International Association for Bridge and Structural Engineering

Young Engineers Colloquium 2019 - YEC2019

PROGRAM

Belgian and Dutch National Groups of IABSE

15 and 16 March 2019 at Eindhoven University of Technology (TU/e), The Netherlands

PROGRAM – Friday 15 March – Presentations

10.00 Opening session – chairs: Bert Snijder (Eindhoven University of Technology) & Bart De Pauw (TUC RAIL & Ghent University)

- Alain Dumortier (Bureau Greisch), Chair of the Belgian National Group of IABSE
- Bert Hesselink (Movares), Chair of the Dutch National Group of IABSE
- Bert Snijder, Vice-president of IABSE and local host

- Keynote lecture
  Vincent de Ville de Goyet (Bureau Greisch): The arch, a tool for the bridge designer

10.50 Break (coffee & tea)

11.10 Oral session 1 - chairs: Bart De Pauw & Bert Hesselink

- Kristof Maes (KU Leuven): Fatigue monitoring of railway bridges by means of virtual sensing
- Frank Rake (Van Rossum Raadgevende Ingenieurs): Steel-supported glazed atrium roof between two adjacent existing buildings
- Ana Sanchez Corujo (Polytechnic University of Madrid and NEY & Partners): The Boekelose Bridge: an innovative structure
- Jan van Asten (Province of North-Holland): Building bridges by IFD-principles
- Nick Gerard (TUC RAIL): Case study of rail-bridge interaction of a large span railway viaduct in Riga

12.10 Poster session 1 - elevator pitches of posters

12:30 Break (lunch)

13:30 Ane de Boer (formerly RWS): Introduction to IABSE and Young Engineers Program

13:40 Oral Session 2 - chairs: Ane de Boer & Pierre Mengeot (BESIX)

- Jonas Feron (BESIX): Uniformly loaded tensegrity bridge design via morphological indicators method
- Fruzsina Csillag (Arup): Tensile and shear resistance of bolted connectors in steel-FRP hybrid beams
- Heng Fang (Ghent University): Parametric analysis of rib distortion induced stress concentration at rib-to-crossbeam joint
- Nick den Adel (Iv-Infra b.v.): Assessment of existing quay walls by test loading

14.30 Poster session 2 – elevator pitches of posters

15.00 Break (coffee & tea)

15.20 Oral session 3 – chairs: Hans De Backer (Ghent University) & Sander van Alphen (Movares)

- Davide Leonetti (Eindhoven University of Technology): Evaluation of clamping force in hot-driven rivets of the Botlekbrug
- Christophe Peigneux (Bureau Greisch): Pont de l'espace Grotte in LOURDES, movable footbridge upon the Gave de Pau
- Rik Steensels (Hasselt University): Recommendations on end zone reinforcement detailing
  of pre-tensioned concrete girders
- Maikel Croes (Hollandia Structures): Design of complex connections in steel structures

16.10 Poster session 3 - elevator pitches of posters

16.40 Closing session – chairs: Bert Snijder & Pierre Mengeot

- Hans De Backer: Future IABSE activities and IABSE Congress Ghent 2021
- Bert Snijder: Closing words

17.00 Drinks and 3D concrete printing demonstration – Structures Laboratory, Eindhoven University of Technology

19.00 Colloquium dinner – Structures Laboratory, Eindhoven University of Technology

- Walking dinner, with in between:
- Dinner speech by Rob Wolfs (Eindhoven University of Technology): 3D concrete printing on a tabula rasa
- Awards ceremony: Best oral and poster presentations

23.00 End of day 1

3D Concrete printer in Structures Laboratory – Eindhoven University of Technology

PROGRAM - Saturday 16 March – Technical Excursion

Excursion on day 2

09.30 Start excursion by bus to the bridges on the Albert Canal, Belgium – start location: Vertigo Building on TU/e campus

Three building sites are visited: the bridge BR08 in Zutendaal, the bridge BR32 in Ham (Kwaadmechelen) and the bridge BR36 in Eindhout. The bridges are under construction but in different construction phases. These three road bridges on the Albert Canal are part of a project with the aim to increase the clearance height under the bridges along the whole of the Albert Canal. The project was commissioned by Vlaamse Waterweg to the joint-venture Via T-Albert in the form of a PPP-contract for the design, building, financing and maintaining of the bridges.

The bridge type of these bridges is similar: a steel bowstring bridge with steel arches coming together in the central part of the arch. The deck consists of steel main and transverse girders with a concrete deck plate on top of it. The deck and the arches are connected by slender full steel hangers.

The excursion will be guided by the contractor and will be presented partly in Dutch, partly in English language. Participants have to wear sturdy shoes. Shoes, helmets and safety vests will be provided. The excursion is organized in collaboration with FRANKI CONSTRUCT NV. The excursion includes lunch near Geel, Belgium.

More detailed information on the excursion and on the project is given at the end of this program.

15.30 Arrival at Eindhoven – End

Impression of the final bridge at the site Herentals

Global route of bus excursion

Poster sessions

All posters are on show during the whole 1st day till 17.00 hrs. All posters will also be presented by 'elevator pitches'.

Poster session 1

- Hashemi Bahman (Eindhoven University of Technology): Probabilistic approach to evaluate fatigue safety status in steel railway bridges
- Gilles van Stael (Ghent University): Buckling design approach for unstiffened curved plates in uniform shear
- Roald Damoiseaux (Aveco de Bondt): Blok 61 & 63 Strijp-S in Eindhoven, the Netherlands
- Evy Van Puymbroeck (Ghent University): Finite element modelling of residual welding stresses in an orthotropic steel bridge component
- Hasana Haidari (Van Rossum Raadgevende Ingenieurs): Foundation replacement of a building in the centre of Amsterdam

Poster session 2

- Bart Bols (NEY & Partners): Ingelmunster – Connecting the village
- Lies Scheerlinck (Jan De Nul): Execution of Woestijnebrug, Aalter
- Gerrit Van Den Bossche: (Jan De Nul): Semi-Integral bridge over the N31, Bruges
- Margaux Geuzaine (University of Liège): A low-order analytical model to monitor tension in shallow cables
- Rayaan Ajouz (Bouwen met Staal, ABT bv): Optimising productions costs of steel trusses
- Rik Steensels (Hasselt University): Application Centre for Concrete and Construction (ACB²)
- Jeroen Koeken (Iv-Consult b.v.): Structural optimization by using parametric models
- Takahashi Kenryo (NEY & Partners): Numerical Method by Projections for Constrained Form-Finding

Poster session 3

- Amaury Leroy (Bureau Greisch): Some technical aspects considered in the design of high-rise buildings
- Julian Flock (Bureau Greisch): Development of a numerical model for the analysis of ligatures for stacks of metallic plate under impact
- Saurabh Dhanmeher (DIANA FEA BV): Automated infrastructure assessment using DIANA FEA
- Martijn Van den Hoogen (Royal HaskoningDHV): Partly reinforced underwater concrete floor crossing water pipeline
- Jannes van Cauwenberghe (SCIA nv): Numerical calculation of steel fiber reinforced concrete in SCIA Engineer
- Felix Leenders (Mobilis-TBI): Geopolymer concrete – a lifebuoy for the Dutch 'beton akkoord'
- Ikram Talib (Eindhoven University of Technology): Verification of the energy flow analysis method as identification tool for damping in high rise buildings
- Laetitia Koning (Arup): Strategies for design of free-form load bearing structures

Sponsors

YEC2019 would not have been possible without our sponsors:

Detailed information on Technical Excursion – 16 March 2019

The excursion to the Albert Canal bridges starts and ends in Eindhoven, Building Vertigo. The journey is organized by bus transfer in collaboration with FRANKI CONSTRUCT NV. Participants have to wear sturdy shoes. Shoes, helmets and safety vests will be provided. We start at 9.30 hrs. and return to Eindhoven at about 15.30 hrs. Three construction sites are visited as mentioned below.

Construction site "BR08 Zutendaal" (visualization)

The rebuilding of seven road bridges over the Albert Canal is part of a project with the aim to increase the clearance height under the bridges along the whole of the Albert Canal. A minimum of 9.10 meters is desired. An increased clearance height enhances the profitability of the inland navigation in general. It also boosts container shipping in particular. The Vlaamse Waterweg has designated Via T-Albert with a PPP-contract to renew the seven bridges over the Albert Canal. Via T-Albert is a joint-venture, especially founded for this project and the members of Via T-Albert are Willemen Infra, Franki Construct, Aelterman and Hye. With this contract, they agree to a public-private partnership for the design, building and financing of the project. The joint-venture is also responsible for the maintenance of the 7 bridges for a period of 30 years.

Construction site "BR32 Ham"

It concerns the bridges in Eigenbilzen, Zutendaal, Stokrooie, Kwaadmechelen Zwartenhoek, Eindhout, Geel-Stelen and Herentals-Lier. At all locations, bridge type is similar. However, the construction phasing is different. The final design by the joint-venture has been made from a reference design as part of the tender documents. The final design consists of a steel bowstring bridge with steel arches coming together in the central part of the arch. The span length is 128 m. The deck consists of steel main and transverse girders with a concrete deck plate on top of it. The deck and the arches are connected by slender full steel hangers.

Construction site "BR36 Eindhout"

During the excursion, we have the unique opportunity to visit 3 different construction phases of the bridges. We will visit the bridge BR08 in Zutendaal as the least advanced bridge, the bridge BR32 in Ham (Kwaadmechelen) in erection on the spot and the bridge BR36 in Eindhout as it has been made in advance at another construction site and moved by pontoons to its final location. The termination of the construction works is foreseen for May 2020. During the project, special attention is paid to prevent inconvenience as much as possible. Therefore, the Vlaamse Waterweg and Via T-Albert are involved in a dialogue with the communities and other stakeholders. This excursion will be guided by the contractor and will be presented partly in Dutch, partly in English language.