

10:00 A.M. Thursday April 7th, 2017 – Cambridge, Ontario

Present:

Kevin Williams (Chair)	Atlantic	Nick Spence	Atlantic
Bruce Matheson	Frontier	Lyndsay Dokas	Armtec
Dave Watson	Leland	Lynn Riley	Tee Group
Randy McDonald	Armtec	Byron Nelson	Leland
Kamran Derayeh	ArcelorMittal	Jason Sherwood	Atlantic
Phil Carroll	Atlantic	Ray Wilcock	CSPI

Absent:

Shane Setter	Ironside	Ian Berry	Warner
Mike Mounts	Valfilm	Chris Groot	ES Hubbell

1. Welcome and Opening Remarks

Kevin Williams opened the meeting at 10:00am and welcomed everyone. Go-To-Meeting was used. Attendance was taken and is recorded above.

2. Review Minutes from March 1st, 2017

Minutes were reviewed and a motion for approval was made by **Kamran Derayeh**, second by **Byron Nelson**.

3. Short Term Items to Complete

a) Approve Tech Bulletin 2 for polymer coating repairs (close out)

Discussion ensued pertaining to the first three paragraphs. Kevin made a number edits / changes to the document. Paragraph 3 contains a reference to CAN/CSGB-1.181. This standard was removed in October 2011. The equivalent ASTM standard is A760, referencing A780 for repair. Kevin will update this section. Both Jason and Bruce brought up saw versus plasma / torch cuts on beveled ends that could result in damage to the polymer laminate. This needs to be addressed in the next update to CSA G401.

Action: Phil volunteered to draft a 1st sentence outlining the purpose of the bulletin.

Action: Kevin will circulate the document one last time for any wordsmithing changes.

Action: One finalized, Ray will reissue Technical Bulletin 2, post to the website and include in E Blast.

b) Bolt & Nut Research Updates

MTQ – Report (close out)

CSPI has presented to all ten Dots'. Members are available to use in corrosive environmental sites as per CSA G 401

4.4.2.4

Bolts and nuts should be

- a) galvanized in accordance with ASTM A153/A153M and ASTM F2329 or CAN/CSA-G164, Class 5; or
- b) mechanically galvanized in accordance with ASTM B695, Class 55.

Alternative coatings may be used in more aggressive environments as required by design.

Action: Seek 75-year material service life with MTQ – will be reviewed with Gerard Desgagne at TAC structures meeting in Ottawa on April 22nd.

Action: Leland to markup up Table 1 of MTQ report to correct items such as the coating thickness.

Action: Kevin & Randy to sign off.

Product Specification (close out)

Action: Leland to provide performance results, thickness of coatings, technical specifications, Kesternich report and the technical overview given to MTO to CSPI.

Technical Bulletin (close out)

Kevin made a number of edits and changes. The committee agreed to share this with the NCSPA after it is complete (target date – 1st of May 2017).

Action: Dave to draft a clause indicating silver and black have the same performance.

Action: Kevin to submit the bulletin to the committee for final review. Committee needs to decide if this bulletin will be public or private.

3rd Party Review

RFQ request sent to Pete Ault on February 27th. Ray spoke with Pete on Wednesday, March 1st at 3pm. I explained to him that we would be looking for a review of the test results and an opinion on 75-year material service life. He would review the reports from MTQ and Leland and provide an opinion on the technical bulletin. He said it would be about 20 hours at \$185 US per hour, or about \$5,000 per Canadian. He mentioned a potential conflict of interest in that he is working on the NCSPA tests for plate and bolts. He understands that he needs to keep these two separate, nevertheless the issue is there. I told him I would be in touch after the committee has reviewed this and that if we do go ahead, we would need the quote to be in writing and firmed up.

On hold for now.

c) Buried Bridge & SWM Presentation Update / Schedule

<u>2016</u>	<u>DOT / Municipality</u>	<u>Engineering Staff Attending</u>
Sept 15 th	MTO Head Office - St. Catharines	8
Oct 11 th	City of Calgary	6
Oct 20 th	NS DOT	8
Oct 21 st	NB DOT	5
<u>2017</u>		
Feb 2 nd	MTO – Thunder Bay Region	10
Feb 2 nd	City of Thunder Bay	6
Feb 6 th	City of Fredericton	1 (Chief Engineer)
Feb 6 th	CFB Gagetown	1 (Chief Engineer)
Feb 8 th	MTQ – Quebec City	5
Feb 15 th	MTO – St. Catharines	8 Regional Bridge Heads
Mar 8 th	OGRA Storm Sewer Course	45 (Heba Ahmed speaker)
Mar 9 th	City of London	10
Mar 14 th	Sask DOT	5
Mar 21 st	City of Edmonton	6
Mar 21 st	Alberta DOT	2 (Certification, Polymer)
Mar 22 nd	BCMOT	6
Mar 23 rd	City of Langley	1 (Chief Engineer)
Mar 24 th	City of Vancouver	2 (Chief Engineer + Assoc.)
Mar 28 th	PEI DOT	2 + 4 Consultants
Mar 29 th	City of St. John's NFLD	8
Mar 30 th	NFLD DOT	5
Apr 5 th	MAN DOT	9
Apr - Jun	MTO Regions	Pending
	Region of Waterloo	Pending
	Kitchener	Pending
	Waterloo	Pending
	Windsor	Pending
	Hamilton	Pending
	Ottawa	Pending

28 Major Canadian Municipalities (Visited thus far):

- | | | |
|--------------------------------|------------------------|------------------------|
| 1. Vancouver, BC | 10. Hamilton, ON | 20. Trois-Rivières, PQ |
| 2. Halifax, NS | 11. London, ON | 21. Saguenay, PQ |
| 3. Toronto, ON | 12. Sherbrooke, PQ | 22. Regina, SK |
| 4. Langley, BC | 13. Windsor, ON | 23. Thunder Bay, ON |
| 5. Kitchener /
Waterloo, ON | 14. Quebec City, PQ | 24. Saskatoon, SK |
| 6. Winnipeg, MB | 15. Fredericton, NB | 25. Sudbury, ON |
| 7. Victoria, BC | 16. Oshawa, ON | 26. St. John's, NF |
| 8. Montreal, PQ | 17. Kingston, ON | 27. Calgary, AB |
| 9. Moncton, NB | 18. Ottawa, ON | 28. Edmonton, AB |
| | 19. St. Catharines, ON | |

Feedback from DOTS and Municipalities:

- 1) Municipalities do not allow steel in Storm Sewers / SWM within the city
- 2) Municipalities allow steel in culverts and bridges (Provincial Specs / CHBDC)
- 3) Obtained city specifications, will review this summer and update Product acceptance list
- 4) Municipalities knew very little of coatings for durability
- 5) Many municipalities are open to new technology and have asked CSPI back to present
- 6) PEI – backfill has to be brought in from NB, thus a bias to concrete structures (analysis required)
- 7) Many referred to past experiences of CSP rusting at the inverts and having short life
- 8) Many concerned with proper installation and manufacturing issues (polymer)
- 9) LEEDS / Environmental Product Declaration not on the radar (Vancouver thinking of it)
- 10) Alberta - Polymer Plate, hole in the valley being damaged by torqueing of bolts
- 11) Alberta Trans – drafted specification change for plant certification and manufacturing outside of Canada clause
- 12) Alberta asked CSPI to post certified Provinces on our website
- 13) Alberta would look at request to move Polymer Laminated to approved material list – Kleskun Hills report (follow up with Joe Filice)
- 14) Edmonton concerned with the ultimate responsibility (Engineer / Designer of record) as nobody wants to take responsibility
- 15) Sask DOT would like a CSPI guideline on optimal equipment (size of compactors) as job sites as per span / size of project
- 16) Sask DOT – what material can they use in environments with resistivity < 200 ohm cm
- 17) Sask DOT – clarification of CSA G401 on # of bolts per coupler size (300mm / 600mm) and who makes semi corrugated couplers (in CSA G401)
- 18) MTO – would like copy of MTQ bolt research report
- 19) MTO – would like a bulletin on pipe rehabilitation covering each issue raised (in ideas for research paper section)
- 20) MTO – would like CSPI to visit to discuss SP Design Manual
- 21) MTQ – testing of Polymer Coated plate in tidal / brackish waters (send Gerard the west and east coast sites)
- 22) MTQ – what type of membrane to be used for bridge water tightness
- 23) Galvalume test site opportunities discussed in NB or NF
- 24) MTO Thunder Bay – would like CSPI to visit this summer to visit polymer / aluminized test site with staff and perform water testing / training
- 25) DOT's are very interested in relining inverts only using polymer coated pipe / plate (Technical Bulletin needed) – Dave suggested to include Fish Baffles
- 26) Minimum diameter of spiral rib pipe is 450mm – median drains are 300mm
- 27) Education is the key / Lobbying politicians when regions are biased
- 28) Full review of the Supplemental Specifications for Municipal Services (DGSSMS) is required
- 29) Many DOT's looking at updating standards (2018 – 2019)
- 30) MAN DOT – moving to certification in 2017 / 2018
- 31) MAN DOT issue – require piles due to soft soil which could compromise cost savings

- MTO issues requiring rehabilitation brought up at latest buried bridge presentation:
 - Flattening of the crown
 - Seam openings – pull apart
 - Haunches buckling – invert rising
 - Crimping of the conduit walls (along the wall haunches)
 - Bolt hole tears

- Excessive deformation of the conduit especially along the crown and shoulders
- Water leakage along plate seams and through bolt holes
- Corrosion and cross section losses (difficult to quantify and repair)

Discussion: See 6A for discussion on call for paper / university association, etc. Kevin asked the committee what CSPI should focus on first. Phil suggested that attention should be paid to Alberta's polymer laminated issue with Joe Filice and the issue of damage in the valley caused by torqueing of bolts. Ray suggested a common theme from a number of DOT's – rehabilitation of inverts using polymer coated plate.

Action: Ray will follow up with Joe Filice once he returns from vacation to move the polymer laminated issue forward.

Action: Prepare Technical bulletin for relining of inverts using the European document and post to the website once reviewed and signed off.

Action: PPC Committee to prioritize the remaining list. Kevin will contact Janine to discuss.

Action: Randy to look at MTO structures and ratings on-line and advise committee of findings.

Action: Ray to go back to Sharif (MTO) and ask him to rank these issues (priority list).

4. Long Term Items

a) ASTM A742 Review & Testing – Polymer Laminated Steel

As per the conference call held on April 21st 2016 it was agreed to proceed with the following tests:

- Adhesion in ASTM A742 (mandrel bend);
- Adhesion in ASTM D3359
- Boiling water adhesion test
- Salt spray.

Samples were supplied to Warner. Tests have not been started yet. No update.

b) MTO Design Manual

Action: Ray to obtain some dates from Tony Merlo and coordinate with Randy & Kevin. Try for a Go-To-Meeting versus a visit.

Action: Ray to send copies of design manuals to Kevin and Randy within the next week.

5. Ongoing Items

a) Kleskun Hills Report

The only question raised at a prior meeting was the performance of the gabion baskets. This will be looked at in 2017. The report was presented to Alberta Transportation on March 21st in Edmonton. Joe Filice who was not present (on vacation) is the key to product approval and specification update.

Action: Ray will call Joe when he returns in mid-April and request acceptance of repair method, product approval and update to Alberta's website (take down 2012 report of 1999 installation and replace with CSPI research reports).

b) Galvalume Project – Summer Update

NFLD may also be interested in a site installation. Thus, NB or NF may be the choice. Kamran asked the committee for direction on what AMD needs to do to move Galvalume forward as an alternative to Aluminized Type II material. Kevin agreed that we need to put together a list / action plan for AMD.

Action: Ray to follow up by end of April. Winter still entrenched in the Maritimes.

Action: Committee be prepared to draw up an action plan for June meeting in Vancouver.

c) Regional Updates – Certification Programs

Region	CSP Protocol	Structural Plate Protocol	Comments
Newfoundland	Presentation made on March 30 th , 2017.	Submitted Polymer Plate Spec. in 2016.	Lack of staff is the reason for slow progress. Will follow up with John Morrissey summer of 2017.
PEI	Presentation made on March 28 th , 2017.	Presentation made on March 28 th , 2017.	Backfill brought in from NB is their #1 issue.
Nova Scotia	Presentation made on October 20 th , 2016.	Changes Specs every 2 years. Download section 12 and send changes in 2 nd Q 2017 to Will Crocker	Would like Guidelines on half plate rehabilitation of the inverts only.

New Brunswick	Presentation made on October 21 st , 2016.	Presentation made on October 21 st , 2016.	Reviewed at October 21 st 2016 Buried Bridge Presentation. Follow – up with Tony.
Quebec	Using 2007 with no CSPI reference. Sent Gerard OGPDPG.	Spoke with Gerard Desgagne on Feb 8 th and bridge group. Under review.	Issues are Polymer Coated plate performance in Tidal / Brackish waters.
Ontario	Webinar held with Art Groenveld. St. Catharines visit on January 18 th 2016.	Met with Tony & Ranko on August 4 th 2016 to discuss changes to spec. Under review.	Continue dialogue with Tony Merlo and Magdy Meleka on SP Design Manual in 2017.
Manitoba	Presentation made on April 5 th . Culvert specifications are scheduled to update in 2017.	Presentation made on April 5 th .	Ruth Eden stated that Manitoba will move to certification in 2017 / 2018.
Saskatchewan	Presentation made on March 14 th . Polymer laminated edges is an issue.	Presentation made on March 14 th .	Will follow the lead of Alberta. Couplers an issue – CSPI will address.
Alberta	Meeting held on March 21 st with Dave & Clayton.	Meeting held on March 21 st with Dave & Clayton.	Current language contains plant certification and Out of Canada clause. CSPI has submitted edits to both.
B.C.	Changes to specification effective January 1, 2017. Both CSP and SPCS require plant certification.	Presentation held on March 22 nd , 2017. Very well received.	Certification pushed back to August 1 st , 2017 as a result of CC asking for delay via the Minister.

d) ASTM

Jesse Beaver of SGH is working on a "Culvert Inspection Manual". Jesse is looking at topics to submit for NCHRP funding. CSPI will submit a few ideas:

- Rehabilitation of inverts using half round plate
- Rerolled Ends – elimination
- Testing of Water Tight Joints in the field
- Life cycle assessment comparing plastic, concrete and steel SWM systems
- Fish Baffle Design
- Maximum deformation of pipe out of round

Next meeting is in May 7-9, 2017 in Toronto. Kevin, Randy and Ray will be attending.

e) NCSPA

Annual meeting is this week in Hawaii. Plant certification issues (mainly cost) are a major topic with the ASSHTO committee. CSPI sent an update to Mike for his TAC meeting.

f) TRB

Sustainable & Resilient Buried Bridges webinar is scheduled for Thursday, April 13th at 2pm. Kevin will be one of the speakers. CSPI has emailed all those on the Standing Structures Committee. Phil asked about the TRB cost comparison versus concrete structure workshop. Kevin has the information from the workshop. Contact Kevin if you want it.

g) CSA – Tee Group Reports

Contacted Ken Phu from CSA with regards to fee / cycle / structure for updating G401 a second time to confirm fees.

- There are no member fees like ASTM
- Standards are paid for by stakeholders and end users who have a vested interest.
- CHBDC is funded by DOT's across the country.
- HDPE is funded by stakeholders
- CSP – CSPI is the major stakeholder

Randy asked about non CSPI members getting the benefit of updating the standard and not paying their fair share.

Action: Ray to address with CSA.

Lynn asked how Tee Group can get specified in Canada. A change in G401 is required as section 4.5.4.1.3. reads as follows:

Polymer Laminate shall comply with ASTM A742/A742M and be a film coating consisting of at least 85wt% ethylene acrylic acid (EAA) copolymer.

Tee Group's film is specified in ASTM A742 / A742M; however, properties are different from EAA. Tee Group was specified in ASTM in August 2014 and CSA was updated in March 2014. Tee Group needs to look at conducting a salt spray test which has great importance in Canada.

Action: Lynn to supply the committee with test reports & USA specifications for review before submitting to CSA for inclusion.

h) AREMA

No update.

i) CSCC / AISI

Next CSCC board meeting is scheduled for June 16th in Milton Ontario.

AISI meetings:	Sustainability Council	June 20 th	Washington
	SMDI 2017 project review	June 21 st	
	SMDI 2018 project submission	August 30 th	

j) MTO Gravity Pipe Update

Kevin mentioned that OPS is attempting to standardize height of cover tables for all materials and standardize a common design method. He has been asked to comment as well as CSPI.

6. Discussion / New Business

a) Scholarship award – papers/project – MTO rehabilitation

Call for papers have been announced at the guest lectures, however a more formal announcement is required. Ideas submitted are as follows:

- 1) Sustainable and Resilient Corrugated Steel Solutions
- 2) Alternative Corrugated Steel Pipe Culvert Joints
- 3) Rehabilitation Guidelines
 - a. Flattening of the crown
 - b. Seam openings - pull apart
 - c. Haunches buckling - invert rising
 - d. Crimping of the conduit walls (along the wall haunches)
 - e. Bolt hole tears
 - f. Excessive deformation of the conduit especially along the crown and shoulders
 - g. Water leakage along plate seams and through bolt holesCorrosion and cross section losses (difficult to quantify and repair)
- a) Kevin spoke with John Newhook from Dalhousie about the call for papers and outlined the scope and literature search required on rehabilitation issues / solutions for number 3.

- b) He also suggested that we may want to partner with MTO and look for co-funding to develop the scope.

Action: The committee was favourable to (b). Kevin will reach out to Janine and communicate where TAC wants to go. Following that, Ray will set up a meeting with Sherif Sidky (Kevin & Randy to attend).

b) Sustainability - Environmental Product Declaration, LEED

CSPI has asked every DOT and City that has been visited if infrastructure projects are looked at with LEED (Leadership in Energy and Environmental Design) certification in mind. Everyone with the exception of the City of Vancouver stated emphatically no. Buildings yes, however culverts, storm sewers and bridges are not on their radar. The City of Vancouver has had talks on LEED, however no plans at this time. Kevin mentioned that the update to CHBDC in 2019 will address sustainability. It may move to the radar at that time.

Action: Move to L/T item.

c) Dave Penny project– elimination of rerolled ends

To be discussed at a later meeting in the year.

d) Technical Issues / Bulletins

L/T Items to be tabled at a future meeting:

- Polymer coated colour other than black. Requests for gray.
 - Deferred to next meeting
- Northern permafrost issue and suggestion that CSPI tackle this - CHBDC committee issue.
 - Deferred to next meeting
- Impact on Polymer Coated Plate from brackish / sea water.
 - Randy sent Ray maritime site
 - There is a site near the Pacific Ocean in BC, that is on the Site Locator Map
 - Ray will do a test this summer in the St. Lawrence near Quebec City

7. Adjourn & Next Meeting

The meeting was adjourned at 12:04pm. Next meeting will be at the annual meeting on June 5th in Vancouver at the Westin Bayshore Inn.

Secretary
Ray Wilcock