TRANSPORTATION ASSOCIATION OF CANADA
STRUCTURES STANDING COMMITTEE

2013 FALL MEETING
MINUTES OF MEETING

Location: Winnipeg Convention Centre, Ground Floor, Room No. 2
Date: September 22, 2013

Present:

- Darrell Evans, Chair, PEI Dept. of Transportation and Infrastructure Renewal
- Ruth Eden, Vice-Chair, Manitoba Infrastructure and Transportation
- Chris Haines, Secretary, Dillon Consulting Limited, London
- Brian Wood, Past Chair, Stantec Consulting Ltd., Winnipeg
- Michael Paulsen, Associated Engineering
- Doug McMahon, Manitoba Infrastructure & Transportation
- Ron Prychitko, Armtac
- Randy McDonald, Armtac
- Brad Neirnick, City of Winnipeg
- Craig MacFarlane, City of Calgary
- Howard Yea, Saskatchewan Highways and Infrastructure
- David Bésuyen, Alberta Transportation
- Eric Loewen, Aecom
- Bob Ramsay, Aecom
- Emile Shehata, Tetra Tech, Winnipeg
- Des Williamson, Alberta Transportation
- Scott Wallbridge, University of Waterloo
- Stewart Nelson, Ellis Don
- Bill Brockbank, Reinforced Earth Company Ltd.
- Tony Merlo, Ontario Ministry of Transportation
- Jadwiga Kroman, City of Calgary
- Eric Levesque, Canam Group, Structal-Bridges
- Reed Ellis, Stantec Consulting Ltd. – Edmonton
- Kevin Baskin, BC Ministry of Transportation
- Jianping Jiang, MMM Group Limited, Vancouver
- Sylvain Montminy, Delcan Corporation, Ottawa
- Gérard DesGagné, Ministère des Transports du Québec
- Marc Sarrazin, City of Montreal
- Kenzie MacPherson, Atlantic Industries Limited
- Felix Sandron, Vector Corrosion Technologies
- Doug Power, Department of Transportation & Public Works
- Rob Simpson, NB Department of Transportation & Infrastructure
- Kamran Khanzada, Transport Canada
- Alamin Abdullah, TEB, Yukon Government
- Salim Sarwar, DOT, Government of Northwest Territories
- Sam Deeb, MMM Group, Calgary
- Chris Barnes, AMEC Earth & Environmental
- John Alexander, Alberta Transportation
- Marta Flores-Barrios, Manitoba Infrastructure and Transportation
- John Logan, Manitoba Infrastructure and Transportation
- Randy Fingas, Manitoba Infrastructure and Transportation
- Troy Hengen, Manitoba Infrastructure and Transportation
- Drew Monnier, Manitoba Infrastructure and Transportation
- Russ Andrushuk, Manitoba Infrastructure and Transportation
- Evan Fer, Manitoba Infrastructure and Transportation

Distribution: TAC Secretariat
Structure Standing Committee Members

Recorded By: Chris Haines
2013F-1 WELCOME AND INTRODUCTIONS
- Darrell welcomed everyone and thanked everyone for attending.
- Introductions of all in attendance.

2013F-2 COMMITTEE MEMBERSHIP CHANGES/CONTACT LIST
- Roster circulated for additions/updates

2013F-3 PREVIOUS MINUTES
- Correction to spelling of David Bésuyen’s name, Alberta Transportation.
- Moved by Shiraz Kanji, seconded by Ruth Eden to accept minutes as amended. Motion carried.

2013F-4 BUSINESS ARISING FROM PREVIOUS MEETINGS

Bridge Preservation Survey – results
(Ruth Eden)
- Responses from 6 jurisdictions BC, Alberta, Quebec, Ontario, PEI and Manitoba sent to those jurisdictions.
- No further action planned.

Guide to Sustainability of Bridges – update & discuss final document
(Jadwiga Kroman/Shiraz Kanji)
- A need was identified to develop a sustainability guide for bridges to serve as a companion to TAC’s Green Guide for Roads
- Project started January 2013. Consultant was selected, MMM Limited.
- Work has begun, with groupings of 24 areas of focus.
- Tentative draft report and presentation target date is Fall 2014

Guide to Bridge Traffic and Combination Barriers
(Jadwiga Kroman)
- Had a tour of the course across country. Usually 8-20 participants at each session. Course feedback was of the highest rating, well received.
- Project is now closed, copies of guide available for purchase.
2013F-5       CHBDC-UPDATE
(Howard Yea)
• 3rd supplement published April 2013
• Next full edition going for public review late 2013 which typically has a 60 day duration, followed by final edits arising from the comments, with final review by CSA committee and release for publication targeted in summer 2014.
• Goal to reduce the number of supplements in the future (ideally to zero) and use a 5 year cycle.
• Seismic design changes to coordinate with NBCC, which is also being released soon.

2013F-6       ASSET MANAGEMENT-UPDATE
(Tony Merlo)
• Two projects:
  1. Synthesis of asset management practices, has raised $110/130k
  2. Traffic monitoring best practices has raised $35/100k
• Participation in committee is very low.
• Asset management paper session on theme “Reinventing organizations for the next 100 years” for TAC 2014 Montreal.
• Integration of different systems is a common theme and area of discussion.
• Dr. Ralph Haas University of Waterloo has published an eBook entitled “Public Infrastructure Asset Management”, available for purchase from www.mhprofessional.com

2013F-7       CLIMATE CHANGE TASK FORCE-UPDATE
(Zoubir Lounis)
• No report since Zoubir was not in attendance.

2013F-8       CSCE SMSB IX CONFERENCE
(Jadwiga Kroman)
• Short & Medium Span Bridge Conference, international, hosted by CSCE every 4 years in Canada.
• An invitation and overview was provided to attend, to be held in Calgary, July 15-18, 2014.
• Call for abstracts extended to September 30, 2013.
• Plenty of sponsorship opportunities available.
• www.smsb2014.ca
2013F-9  ROUNDTABLE DISCUSSION
(All)

Transport Canada

- Bridges over rail lines – can be a challenge to know who is responsible for inspection and maintenance of these bridges in some cases. There is an expectation that railways are responsible regardless of ownership. Some challenges getting evidence from these inspections.

BC update (Kevin Baskin)

- Succession a focus, with hiring ongoing.
- Evaluating existing bridges for overload permits ...now reducible loads are pushing back...code does not address all categories of bridges...did 1300 overload permits in one year, 5 consultants involved, about $1M cost for consultants.
- Government push to open data with private sector...what is an appropriate type and amount of bridge data to be made available? Have released some bridge condition summaries.
- Seismic updates...BC contingent to promote performance based design for bridges, less prescriptive, more performance-related. Has been a challenge to get integrated into code as it is a newer methodology.

- Climate change adaptation an area of ongoing interest and development by many present.

- Social media is an emerging area of focus, with dedicated resources to improve messaging, using blogs, etc.

Calgary

- Lost 3 small pedestrian bridges in recent flooding, ~16 meter span, to be reinstated ASAP
- Creative procurement method for ABC of these bridges in <1 year.
- Sole source /direct award only permitted during an emergency.
- CM at Risk model has been considered in Winnipeg for this, but not used. Would have a slight premium.

Edmonton

- Stress ribbon bridge, first of its kind in Edmonton. Scott has a colleague who has studied vibration on these kinds of bridges in Europe.
- Lightweight epoxy wearing surface. AT: Longevity has been questionable. Winnipeg: 10 to 15 year lifespan.

Ontario

- Ontario – awarded contract for first cable-stayed bridge in Nipigon, near Thunder Bay.
- WEP issue with tack welding of stirrups in about 500 girders. Independent review panel convened.
Reinforced Earth Company
- Design, construction and inspection guideline – interested in involvement
- CHBDC code – expansion of MSE walls
- Techniques for inspecting soil reinforcement now that inventories are getting older.

Saskatchewan
- Underwater inspection frequency/methods?
  - Calgary has a 5 year schedule...Alberta has a program.
  - BC has a program with divers, and a separate hydrographic inspection (sonar)...moving toward a vulnerability assessment of scour-critical structures to establish a priority list and process to provide extra attention where needed. Divers looking more at structural elements. Hydrographic focussed on scour.
- Integral Abutment performance – some cases of poor performance...
  - Calgary has experienced issues related to settlement of the approach slab. Also joints at far end of the approach slab seem to fail sooner than expected. Joints between approach slabs and wingwalls are a challenge.

Manitoba
- Load rating is an issue. They use AASHTO. They do about 3000 per year. About 1.5 staff dedicated to doing the work internally. Not using consultants. There is a presentation comparing AASHTO and CHBDC load rating methods at this conference.
- MIT hiring a position for structural health monitoring.
- Trying to develop a formula for back charging for overload permits based on incremental damage to bridges under many, repeated loads. An asphalt system exists, but there is a lot of uncertainty, making it difficult to quantify. BC exploring this as well. Alberta also has some preliminary LCC to evaluate this effect, potentially considering SHM.
- Large girders fabricated in MB and shipped to Saskatchewan. Girders tipped over while shipping, early on the route. An investigation is ongoing. Some early takeaways include having a single engineer responsible for all of the aspects of the shipment. Also need to understand what the dollies are designed for. There appears to be an issue with registering and insuring the dollies, since it does not fall under a specific classification.
- MB doing their first full depth precast deck panel bridge using ductal throughout and has studied other jurisdictions, etc. Also cooperating with University of Manitoba to study on options related to grout/ductal and other materials.

MSE walls
- How to evaluate soil reinforcing in an MSE wall? Some walls have corrosion samples placed during construction that can be removed, measured for loss of section and a tensile test completed. Otherwise it is a similar process but need careful choice of sample removal location and possible repairs. AT and BC require installation of inspection straps to be installed. Ground penetrating radar has been explored, but not performing as well as had been hoped.
Newfoundland

- Policy on defects in precast girders? At what point do you reject a girder? Often case by case.
- Guideline policy on climate change impacts on bridges? Discussed at spring meeting. An acknowledgement that it is an issue, but no explicit written policies on this in any jurisdiction. BC is planning a Technical Circular to identifying climate change as an issue to be addressed in principle.

Alberta

- AT working on their own manual for load rating bridges.

2013F-10 TAC CENTENNIAL ACTIVITIES

- Montreal 2014, September 28 - October 1, 2014
- 1200-1400 delegates anticipated
- 4 sessions 1.5 h long versus 2 at 3 hours
- The communication portal is available online at http://www.transportation2014.ca/ with a French version available at http://www.transportation2014.ca/?lang=fr. The web site includes a toolkit (free to download) with logos, posters, advertisements, etc.
- Highlighting transportation individuals over past 100 years. Confederation Bridge may be a candidate.
- Five levels of partnership/sponsorship - contact Gérald for information.
- Standing Committees to decide what special celebration to implement. Darrell opened discussion about what could be done to commemorate 100 year at 2014 Conference. Subcommittee volunteers to consider options: Zoubir, Darrell, Ruth, Chris

2013F-11 MSE WALL GUIDE - DEVELOPMENT

- Submitted to Chief Engineer’s Council, awaiting approval.
- Joint venture between Structures SC and Soils and Materials SC
- Working toward 50k budget, could be higher when scope is finalized.
- Project steering committee to be convened, to determine specifics.
2013F-12 PRESENTATION - THE CANADIAN ARCTIC METHOD FOR RATING HIGHWAY BRIDGES AGAINST CLIMATE CHANGE IMPACTS
Presenter: Anthony Ikpong, M.Sc., P.Eng., Concordia University

- Climate change impacts in the far north have led to development of a functional index system based on replacement cost, consequences of event and user costs.
- Inspection scoring and weighting factors were included.

2013F-13 METAL BRIDGE DESIGN AND REHABILITATION: RECENT RESEARCH AND DEVELOPMENT EFFORTS (Fatigue Retrofitting, Shear Connections for Precast Deck Slabs, Aluminum Use in Bridge Applications)
Presenter: Scott Walbridge, University of Waterloo

Fatigue Retrofitting
- Needle peening primarily, and ultrasconic impact treatment induces residual compressive stresses in weld metal. Potential for life extension
- Tested for variability in quality of workmanship – over and under treating of specimens in tests does not worsen behaviour relative to untreated systems
- An approach to integrate fatigue into BMS.

Shear Connections for Precast Deck Slabs
- Grout timing, durability is a challenge....a desire for a better solution to solve problems (esp. time)
- Panel end connection – fewer shear connectors – looks promising in finite element modelling. No empirical tests to date. (an area of interest)
- Testing of bolted connection – slip occurs a lower load than a CIP shear stud, friction surface does not seem to have much effect.
- Next step to look more closely at the pocketed connections from a fatigue perspective with CISC.

Aluminum Use in Bridge Applications
- New chapter on aluminum structures in CHBDC, released in a supplement.
- Wanted to have process resemble steel section to aid designers in reading.
- Referenced CSA S157, and referred to more recent codes from other jurisdictions.
- Report was prepared and is available in French and English for download at no cost.
- Aluminum tends to be about twice the cost of steel once weight savings are taken into account.
- Aluminum high corrosion resistance, light weight and extrudability
- Aluminum deck v steel has benefits, substituting aluminum girders does not result in savings
- Lighter weight useful for lower crane sizes.
- SAPA Group/AlumaBridge in the US is developing extruded deck products.
ALBERTA TRANSPORTATION – RECENT FLOODS IN SOUTHERN ALBERTA
Presenter: Des Williamson, Alberta Transportation

- Flood was one of the largest events in the last 50 years (effect varies depending on location, what is measured). Largest flow on the Bow river since 19th century. Probably the biggest in terms of cost, breadth of impact. $5 billion impact for the Province.
- Since the 1930's the flooding has not been as severe.
- Hydraulic geomorphology effects...For example, some bridges on the Elbow and Bow River had complete loss of fill behind abutments.
- Takeaways – geomorphology more significant than conveyance capacity, protection for scour generally acceptable, but under review and improvement, and complete prevention of flood damage is impractical.

EXTRA SESSION
Presenter: Brian Wood, Stantec Consulting

- Souris Pedestrian Bridge Replacement (near Brandon, MB)
- Some involvement of military from CFB Shilo Bridge-- Dynamic testing of bridge.
- 4 steel cables, steel cross members, wood deck, cost just over $4 million.
- Video clips shared of military troops marching a standard march, double-time march, etc.
- Longest bridge of its type in Canada: 184 m long (~604 ft)
- Town wanted a “fun” bridge as a feature and tourist destination, but also needed a safe and stable bridge for all users.

OTHER BUSINESS

(Chair)

- Reminder that Asset Management Task Force will be hosting a paper session...members encouraged to submit a paper.
- Spring meeting April 9-16, 2014 at Marriott in Ottawa.
- TAC Centennial 2014 Montreal, then Charlottetown, then Ontario (location TBD)
- FIDIC centennial recognized top 100 structures in the world – Canada’s Confederation bridge was named to the list.

MEETING ADJOURNED AT 4:25 PM LOCAL TIME.