BOF

Bridge Owners' Forum

Report No.4 to the Bridges Board on the activities of the Bridge Owners Forum (BOF) for 2006/07

For presentation at the Bridges Board Meeting, Wednesday 17th October 2007

HIGHLIGHTS OF 2006/07

Membership

During the past year the membership of BOF has expanded to include the National Road Authority of Ireland (NRA), represented by firstly Liam Duffy and subsequently by Dr Albert Daly, and the Manchester Ship Canal Company (MSCC) represented by David Stork.

The primary areas of focus for BOF have included the following:

Dissemination of information / Technical reviews

Presentations have been given on the following topics:

1. Masonry arch bridge strengthening techniques – technical evaluation with 4 contractors/consultants plus a panel of 3 masonry arch bridge academic experts (Professor W.Harvey, C.Melbourne and J.Heyman).
2. Review of criticisms by Prof. W.Harvey of current masonry arch bridge strength assessment methods (independent review commissioned with
3. Presentations on Strategic vision and priorities by Chairman of the Bridges Board, R.Fish and P.Foskett (DfT/RLTSF3).
4. A technical session on masonry arch bridge strengthening methods was held at BOF17. Four contractors were invited to present the technical details of their respective systems to BOF and academic experts (Professors W.Harvey, C.Melbourne, J.Heyman). A panel discussion was held after presentations from each of the contractors.
5. Liam Duffy from the NRA outlined the Irish EIRSPAN bridge management system.
6. A presentation on novel computer vision technology for geometric modelling structural forms was given by consultant JonesMarine.
7. A BOF working group led by Graham Cole & Rod Howe is preparing a BOF response to the output from the peer review carried out by 4 leading academic experts [C.Melbourne (Salford), T. Hughes (Cardiff), M.Gilbert (Sheffield)., S.Garritty (Leeds)] in response to concerns raised by Professor W.Harvey relating to the current methods adopted in the codes and by practitioners for assessing the strength of masonry arch bridges.
8. A BOF working group led by Stephen Pottle has been set up to examine targets on environmental issues and the influence this is having on bridge management.

Review of the role of UK RLG

The Chairman of BOF submitted a written report in response to an invitation by Elizabeth Hopkins to comment on the effectiveness of the UK RLG. (This report is available on the BOF website).

International co-operation

The co-ordinator of the EU's European Construction Technology Platform (ECTP) on Networks, Dr Livia Pardi from Autostrada in Italy, explained the role of the ECTP in formulating the research priorities for the next EU research programme (Framework 7). The first calls for research in this programme were issued in 2007 with calls relating to transport networks expected in early 2008.

International Bridge Forum (IBF)

An International Bridge Forum, originally proposed for 2005 but subsequently postponed, is now planned for September 2008. Senior engineers from major bridge authorities and research organisations abroad will be invited to a 3 day Forum to allow detailed comparison of innovations and new technologies in bridge engineering around the world.

Identifying research needs and priorities

An updated BOF document, titled Challenges 2007/8, has been disseminated to the bridge research community via the BOF website and email. This outlines the priority areas of interest for the Bridge Owners where research is needed to improve the management of the bridge stock in the UK. (http://www.bridgeforum.org/)

A revised BOF research proposal pro-forma has been adopted to minimise the bureaucracy involved in the preliminary submission of research ides for consideration by BOF. This may be downloaded form the BOF website (http://www.bridgeforum.org/).

A new Key Issues for Research document has been completed which lists specific problems faced by bridge owners (also available from the BOF website). The Owners have criticised the lack of relevance of much of the research presented to them by the academic community at a previous Bridge Researchers' Forum and this document aims to give a lead to the researchers to assist them identify new projects which will address these issues..

Fifteen research proposals were reviewed during the year. From this list two were submitted to the Bridges Board for consideration for funding in 2007/08. In addition a consultancy type project to scan existing HA research reports was also submitted.

Financial support for BOF and BOF research projects

Funding for BOF, which has been provided by the DfT, has been renewed for 3 years from April 2006 until the end of March 2009.

SUMMARY OF STATUS OF RESEARCH PROJECTS INITIATED BY BOF

2003/04 - completed

1. *Masonry arch bridges: condition appraisal and remedial treatment* **– published**

This best practice guide for the management, condition appraisal and repair of masonry and brick arch bridges has been published as CIRIA Document C656. The contactor was CIRIA / Mott MacDonald. This is the first of several BOF initiated projects to be published and makes a welcome addition to the information available to bridge engineers in this key area.

(http://www.ciria.org/acatalog/C656.html)

2004/05 – both projects near completion

1. *Dry stone retaining walls: condition appraisal and remedial treatment*
   – CIRIA/Mott Macdonald
   – joint funding (CSS, DfT, Network Rail, DoRD(NI))
2. *Iron and steel bridges: condition appraisal and remedial treatment*
   – CIRIA/Gifford WSP
   – joint funding (DfT, Network Rail)

2005/06 – No new projects due to Ministerial moratorium

2006/07 – BOF advised projects approved but not commissioned as yet

1. Revision of BS6779 Part 4 (£100k for each of 4 years)
2. Training and qualification of bridge inspectors (£50k)
3. Bridge deck slabs with non-metallic reinforcement (£55k)
4. Carbon composites for the strengthening of steel structures (£65k)

2007/08 – BOF advised projects approved but not commissioned as yet

1. Automating bridge inspections (£50k)
2. NDT of macalloy bars tieing prestressed beams (£146k)
3. Scanning of HA research reports (consultancy project**)** (£30k)

2008/09 – submitted to Bridges Board for approval: 2008/09

1. Review of Road Restraint Systems
2. Design, Maintenance, and Inspection of Concealed Metal Connectors and Bearing Pins in Moving Bridges
3. Surface Preparation for Metallic Structures – Methods for Repair and Rehabilitation
4. Best Practice for Specifying Long Life Road Surfacing for Bridges
5. Life Expectancy of FRP-Strengthening Schemes
6. Quantifying the Reliability of Non-intrusive Inspection Techniques for Multi-strand Bridge Cables using Probabilistic Assessment
7. Monitoring of a Novel Flexible Concrete Arch Bridge using Fibre Optic Sensors

Issues facing BOF

The most pressing issue facing BOF is the lack of progress achieved in commissioning the research projects submitted to the Board for consideration in 2006/07 and 2007/08. BOF has been advised that all the projects listed above had been approved yet no contracts have as yet been let. As a result, the credibility of BOF, the Bridges Board, the UKRLG and the DfT are all being questioned by the wider bridge research community. A very substantial amount of time and effort has been invested by the researcher proposers, the project referees and the BOF members in preparing, reviewing and prioritising those projects deemed by the Owners to be of high priority to the management of their bridge stock. It is thus considered extremely important that a clear line of communication up and down the decision chain from BOF to the Board to the UKRLG to the DfT to the Minister and back be established.

At present no formal procedure for advising the outcomes of each decision stage appears to be in place and BOF has relied on phone calls and emails to the DfT to find out what has happened. This is clearly an ineffective procedure that can potentially lead to confusion and misunderstanding.

It is recognised that the DfT is under significant pressure to deliver a substantial road and bridge maintenance programme with very limited manpower available. BOF wishes to assist the DfT in delivering this research programme and thus commissioned the BOF Technical Secretary, Dr John Menzies, to prepare project specifications, in discussion with the DfT and project proposers, for two University based projects submitted for funding in 2006/07. These specifications have been lodged with the DfT but as yet no further progress on commissioning the work has been achieved.

BOF has also identified the possibility of delivering some of the recommended projects through the existing DfT Research Frameworks and would anticipate that this should simplify the procurement procedure.

Advice is sought from the DfT on how best to progress the research projects in the list above.

Recommendations

1. It is recommended that a formal procedure be introduced for positive notification of the outcomes of each stage of the decision process and the amount of funding allocated to each project in the budget. All parties need to be advised on a realistic timeframe in which a contract can be let.
2. The mechanism by which the proposed projects are administered needs further consideration. BOF currently appoints a spokesperson for each shortlisted project. It would recommend that the Board delegates the technical overview of bridge research projects to BOF, with administration and financial management of research contracts overseen by the DfT.
3. BOF requests the DfT give a written summary of the decision process and timeframe involved in commissioning research projects via the UKRLG route on an annual basis.

Bridge Owners' Forum

The overall goal of the Bridge Owners Forum is to provide a framework whereby there is wide dissemination of bridge research information and discussion on the technical merits of research developments. It also provides a conduit and filter for research proposals to be vetted and promoted to appropriate funding organisations. The net gains to the UK are (i) better co-operation between owners (ii) managers who are kept abreast of the latest research and technological developments and (iii) the more effective use of the UK's resources in managing this key element in the national infrastructure. The meetings have been very well supported with the majority of members attending most of the meetings to date. In view of the time demands on managers today this is possibly the best indicator of the importance and relevance of the Bridge Owners Forum in fulfilling its role to help bridge owners more effectively manage the nation's bridges.

Campbell Middleton
Chairman
Bridge Owners Forum
15/10/2007