

10:00 A.M. Friday October 6th, 2017 – Cambridge, Ontario

Present:

Kevin Williams (Chair)	Atlantic	Kamran Derayeh	ArcelorMittal
Nick Spence	Atlantic	Byron Nelson	Leland
Jason Sherwood	Atlantic	Dave Watson	Leland
Phil Carroll	Atlantic	Jim Evans	AK Steel
Randy McDonald	Armtec	Ray Wilcock	CSPI
Heba Ahmed	Armtec		

Absent:

Bruce Matheson	Frontier	John Buckner	Tee Group
Shane Setter	Ironside	Riley Wilson	Atlantic
Mike Mounts	Valfilm	Ian Berry	Warner
Lyndsay Dokas	Armtec	Marc Warden	ES Hubbell

1. Welcome and Opening Remarks

Kevin Williams opened the meeting at 10:08 a.m. and welcomed everyone. Attendance was taken and is recorded above. Go-To-Meeting was used.

2. Review Minutes from June 5th, 2017

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

3. Short Term Items to Complete

a) Bolt & Nut Research

➤ **MTQ Report update - Product specification**

Ray met with Gerard Desgagne (MTQ) along with three bridge and two lab staff on September 12th in Quebec City. Discussion involved the Leland bolt test results and testing polymer coated plate in tidal waters. MTQ will consider allowing these bolts on structures with footings (however will not allow in inverts given the abrasion results) – decision by year end. With regards to polymer, MTQ are very interested in any test results in tidal waters. We have three sites to look at in 2018 (BC, Quebec and NS) and then report back.

MTQ has taken the submittal into consideration and will advise in the near future.

Byron is currently looking at a new top coat to address the abrasion test results. He expects that new bolts (used in the automotive industry) will be ready by year end.

Randy brought Leland bolts to the meeting that were recently supplied to Armtec that showed coating chipping and not to the quality of NZF3000 that was tested. Byron explained that the bolts that were supplied were a substitute DT1500B and not NZF3000 due to the rush order. He followed up with an email to all TAC members explaining same. All agreed, that we need to move forward, however must ensure that quality is maintained throughout.

CSPI has presented to all ten DOTS'. Members are available to use NZF3000 in corrosive environmental sites as per CSA G401.

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: Byron will send sample NZF3000 bolts to Mike McGough (NCSPA) for their testing project.

Action: Ray will follow up with Pete Ault to determine status of the test.

➤ Technical Bulletin sign off

Edits were made during the meeting using track changes. The title was changed to "Alternatively Coated Fasteners for Structural Plate CSP". Kevin asked the committee for approval and all were in agreement. Following are the remaining actions:

Action: Ray to resend to TAC the updated bulletin for December meeting discussion.

Action: Leland to produce Kesternich testing report.

➤ Estimated material service life

From past minutes:

Kevin asked the committee about sharing this bulletin with MTO. Randy suggested we wait until a response is received from MTQ. Kevin asked Ray to update the committee on the conversation with Pete Ault. Cost for Pete to conduct a review and express an opinion on the MTQ report would be in the neighbourhood of \$5,000 US. Phil expressed concerns about Alberta and BC's abrasion levels which may cause issues with closed bottom structures. Thus, this document is still under open discussion. Issues raised as follows:

- Compare abrasion testing versus seam strength
- Before we post to the website, wait for MTQ to decide or take out the abrasion level out completely

Thus, the following was agreed to:

- Take out the abrasion level out of the document and wait on the MTQ decision and the NCSA tests.
- Decision on usage of bolts will be on a regional basis.
- Change the title to “Enhanced Corrosion Performance Fasteners for SPCS”.

➤ **Publication?**

On hold for now.

➤ **RFQ from Pete Ault**

On hold for now.

b) Rehabilitation Gap Analysis Literature Review

➤ **MTQ Aug 21st meeting update**

S.P. Design Manual / DSM / Specification discussion

CSPI will put together all of the documents related to polymer coated plate as follows:

- All test results (MTQ and others)
- Durability Technical Bulletin
- Map of Ontario – polymer coated sites
- MTQ S.P. Specification
- Provide standard backfill drawings
- Set up a visit to Warner Custom Coating in Guelph (presentation and plant tour)
- Polymer Coated SP is in the Ontario Design Build Specification
- CSPI Technical Committee to decide if we go forward with a S.P. Design Manual
- Target end of year.

After discussion, it appears the best route is to develop/update develop structural plate specific OPS specifications and drawings rather than a design manual.

See 3(b) above. Moved to short term.

Action: Ray to schedule meeting with MTO to discuss the best path forward, and propose preliminary standard drawings/specifications.

c) Rehabilitation of Culverts / Structures Technical Bulletin

- CSPI will be moving forward with a literature review (Queen’s Masters / PHD student under the direction of Dr. Ian Moore)
- CSPI has the knowledge / experience
- Connect with David Lai in the near future

Action: Kevin & Randy to review with Dr. Ian Moore at the next CHBDC meeting in October.

Action: Nick to draft up a proposal for literature review.

d) Galvalume (Kamran Lead)

Site visits and reports were completed & distributed for Port Alberni in June and Algonquin Park in August. NS still looking for an appropriate site. Kamran was positive towards sharing these reports with both MTO & MTQ.

Ray met with Art Groenveld (MTO) on September 15th in St. Catharines to discuss requirements for Galvalume material to be included in the Gravity Pipe Design Guidelines. CSPI needs to put together a technical file (specifications, test results, standards) by the end of the year to present to MTO for review. Art indicated that it would take 3 – 5 years, however with Galvalume already in CSA G401, this time period could be condensed.

Jim suggested testing coating thickness using a dry film thickness gauge with a water probe head at the next site visits. This is a NDT and will compliment the visual inspection and eliminate taking coupons for laboratory testing. He suggested taking thickness readings throughout the pipe if possible and use an average of the results. Mike McGough of the NCSPA has a gauge of this kind and can be purchased for less than \$1,000.

Pete Ault draft report of galvalume white paper available.

Action: Ray to distribute draft galvalume report to interested members. Kamran to review and offer comments.

Action: Ray to acquire a thickness gauge for future testing.

e) OPS Height of Cover Tables

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.

Action: Ray to summarize for the committee for discussion at the December meeting.

4. Long Term Items

a) ASTM A742 Review & Testing – Polymer Laminated Steel (Ian Lead)

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.

Action: Move to Outstanding Items section for the next TAC meeting.

b) SWM/Buried Bridge Action items (Armtec Lead)

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 fall and update Product acceptance list
 - [List will be updated by December meeting](#)
 - [Future – post on members section of website all latest specifications / standards](#)
- 4) Municipalities knew very little of coatings for durability
 - [Education has started during meetings / presentation](#)
- 5) Many municipalities are open to new technology and have asked CSPI back to present
 - [In progress – meetings / presentations to be scheduled](#)
- 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
 - [Education – in progress](#)
- 8) Many concerned with proper installation and manufacturing issues (polymer)
- 9) LEEDS / Environmental Product Declaration not on the radar (Vancouver thinking of it)
 - [Have started the EPD Project](#)
- 10) Alberta - Polymer Plate, hole in the valley being damaged by torqueing of bolts
 - [Initiate technical bulletin](#)
- 11) Alberta Trans – drafted specification changes for plant certification and manufacturing outside of Canada clause
 - [Completed in July. Remove from list.](#)
- 12) Alberta asked CSPI to post certified Provinces on our website.
 - [PPC Committee approval required.](#)
- 13) Alberta would look at request to move Polymer Laminated to approved material list – Kleskun Hills report (follow up with Joe Filice)
 - [Completed in July. Remove from list.](#)
- 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)
 - [CSA update in 2019](#)
- 18) MTO – would like copy of MTQ bolt research report
 - [TAC Committee approval required](#)
- 19) MTO – would like a bulletin on pipe rehabilitation covering each issue raised (in ideas for research paper section)
 - [In progress under 3\(b\). Remove from list.](#)
- 20) MTO – would like CSPI to visit to discuss SP Design Manual
 - [Completed in August. Action items under 3 \(b\). Remove from list.](#)
- 21) MTQ – testing of Polymer Coated plate in tidal / brackish waters (send Gerard the west and east coast sites)
 - [Visit BC / NS test sites for updates. Quebec test started in September 2017.](#)
- 22) MTQ – what type of membrane to be used for bridge water tightness
 - [Check with Ten Cate.](#)
- 23) Galvalume test site opportunities discussed in NB or NF

- NB still looking for a suitable site. Covered in 4 (b). Remove from list.
- 24) MTO Thunder Bay – would like CSPI to visit this summer to visit polymer / aluminized test site with staff and perform water testing / training
 - Scheduling for early November.
- 25) DOT's are very interested in relining inverts only using polymer coated pipe / plate (Technical Bulletin needed) – Dave suggested to include Fish Baffles
 - Covered in 4 (d). Remove from list.
- 26) Minimum diameter of spiral rib pipe is 450mm – median drains are 300mm
- 27) Education is the key / Lobbying politicians when regions are biased
 - In progress. Remove from the list.
- 28) Full review of the Supplemental Specifications for Municipal Services (DGSSMS) is required
 - Winter project
- 29) Many DOT's looking at updating standards (2018 – 2019)
 - CSPI on the list for review / updates. Remove from the list.
- 30) MAN DOT – moving to certification in 2017 / 2018
 - CSPI to follow up
- 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 3b 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: PPC Committee to prioritize the remaining list for December's meeting.

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

c) Technical bulletin on invert reline (Ray Lead)

Action: Move to short term section.

Action: Ray to draft a technical bulletin using the article from Sweden.

d) Thermopolymer plate in brackish/salt water (Ray Lead)

There are three sites requiring a review (1 in BC, PQ & NS). New site in Quebec, Cap A L'aigle – report to be issued. MTQ are extremely interested in these sites as this is their number one concern.

Action: Ray will visit during fall / 2018 travel and will report back once complete.

e) Sustainability (EPD)

Both Atlantic and Frontier have supplied energy information. Once Armtec reports, then we can move this project further with 3rd party review.

Action: Armtec to supply information to Ray.

5. Ongoing Items

a) Kleskun Hills Report – approval of August 10th report

Polymer laminated was moved to the approved material list and 2012 report was taken down from the Alberta website in August.

Action: AIL & Armtec to sign off on report by end of October.

b) ASTM

Next meetings are in November in Atlanta. Randy gave a heads up that Pete Ault is developing a new polymer coated specification. He will be looking for a ballot in the new year. Ray, Kevin, Jason and Mike will be attending. Randy is not able to attend.

c) NCSPA

NCSPA fall meeting will be held in Atlanta following the ASTM meetings. Ray, Kevin, Jason & Mike will be attending. Heba may attend in Randy's place.

d) TRB

Nothing to report

e) CSA G401

Ray met with Ken Phu and Samantha McDiarmid on August 16th to discuss the next revision to G401. Committee will be called upon in early 2018 to review changes / updates with 2019 publication date.

Action: Ray to mock up the standard for December meeting review.

Action: Ray to send the committee a laundry list of revisions for review.

f) AREMA

No update.

g) CSCC (Canadian Steel Construction Council)

Next CSCC board meeting is scheduled for October 25th in Milton Ontario.

h) AISI 2018 Projects Presented

There were two meetings with AISI since June 5th. On June 20th, CSPI presented the status on 2017 projects and on August 30th the 2018 project list for funding. Decision will be made by year end.

2018 Projects Presented

1. Polymer Laminated Steel	10,000
2. CSA Certification Programs	10,000
3. University Outreach Program	5,000
4. Galvalume Projects in 3 Provinces	5,000
5. Floodnet	1,000
6. Environmental product declaration	5,000
7. Life cycle comparison	5,000
8. CSA G401 rewrite for 2019	5,000
9. Rehabilitation of Older Culverts/Bridges	5,000

Total **\$51,000**

6. Discussion / New Business

a) Technical Issues / Bulletins

- Northern permafrost issue and suggestion that CSPI tackle this - CHBDC committee issue.
 - Long Term issue.

b) 10th International Conference on Short & Medium Span Bridges – August 2018 in Quebec City

Action: Ray to submit an abstract on buried bridges / sustainability.

c) Culvert Inspection & Rehabilitation Database

Jim stated that Mike McGough has a checklist for inspection in the field. Relates to item (b) in outstanding items.

Action: Ray to obtain a copy and standardize the process.

7. Adjourn & Next Meeting

The meeting was adjourned at **11:55 a.m.** Next meeting will be on December 7th in Kitchener at the fall meeting.

Secretary
Ray Wilcock