

# Minutes

## Technical Section 4b Flexible and Metallic Pipe

### AASHTO Subcommittee on Materials Webinar

Thursday February 20, 2014  
2:00 to 3:30 PM

#### Introduction/acknowledgement of those present

- Webinar Guidelines

**Attendees:** Katheryn Malusky(AASHTO), Bill Trolinger (TN), Danny Lane (TN), Jason Davis (LA), Chris Peoples (NC), Bill Bailey (VA), Russell Dabbs (AASHTO), Mario Paredes (FL), Steven Ingram (AL), Brian Chestnut (Lane Enterprises), Dave Kuniega (PA), Tim Ramirez (PA), Donald Streeter (NY), Therese Kline (MI), Sam Allen (TRI), Pete Kemp (WI), Kim Spahn (ACPA), Jeff Hite (Cemex), Mike McGough (NCSPA), Oak Metcalfe (MO), Scott Andrus (UT), Shawn Coombs (ADS), Kevin Ledford (GA), Georgene Geary (GA), Evan Rothblatt (AASHTO), Andre Jenkins, Hugh Martin

#### Roll Call:

- Present States on the call: GA, LA, NH, NY, NC, TN, VA
  - o Majority would be 5 for voting purposes during this call.

#### Report on SOM ballot results:

- All items on the SOM ballot passed with 45 affirmative and 0 negative votes.
- Item 74 Revise M167 Corrugated Steel Structural Plate for Pipe arches to incorporate deeper corrugations.
  - o **Comments:**
  - o **RI:**
    - Will these changes still make the specification equivalent to a newer version of the ASTM specification? If so, the ASTM year needs to be updated. If not, a footnote should be added noting the differences.
    - Notes need to be referenced in the standard.
    - Note 1 - In two places, "M 167-\_\_\_\_" should be "M 167M/M 167-\_\_\_\_".
    - Note 1 - Are the blanks for adding the year upon ordering?
  - The chair will contact ASTM to determine if this standard is the same as the current ASTM or a newer version. The Chair will make sure the standard coincides with the proper version of the ASTM specification before publication. Note 1 is correct. The blanks are actually for putting in the year when ordering corrugated pipe of that type. M 167 for English orders and M 167M for metric orders.

- **VA:**
    - Section 5.1.3, Note 2 - if the yield strengths in Note 2 are used in the structural design of the pipe, should the yield strengths be in a separate table?
    - Table 5 - Why is there a differentiation between plates thinner and thicker than 7.87 mm when the value, "4d", does not change?
  - **Action Item:** Mike McGough is going to talk with Dr. McGrath to ask for his opinion on whether or not it is appropriate to incorporate Note 2 into Table 2.
  - **LA:** Is a note mandatory? The properties in Table 2 provide the minimal yield strength. These values are typical. If the typical design strengths in Note 2 are used, this information should be in a table and not in a note.
  - **Chair:** The mechanical properties change in Table 2 after the plate is corrugated. Should we actually have a table for this information? If a mean value or lower value for yield is used for design, then a design is okay; however if the higher yield value is used, this does not seem to be a good practice.
- **Item 75 Revise M36 Corrugated Steel Pipe** to remove steel sheet Zinc and Aramid fiber composite coating
    - **Comments:**
    - **RI:**
      - Will these changes still make the specification equivalent to a newer version of the ASTM specification? If so, the ASTM year needs to be updated. If not, a footnote should be added noting the differences.
      - Most Notes are not referenced in the standard.
    - **No, the changes in M36 are only removing the Zinc and Aramid fiber composite and the asphalt coating options on the pipe. The ASTM version (A 760) has a pipe joint test in their standard, which is not in this standard. The AASHTO standard is not equivalent to ASTM standard.**
    - **MO:**
      - The "notes" have all changed number and the text may need corresponding changes made. See 6.3.
    - **Chair will work with publications group to make sure the notes are in sequential order prior to publication.**
    - **VA:**
      - Section 1.3 - Replace the first two sentences with "Section 9 of this specification lists several different types of pipe joints and applies to corrugated steel pipe.
      - Section 12.1 - change "shall be extended to purchaser" to "shall be available to the purchaser"
    - **A mistake was made with the ballot. The intent is not to have Section 1.3 in the scope unless a pipe joint test is put in Section 9. Motion to remove Section 1.3 and publish without this section in the standard due to oversight on the Chair's part: Motion made by NY, seconded by NH. Motion passed. Section 1.3 will be removed and the revised standard will be sent to the publications staff.**

- **Item 75 Revise M278 Class PS46 Poly (Vinyl Chloride) (PVC) Pipe M 278-12** to specify the industrial scrap center layer in Section 6.3 should have a cell class of 12224. This revision will make AASHTO M278 compatible/harmonized with CSA B182.2 and ASTM F1760 (F1760 actually permits a cell class of 12223 but 12224 exceeds 12223 and is preferred)
  - **Comments:**
  - **FLA:**
    - Suggest research be conducted to explore the durability consequences of this revision.
- **FL: Mario Paredes will prepare a research needs statement (RNS). This RNS will be taken to the SOM meeting this summer and the chair will see if the TS will support this research.**
  - **VA:**
    - Section 3.4 - change "generated by a different company" to "generated by a company different"; change "composition is known" to "composition is provided"
    - The intent of the wording as in Section 3.4 is unclear. Is the intent that the composition of the material is made available or provided by the original manufacturer?
- **Chair: Wants to make sure the industrial reworked material coming from a different company that manufactures the pipe meets the specification. Is this clear in the current standard?**
  - **LA:** Thinks the sentence needs to be cleaned up a bit. "Industrial reworked material generated other than the original pipe manufacturer" should not be allowed.
  - **NC:** External- doesn't have to be from another manufacturer.
  - **LA:** Define what reworked material is.
  - **Chair:** If the TS rewrites the definition and sends to TS for balloting, then the standard must be send to a full committee ballot for confirmation.
  - **NH:** Advises the TS to not publish this change until revisions are made.
  - **Motion** to withhold publication of the new voted standard until questions on section 3.4 and section 3.5 are resolved through SOM ballot was made by NH, seconded by LA
  - **NC:** In favor of the motion, but asks: how are we going to define what "external" recycled material is allowed?
  - **LA:** A better definition can redefine what is allowed for reworked material.
  - **GA:** Because ASTM D5033 was deleted the terminology that described industrial plastic scrap was lost and this standard was changed.
  - **Chair:** This standard was modified based on the Canadian standard.
  - **PA:** Critical issue is the idea of what you want is only material that has been scrapped in the production process prior to it being used in the field.
  - **WI:** Use pre and post-consumer instead?
  - **LA:** Use the terminology from ASTM D5033 within this standard
  - **ACPA and PA:** Instead of saying recycled, be sure to say reworked material. Consider the use of other manufacturer's material that is internal.

- FL: The use of recycled or reworked material is problematic in the fact that while one could potentially confirm this material to requirements of the cell classification, the mixture of various sources gives NO indication of LONG-TERM performance because the reaction of the composition of this 'mixture' is not accounted in the cell class for long-term durability. I believe Mario indicated that Florida would be generally against mixing any multiple sources for reuse because of this fact.
- **Motion Restated:** Remove the changes in Section 3.4 and Section 3.5 and those sections related to external and internal recycled material and not publish these changes in the standard this year.
- **Vote:** States opposed: None, motion passes.
- **Resolution:** The standard will revert back to what was published in the 2013 AASHTO materials book.

## Tasks Force Updates

- Task Force 2013-1 – Chris Peoples (2 photos)
  - The members of the task force: Bill Trolinger (TN), Bill Bailey (VA), Alan Rawson (NH), Chris Peoples (NC) discussed with Mike McGough (NCSPA) what was needed to place a test method for a watertight joint into M36. Mike McGough suggested a visit to a corrugated metal plant (CMP) to demonstrate the proposed test procedure to the task force. A visit to Lane Enterprises in Dublin, VA was completed with Mike McGough in the December. Bill Bailey and Chris Peoples attended this demonstration. Two 2 ½ foot sections of 24 inch metal pipe with end plates welded on to the ends of each section were joined together with a neoprene band underneath a 12 inch flat metal band. The flat metal band was tightened and held in place with three lugs. The water pressure gauge read 10.8 psi. The seams of the CMP away from the joined area were also welded. This demonstration showed the joint would hold (be watertight) at this pressure. The pressure was backed off and all of the water was drained from the pipes. The pipes were reassembled again using a neoprene sleeve/band and a fully corrugated metal band tightened and held in place with three lugs. The water was turn on and the pressure cranked back up again to 10.8 psi for 10 minutes, no leaks were observed. Mike McGough has video of this if you want to see this video. This video can be provided at the annual SOM meeting. The testing was performed in the straight alignment. The Deflection alignment was not completed on this assembly. This facility is not set up to do the deflection test. The NCSPA is working with a test facility to set up a deflection test.
    - FL: Requires manufacturers to do the straight alignment test and then the deflection test. Misalignment is never shown. A day or two is given to do the deflection test. The ASTM D3212 procedure is used to perform the deflection test. The test method for joints does not remotely reflect what is going on in the field. FL wants to come up with a more representative test.
- Task Force 2013-2 – No activity
  - This task force was put together to incorporate a water tight joint test from M36 into PP 63. An acceptable water tight joint test was not prepared in time for the SOM ballot. All pipe industries will be invited to participate in a review of PP63 once an acceptable water tight joint test method for CMP has been incorporated into M36.

## Research

- **NCHRP 20-7 (Task 347) Test Methods for Watertightness of Culvert Joints**
  - Final report due in October 2014
  - Queens University – Dr. Ian Moore
  - The researcher is to come up with test methods for determining the water tightness of culvert joints. The report is due in October. The Chair has invited Dr. Moore to come talk to members at the SOM meeting and he has agreed to do this. The Chair received an email from Evan Rothblatt, asking the Chair to see if Dr. Moore would be interested in talking at the plenary session. Mike McGough has talked with Dr. Moore about doing some testing for the metal pipe industry.
- **Proposed NCHRP 20-7 to Update CANDE**
  - The Chair provided an explanation of why CANDE is used and why it should be upgraded for the LRFD design specifications. A lot of TS members were not familiar with CANDE at the SOM meeting last summer. The Chair wants the members to understand the 20-7 research proposal and if they agree with the proposal work for acceptance of the proposal by SOM and Subcommittee on Bridge. If the CANDE program is completely updated, it would take more funding than a 20-7. If a small upgrade is performed without all the bells and whistles, a 20-7 project can be awarded and completed within the 20-7 budget. This small upgrade would benefit the states in a variety of ways. This program is widely accepted by the bridge engineers, it is inexpensive and available to all users. The Chair is urging the TS to move this forward as a 20-7 project.
    - GA: On the 20-7, SOM only gets one shot. Based on this, if this project isn't going through the bridge group, it may not become the top project for materials (SOM).
    - ACPA: Two TRB committees believe this should be a bigger project than 20-7. TRB can lend support for this to be a bigger project.
    - Chair: If the members want to have a full three dimensional finite element analysis and a sophisticated interface then a full NCHRP project would be needed. There are not enough funds in a 20-7 to cover all the software requirements for a sophisticated interface. Dr. McGrath is a proponent of the scaled down version of CANDE and would like for it to be considered as a 20-7 project.
    - GA: TRB can directly award a 20-7 project to a researcher without going through an RFP.

## Standard Assignments

- Review standards and make assignments – Summer SOM meeting
  - Standards that need champions:
- The Chair will provide a list of standards and assign these standards to states. This will allow these states to be responsible for reviewing these specific standards in the future. Please review the standards and contact Bill Bailey to let him know what standards you would volunteer to review in the future.

## New Business

- PA: AASHTO M294-Wall Buckling: There has been language added regarding buckling, which can be interpreted in several different ways. PA would like this language cleaned up so there isn't room for interpretation. External buckling can be defined by a decrease in load-carrying capacity using a load-deflection curve and the equation in section 9.2.1 when conducting a pipe stiffness test or by observation with the unaided eye. The standard allows these two different interpretations. Section 3.4 is where the definition is. Buckling was observed in the outer corrugated wall in PA when a pipe stiffness test was performed on a Type S pipe. Type S pipe has an outer corrugated pipe wall and a smooth inner liner. In some places in the standard, the liner is called "inner wall" and in other places "inner liner". So is Wall buckling the outer corrugated wall or does it have to be both the outer wall and inner wall/liner? Section 7.5 states that there shall be no evidence of wall buckling, cracking, splitting, delamination, or buckling as defined by a decrease or downward deviation in load-deflection curve when tested in accordance with Section 9.2. Section 9.2 has similar language. PA will put together a package of photos and some test results for the TS to review. PA pointed out that Section 4.1.2, Type S is defined as the outer corrugated pipe wall and smooth inner liner, while Section 7.2.2 has –wall thickness- the inner wall. These are a few discrepancies in the standard. PA considers the outer wall buckling a visual buckling failure. The pipe manufacturer does not consider this a failure and cites the fact that there is no decrease in load as determined by the equation in Section 9.2.1.
  - o Chair: The TS will review the package from PA and the wording in M 294 and make sure the language provides one interpretation, not several interpretations.

**Adjourn**