNYEGYETEM
UNIVERSITY OF PÉCS

