



Challenging prior decisions relating to existing bridges

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Many existing bridges do not have any, or have very little, historical information available. They may not have an extensive body of evidence about their change in condition over time. In these cases, a considered and pragmatic engineering approach is required. Examples from the UK and Ireland are discussed that demonstrate how challenging prior decisions has resulted in a change of outcome for existing bridges and enabled them to remain in service. These included challenging the assumed condition of structures, scope of inspections, assessment outcomes and decisions, types of intrusive investigations, the use of instrumentation and monitoring, and ensuring that touching distance inspections were undertaken. Case studies are discussed that capture works associated with existing bridges of various forms including: in-situ post-tensioned concrete, precast prestressed concrete, in-situ reinforced concrete, masonry arch and steel half-through truss.

Keywords: existing bridges; inspections; intrusive investigations; assessment; PTSI; deterioration.

1 Introduction

It is best practice to use inspections over time to create a body of evidence about the condition of existing bridges and if / how this is changing. Inspections typically comprise a combination of routine surveillance, general inspections, principal inspections and special inspections. Progression of deterioration can then be monitored. and operational and financial risks and costs managed effectively. This type of approach is described in industry guidance such as the UK Road Liaison Group (UKRLG) Well-Managed Highway Infrastructure: Code of Practice [1].

While many bridges in the UK and Ireland have extensive historical records including design records, as-built drawings, inspection reports and maintenance records, others do not. The

reasons for not having extensive historical records can be wide-ranging. This situation can be particularly prevalent amongst what might otherwise be regarded as low-risk bridges (e.g. masonry arches on lowly trafficked roads not otherwise showing signs of distress) or owners of bridges who are not in the transportation infrastructure industry otherwise (e.g. privately owned bridges). Where there is little information available, it can be challenging to be confident when making decisions about the future works required at a bridge. In some cases, a considered approach by experienced engineers including targeted inspection, investigatory and assessment works can greatly aid such decision making.

This paper discusses case studies undertaken by the authors' employer Roughan & O'Donovan.