

## **BRIDGE OWNERS FORUM**

### **MINUTES OF MEETING BOF16: TUESDAY 13 SEPTEMBER AT KINGS COLLEGE, CAMBRIDGE**

#### **PRESENT**

Campbell Middleton	CUED Chairman	01223 332 814	crm11@eng.cam.ac.uk
Rod Howe	British Waterways	01132 845 231	Rod.Howe@britishwaterways.co.uk
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Jim Moriarty	London Underground Ltd	020 7308 2697	jim.moriarty@thetube.com
Andrew Brodie	Scottish Executive	01312 440 429	Andrew.Brodie@transportscotland.gsi.gov.uk
Ronnie Wilson	DoRD (NI)	02890 540 398	ronnie.wilson@drdni.gov.uk
Brian Bell	Network Rail	020 7557 8355	brian.bell@networkrail.co.uk
Tudor Roberts	Welsh Assembly	02920 826 450	Tudor.Roberts@wales.gsi.gov.uk
Peter Brown	CSS	01865 815 641	peter.brown@oxfordshire.gov.uk
Graham Cole	CSS	0208 541 7317	graham.cole@surreycc.gov.uk
Andrew Oldland	DfT	020 7944 2239	Andrew.Oldland@df.t.gsi.gov.uk
Peter Hill	Large Bridges Group	01482 647161	rachelh@humberbridge.co.uk
Paul Fidler	CUED	01223 332 816	praf1@cam.ac.uk
John Menzies	Technical Secretary	01923 675 106	jbmenzies@aol.com

#### **APOLOGIES**

There were none

#### **INTRODUCTION**

The Chairman welcomed all to the meeting.

#### **1. MINUTES OF MEETING BOF 15:14 JUNE 2005, LEEDS**

The minutes were accepted with corrections to 2 typographic errors.

#### **2. ACTIONS FROM BOF 15 MINUTES**

Minute 3: Assessment of dry stone retaining walls – It was reported that Tudor Roberts would be the Welsh Assembly representative on the project steering group.

It was agreed other actions from the minutes would be covered in later items on the Agenda.

### **3. UPDATE ON BOF RESEARCH PROJECTS**

#### **3.1 CURRENT PROJECTS**

##### **3.1.1 CIRIA Masonry Arch Best Practice Guide – BOF Chair of Subgroup: Brian Bell.**

Brian Bell reported that the work had been delayed a little. Following the final steering committee meeting earlier this year, the contractor, Mott Macdonald, had modified the draft to take account of comments and returned the report to CIRIA. Comments on the returned draft then led to a revision of the draft by Mott Macdonald, which had been returned to CIRIA who had now placed it into the publication process. Brian Bell indicated that a meeting is to be held in November 2005 at which the contractor will present the report. He said BOF could expect to see a hard copy of the final report in the New Year (2006).

The Chairman expressed concern about the delays to the project and also asked about the format of the publication (the original concept had been for it to be produced in a loose leaf format to allow easy updating) and the quality review process for the project. He added that the BOF should send signals to those undertaking BOF projects if BOF has concerns about quality or efficiency of project delivery. A discussion followed.

Brian Bell said that CIRIA has a review mechanism for its published guidance. He said that the format of this publication was to be in line with others that form the ‘family’ of documents. There was some unease about the loose leaf concept due to the ease with which pages can be lost.

Brian Bell said that CIRIA were embarrassed by the delays and were attempting to manage the situation. BOF can be reassured that it is getting what it asked for albeit somewhat delayed. The steering group for this project includes B Bell (Network Rail), R Howe (British Waterways), Ron Ko (HA), W Kerr DoRD(NI) and Graham Cole (CSS). Brian Bell agreed to provide the Chairman with a list of the current project steering group members and a summary of the progression of the project.

ACTION: Brian Bell

The Chairman asked Brian Bell to press for acknowledgement of the BOF role to be included in the Acknowledgements in the report.

ACTION: Brian Bell

##### **3.1.2 Assessment of dry stone retaining walls – BOF Chair of Subgroup: Ronnie Wilson**

Ronnie Wilson said that the steering group for the project (Brian Bell, Rod Howe, John Clarke, Tudor Roberts, Edward Bunting and Ronnie Wilson) has met twice. CSS and DfT are the main funders and the CIRIA project manager is Chris Chiverrell.

Expressions of interest in undertaking the project have been received from Halcrow, Mott MacDonald, Mouchel Parkman and possibly Babbie. A 9-months commission is envisaged and the work is going out to tender at the end of September with the expectation of appointing the contractor in October.

It was considered that the available money for the project (CSS £60k + DfT £30k, + Network Rail £10k, + DRD (NI) £5k) is sufficient.

### **3.1.3 Management of Older Metal Bridges – BOF Chair of Subgroup: J Clarke**

John Clarke said that one meeting of the steering group (Brian Bell, Rod Howe, Jim Moriarty, Edward Bunting and John Clarke) has been held and the next is due next week.

The CIRIA project manager is Samantha Connelly (previously Chris Chiverrell) and the funders are DfT £90k and Network Rail £30k.

Four tenders have been received (Arup, Faber Maunsell, Mott Macdonald and Gifford)

and the tender interviews are to be held on Friday week. Tudor Roberts will attend this meeting. Graham Cole suggested that someone from CSS attend. Peter Brown agreed to attend on the behalf of CSS.

It was noted that Dr Menzies is involved in one tender and will remove himself from any discussions if necessary to avoid any confidentiality issues.

## **3.2 PROPOSED PROJECTS**

The Chairman referred the meeting to the tabled papers giving the final list of research proposals and the discussion document on the revision of BS 6779 Pt 4. The Forum was reminded that the Bridges Board is required to advise the Roads Liaison Group (RLG) on what research projects should go forward this year.

### **3.2.1 Revision of BS6994 Pt 4 (Masonry Bridge Parapets) – Proposer: B Bell**

It was agreed this project has the highest priority. The Bridges Board already has the discussion document which poses options. It was agreed that Option 3 – ‘liability implications’ is a separate issue for the DfT to consider.

ACTION: Andrew Oldland

Brian Bell said that Network Rail is prepared to contribute in the region of £20k to the funding but that the cost of the project will depend on what work is included. In his view a total revision of BS6994 is needed as a support to BS EN1317. The complete programme is expected to cost £400 - £500k. It was recognized that this amount is unlikely to be available in one year from the RLG funding.

The mechanism for the revision process was discussed. BSI might be asked to undertake this but the lack of control of the process, the uncertainty of start date and timescale to completion and the cost of purchase of the revision were seen as substantial disadvantages. An alternative, possibly preferable, was to undertake the ‘revision’ independently and publish the new document through TSO (The Stationary Office) as has been successful for the ‘Code of Practice for the Management of Highway Structures’.

A discussion followed on the options and funding possibilities. It was thought that small contributions to the funding might be obtained from, for example, the CSS and British Waterways. ‘European research funds’ were thought unlikely to help as they are mostly related to new build. The possibility of funding the testing work through an EPSRC project

was discussed but the great uncertainty of obtaining support through this route was seen as a deterrent. The Chairman pointed out that EPSRC projects would be considerably more expensive in future due to new requirements for universities to charge full costs.

BOF members were asked to send details of the funding they could provide to Brian Bell as soon as possible. G Cole agreed to approach CSS for support. R Howe and J Clarke may be able to make a small contribution.

ACTION: All

The Chairman suggested that the project be spread over 4 years at a cost of about £100k per year and it was finally agreed that the project should go forward to the Bridges Board in November on this basis.

ACTION: Brian Bell  
ACTION: Chairman

### **3.2.2 Carbon composites for the strengthening of steel structures - Proposer: Ian May**

Brian Bell reported that Ian May has now amended his proposal which now tackles a number of areas where knowledge is lacking the estimated cost £65k. It was agreed this proposal would go forward to the Bridges Board in November.

ACTION: Chairman

### **3.2.3 Bridge deck slabs with non-metallic reinforcement – Proposer: S Taylor**

Ronnie Wilson reported that the cost to BOF is £35k and Su Taylor, the proposer, is seeking other funders, hence the low ‘BOF cost’.

The Chairman said he was uneasy that there had been no independent peer review process by experts in the subject areas. The Forum agreed that the Chairman should formally seek the proposers permission to obtain confidential independent views from other experts to which the proposers would be invited to respond before the proposals go forward to the Bridges Board.

ACTION: Chairman

### **3.2.4 Training and qualification of bridge inspectors**

It was noted that a view expressed at the Bridges Board was that the cost of £35k is low.

**3.2.5 Summary** – It was agreed that the four proposals would be put to the Bridges Board in November indicating priorities, highest to lowest, for funding as follows:

- |                  |   |
|------------------|---|
| Highest priority | 1. Revision of BS6779                                   |
|                  | 2. Training of bridge inspectors                        |
|                  | 3. Bridge decks with non-metallic reinforcement         |
| Lowest priority  | 4. Carbon composites for strengthening steel structures |

**3.2.6 Other topics discussed** –Andrew Oldland asked about outcomes from the CMI/BOF13 ‘Remote Monitoring’ meeting held last autumn at Jesus College, Cambridge.

The Chairman said that a substantial proposal for research on remote monitoring technologies relating to infrastructure more generally (bridges, water industry and tunnels) are currently being developed for submission to the EPSRC for financial support by Cambridge University, Imperial College, and a number of industry partners and collaborators. He thought this is likely to be of interest to the Forum as these technologies are developing rapidly. Tudor Roberts pointed out that monitoring systems are currently in use on sites in Wales. The Chairman agreed to discuss this with Andrew Oldland and to arrange a discussion session (including an invited speaker?) at a future Forum meeting.

ACTION: Chairman

#### **4. CODE OF PRACTICE FOR THE MANAGEMENT OF HIGHWAY STRUCTURES**

The publication of the Code was noted. Members agreed that current circumstances will lead to their organisations adopting the Code. Graham Cole thought that the Code may contain topics that the Forum may need to work on in the future. There are 17 key recommendations and 80 action steps behind these. He agreed to prepare a note for discussion at the next Forum meeting. Awtar Jandu advised that the HA will be implementing this code of practice.

ACTION: Graham Cole

#### **5. AASHTO GRAND CHALLENGES: US STRATEGIC PLAN FOR BRIDGE ENGINEERING**

The Chairman introduced the document. Peter Hill felt that it was more a tactical document than a strategic one and noted that there was no discussion of sustainability or environmental issues. He noted that large bridges internationally have started defining benchmarks for bridges, which could then be measured and compared. BOF could consider this approach. John Menzies noted that the AASTO approach is quite different to the HA route which focuses on safety, the environment etc. He felt it becomes too narrow quickly and needs a clearer, high level strategy. He suggested that BOF develops such a high level document. Jim Moriarty commented that the two questions used raised the document on accessibility and integration were more socio-economic issues. Members agreed to look further at it during development of the future BOF programme. Brian Bell noted that Grand Challenges 1 & 2 (GC1 & GC2) are being tackled in the £10m EU Sustainable Bridges Project.

#### **6. PROPOSALS/STRATEGY/TECHNICAL TOPICS FOR BOF**

The Chairman invited the Forum to look towards the future by considering the paper by John Menzies titled 'Selecting research proposals for support 2007/8 onwards', the issue of independent review of research proposals, current BOF Terms of Reference and the requirements of the Research Proposal Form.

##### **6.1 Research needs and priorities**

Priority areas for research are identified by several organisations – CSS, Highways Agency and Network Rail.

If BOF has a 'real' problem requiring research, it is important to be able to resource the required work and solve the problem as soon as possible. Some disappointment was

expressed that BOF projects have a 2-year lead time and that funding of work may even then be fortuitous. Some reservation was expressed on the extent that BOF should be trying to generate research ideas particularly in relation to advancing applications of new technology – it was accepted that the BOF emphasis should be on identifying ‘problems’.

It was suggested the Forum, as representatives of bridge owners, could usefully do more to present their problems and needs for solutions to researchers. There is need to tell researchers more on the problems that Forum members face. It was agreed the Chairman and Technical Secretary will discuss the paper on research selection and the AASHTO Grand Challenges with a view to developing a key issues paper that can be presented to researchers at a future meeting and possibly also placed on the BOF website

ACTION: Chairman  
ACTION: John Menzies

It was agreed a Forum meeting in May/June 2006 be held jointly with researchers to allow BOF members to present to them the needs and problems which may be susceptible to solution by means of research and to hear their responses. Most Forum members would like to have a ‘say’ at that meeting. Research representatives from universities, TWI, TRL etc will be invited. The format of this meeting will be discussed at the next Forum meeting in January 2006. The Chairman undertook to investigate possible dates for this one/two day joint BOF/Researchers Forum.

ACTION: Chairman

## **6.2 Terms of Reference**

It was agreed the Terms of Reference be amended to read:

1. To promote co-operation, collaboration and partnership amongst bridge owners.
2. To identify technical and research needs/topics to promote best practice management of bridges and structures.
3. To disseminate information (avoid duplication)
4. To recommend research priorities.

The only change is the replacement in No. 2 of the words “bridge infrastructure” with “bridges and structures”.

## **6.3 Research Proposal Form**

The RLG Research Proposal Form used for the current proposals has included a number of Additional Questions. It was agreed the Chairman and Technical Secretary would examine the Form to see if it can be ‘cut down’ and propose a revision in the light of the paper on selection of proposals and also the New Proposals Forms of the Highways Agency provided for information by Awtar Jandu.

ACTION: Chairman  
ACTION: John Menzies

## **7. EXTREME EVENT PLANNING**

Jim Moriarty gave a presentation on the experience of London Underground following the explosions in London on 7 July 2005. A useful discussion followed of the plans in hand by different authorities to cover preparedness, immediate response and recovery from such events.

## **8. RESEARCH UPDATE**

### **8.1 Highways Agency Research**

Awtar Jandu described the programme of the Highways Agency. The budget as a whole is in the region of £13m - £14m per year of which about £2m relates to bridges and other structures. He referred to the two new forms that the Agency uses for New Proposals, one giving the details of the proposed work and the other being for an assessment of the proposal by an appropriate specialist. These are due for imminent release. These replace the New Ideas Form (PLC1).

Awtar Jandu also described the Highways Agency Procurement Contracts and, in particular the R & D and Consultancy Framework Contracts which are due to be let by the end of 2005. These contracts follow a consultation held during 2003/4 on commissioning Agency work. A Framework Board is to be set up to decide the distribution of work between the contractors.

The Chairman expressed concern about the balance of national resources being spent in the area of highway structures, some £2m being spent on the relatively few but important Highways Agency stock whilst less than £1m appears to be being invested in the much more numerous stock owned by Local Authorities, Network Rail, British Waterways and others, much of which is key to the operation of the UK transport networks.

Although it was thought the remit of the Highways Agency had been widened so that the results of R & D would be available for all UK structures owners, there was uncertainty that this is the case and also that the work commissioned has an appropriate balance related to the whole of the UK bridges stock. Andrew Oldland agreed to clarify the remit of the Highways Agency in these areas and members were asked to provide comments on this situation. Awtar Jandu was asked to consider the possibility of BOF becoming involved at an early stage with the HA in the formulation of the HA's research priorities.

ACTION: Andrew Oldland

ACTION: Awtar Jandu

### **8.2 Network Rail Research**

Brian Bell briefly described progress of the Network Rail programme of research projects. He agreed to provide an update for the BOF website.

ACTION: Brian Bell

#### **8.2.1 Current Projects**

CIRIA tunnels manual – draft has been circulated.

Mining related NDT – B Bell has received report

CIRIA – Rock in Hydraulics (?) – big delay

### **8.2.2 New Project Starts**

Smart Materials (DTI); use of GPR (Edinburgh); Reliability based bridge inspection (University of Surrey); Fatigue crack growth in wrought iron (University of Surrey); Radial pinning (University of Salford); State of Art FRP components (Parsons Brinckerhoff).

### **8.2.3 New EU Programmes**

European Construction Technology Platform (ECTP) will hold its plenary meeting on 25<sup>th</sup> October in Paris. Brian Bell strongly recommends BOF send a delegate to attend this meeting. The Chairman sought volunteers and agreed to check if HA or DFT were sending anyone. If not he offered to attend if it did not clash with his other commitments.

ACTION: Chairman

### **8.3 Other Research**

Andrew Brodie drew attention to a report on assessment of half joints, many of which were ‘failures’. He agreed to provide an electronic version of the report that could be put onto the BOF website.

ACTION: Andrew Brodie

## **9. PUBLICATION AND AVAILABILITY OF RESEARCH REPORTS/PUBLICATIONS**

The Chairman said it was desirable to ensure that future R & D reports can be placed on the BOF website. Ideally all past unpublished HA and TRL research reports should be scanned and made available in electronic form. Resources would be needed for this. Andrew Oldland agreed to ask the Bridges Board to consider providing resources.

ACTION: Andrew Oldland

## **10. BOF SUBMISSION FOR RENEWAL OF FUNDING FOR 2006-2009**

The Chairman introduced the draft report he had prepared on the work of BOF to date and plans for the future. It was agreed that BOF had met its terms of reference well since it was formed in 2000. It was also agreed that two one-day BOF meetings per year plus one 2-day meeting has enabled BOF to make good progress and should be adopted as a template for the future. The important role BOF fulfills in allowing extended discussion on technical issues was emphasised by several members.

The Chairman then described an analysis of BOF income and expenditure for the period 2000 – 2005 and estimated annual costs for the future 2006 -2009. It was clear that a considerable amount of BOF costs had been born by Cambridge University and some Forum members in the early years. The Forum endorsed this case for funding and agreed that the Chairman put the proposal forward for consideration by the Bridges Board in November.

ACTION: Chairman

## **11. INTERNATIONAL BRIDGE FORUM – Format, Agenda, Delegates**

Earlier in 2005, it had been hoped to hold an International Bridge Forum in September 2005 but the lead time had proved to be insufficient and so the event had been postponed. The Chairman suggested that the role of the IBF would be to find out what relevant R & D is in progress abroad, i.e. what work is being done that is relevant to the problems of UK bridge owners.

For this purpose it was agreed that the Forum should prepare a position paper that could be sent to those invited from abroad to attend the IBF for them to respond to during their preparations for input to the event. The Chairman agreed to consider the preparation of the position paper. The envisaged date for the IBF is September 2007. It was considered the position paper should be prepared by September 2006.

ACTION: Chairman

Forum members were invited to suggest to the Chairman names of people to be invited to the IBF from abroad.

ACTION: All

The Chairman asked Andrew Oldland to find out if there were any UK engineers on secondment to or embedded in highway/rail organisations overseas who may be able to provide feedback on bridge developments there, particularly in the US, Canada, Japan, Australia, France and Germany. Awtar Jandu advised he had an engineer from the Japanese Ministry of Land, infrastructure and Transport on a 1 year secondment with him at present.

ACTION: Andrew Oldland

## **12. ANY OTHER BUSINESS**

There was none.

## **13. TENTATIVE DATES FOR FUTURE MEETINGS**

BOF17	Tuesday 17 January 2006 Two presentations on masonry problems and research to be arranged if possible
BOF18	Tuesday 9 May 2006
BOF18	Tuesday 26 <sup>th</sup> September 2006
IBF/BOF	Monday 17 and Tuesday 18 September 2007

It was agreed that future meetings should start at 10.00am rather than 10.30am.

## **CLOSE OF MEETING**

The Chairman thanked those present for attending and closed the meeting.

John Menzies

16 September 2005