Meeting Minutes

IABMAS Technical Committee on Bridge Load Testing

Online, Zoom https://usfq.zoom.us/j/81325171899

Friday June 4th, 9am – 11 am EDT (US Eastern) / 3 pm – 5pm CET (Central European)

Mission: *Bridge Load Testing is a field testing technique that can be used to obtain more information about the performance of bridges. In particular, diagnostic load tests can be used to quantify elements of structural performance such as transverse distribution, unintended composite action, etc. and the information of a diagnostic load test can serve to develop field-validated models of existing bridges that can be used to develop a more accurate assessment of the bridge performance. Proof load testing can be used to demonstrate directly that a bridge can carry a load that is representative of the code-prescribed live load, provided that the bridge does not show signs of distress. Other types of load testing include testing for dynamic properties, and parameter-specific tests. Associated with bridge load testing, the following topics are also of importance: instrumentation during load testing, determination of required load, method of load application, methods of updating assessments using field information, the link between load testing and structural health monitoring, and the uncertainties associated with load testing.*

The IABMAS Bridge Load Testing Committee aims to be an international committee of participants from academia, industry, and bridge owners, which provides a forum for the exchange of ideas on bridge load testing. Best practices as well as the insights from the development of national codes and guidelines will be exchanged among participants from countries that use load testing for the assessment of their existing bridges, those who are exploring the possibilities of this method, and those who are in the process of standardizing the procedures or developing guidelines.

Goals:

- *Organize dedicated sessions to the topic of load testing at IABMAS conferences.*
- *Develop national IABMAS group events on the topic of load testing.*
- *Exchange information on the use of load testing in different countries.*
- *Exchange lessons learned and best practices.*
- *Inform about case studies of bridge load testing.*
- *Communicate load testing guides or standards that have been developed.*
- *Provide a forum for new ideas and applications of technology.*
- *Identify potential research topics.*

- *Establish international collaborations.*

Committee Members

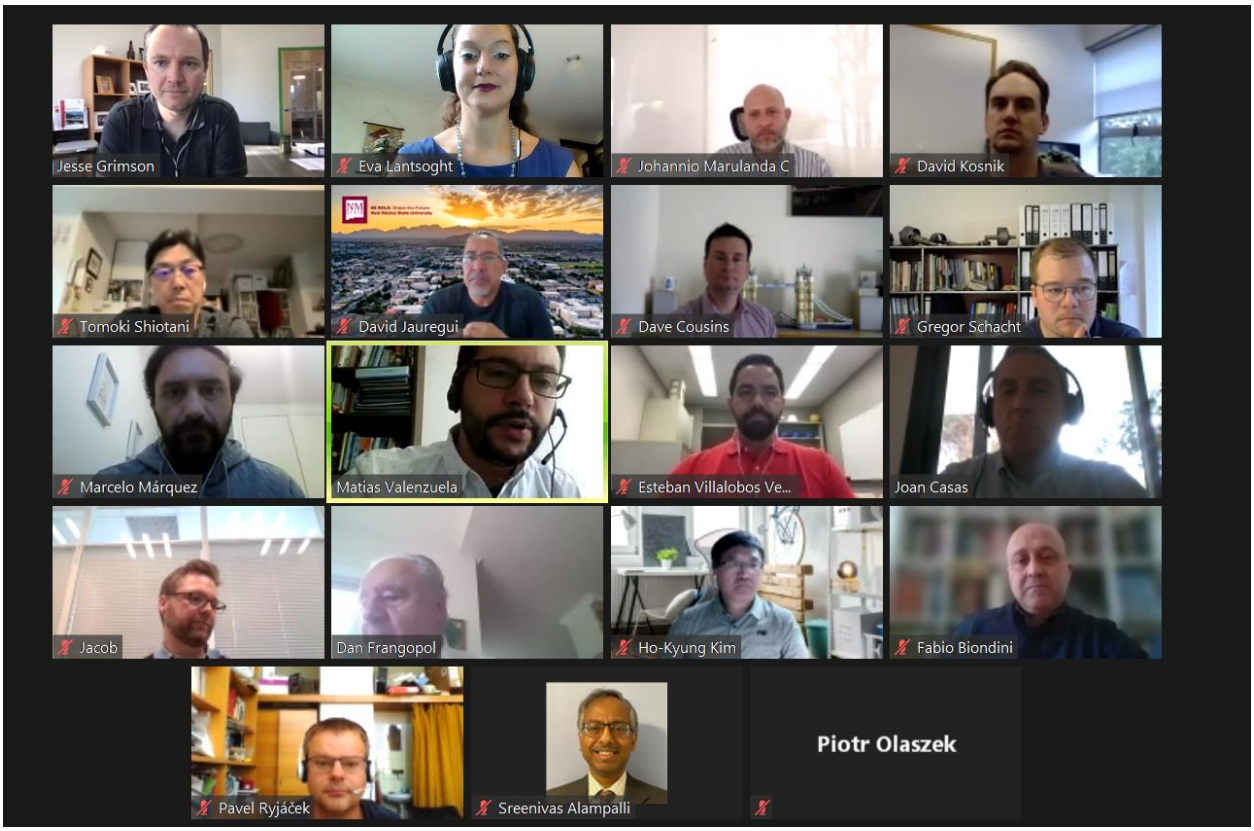
Eva Lantsoght
Jesse Grimson
Sreenivas Alampalli
Fabio Biondini
Jonathan Bonifaz
Anders Carolin
Dave Cousins
Dan Frangopol
David Jauregui
Ho-Kyung Kim
David Kosnik
Marcelo Marquez
Johannio Marulanda
Piotr Olaszek
Joan Ramon Casas
Pavel Ryjacek
Gregor Schacht
Jacob Schmidt
Tomoki Shiotani
Matias Valenzuela
Esteban Villalobos Vega
David Yang

Regrets: David Yang, Anders Carolin, Piotr Olaszek

1. Administrative

1.1. Welcome and introduction

All committee members introduced themselves, their affiliation, and relevant bridge load testing experience.



1.2. Review and approval of agenda

Jesse Grimson gave the overview of the agenda for today.

2. Strategic Planning and Discussion

2.1. Membership

We will look for more members from the bridge owner perspective. Jacob Schmidt suggested to liaise a member with the Eurocode committee.

Regarding the possibility of having friends of the committee, Joan Casas confirmed that IABMAS works with a structure of committee members only. He recommends the group to be as open as possible.

Matias Valenzuela could help with liaising to other bridge owners.

2.2. Review of mission

Jesse Grimson read the mission of the committee and opened the discussion on the mission of the committee.

Comments:

- Fabio Biondini: possibility to include not only field testing, but potentially also testing components from existing bridges in laboratory settings to improve the assessment methods.
- Eva Lantsoght: For those of us working on the research behind the guidelines, component testing is a method often used for research purposes to better understand the behavior of bridges and field observations.
- Jesse Grimson: We will accommodate this in the language of the mission
- Tomoki Shiotani: can we include load testing before and after repair of bridges? Repair effectiveness is an important aspect for the life-cycle of bridges from the perspective of RILEM.
- Dan Frangopol: Suggest having a liaison with RILEM.
- Dave Cousins: there's also the risks associated with load tests and managing the risks associated with the field test.
- Jesse Grimson: rephrase to risk and uncertainties in the mission
- David Jauregui: the part on laboratory testing can go into the end of the final paragraph
- Dan Frangopol: explicitly include when to load test or not, which information to obtain from the load test and thus reduce the uncertainties. Second comment: include how to interpret the results of a load test in terms of overall safety of the structure.
- David Jauregui: include typical uses of load testing for bridge owners who are interested in applying load tests. Current work in New Mexico is load testing of prestressed concrete bridges with shear cracks.

- Dave Kosnik: using AE and other methods is important for evaluating cracking during load testing.
- Jesse Grimson: potential for applying new technology for bridge load testing and bridging to other industries and the technology they use.
- Dave Kosnik: civil structures are inherently different from manufactured devices, which is important to understand the difference in sensing technologies between the fields as well.
- Dan Frangopol: more informed decision-making based on the results of load testing is an important topic as well for managing the life-cycle performance of structures.

2.3. Review of goals

Jesse Grimson read the goals of the committee and opened the discussion on the goals of the committee.

Comments:

- Dave Cousins: would we want to extend the network to other organizations outside of IABMAS?
- Jesse Grimson: we can liaise with other committees. Add the goal to liaise with other committees.
- Dan Frangopol: liaise with national groups of IABMAS to see if there are national (code) committees that deal with load testing.
- Matias Valenzuela: can we include the link to performance indicators, not just liaise to committees that deal with load testing but also reach out to committees that work on bridge evaluation and assessment as well. Will we compile the lessons learned into a report? We should define the way in which we will compile the information.
- Jesse Grimson: what we could work on is a guide on when to load test for bridge owners.
- Eva Lantsoght: we need to consider the different codes and live load models to come to a general recommendation.
- Jacob Schmidt: we have had several discussion on the difficulty on coming to general international guidelines.
- Jesse Grimson: we can put together a document that discusses the separate international practices.
- Dave Kosnik: in the US this would be an NCHRP survey document to get a synthesis of the requirements and approaches used internationally.
- Jesse Grimson: we could address the 3 goals on best practices to develop a report with international practices.
- Joan Casas: IABMAS can help with the dissemination of the results, while the work would be done in the committee itself.

3. New Business

3.1. Technical presentations

1. Supplementary (diagnostic) load testing on the new Queensferry Crossing at Edinburgh – Dave Cousins

Dave Cousins presented the load testing and measurements on the new Queensferry Crossing. The slides of this presentation are attached to these minutes.

3.2. Opportunities for collaboration

Collaborative efforts within this committee.

Liaisons to other organizations.

By next meeting: identify other organizations and committees with similar goals for liaisons.

3.3. Upcoming conferences and events

- IABSE Ghent 2021, September 22-24, 2021: Towards extending the service life of existing concrete infrastructure through advanced assessment methods: https://iabse.org/Events/Ghent-2021/Technical-Programme
- IABMAS 2022, July 11-15, 2022: [MS05] Assessment of existing infrastructure assisted by field data: https://congress.cimne.com/iabmas2022/frontal/MiniSymposia.asp
- IABSE Symposium, Prague, May 25-27, 2022: https://iabse.org/prague2022
- ISHMII-10 conference, June 30 – July 2, 2021 https://web.fe.up.pt/~shmii10/
- RILEM week Kyoto 2022, September 3-9, 2022 https://rilemweek2022.jp/
- Conference on bridges IABMAS Chile, October 27-29, 2021 https://www.pucv.cl/uuaa/escuela-de-ingenieria-en-construccion/eventos/congreso-de-puentes-2021

4. Adjournment

Next meeting – Tentatively: October 2021