

AASHTO Subcommittee on Materials

TS 4B

Flexible and Metallic Pipe

Stateline, Nevada

August 6, 2013

Meeting Minutes

- I. Welcome and Opening Remarks:** The Chairman, Mr. Bill Bailey, called the annual meeting of Technical Section 4B, Flexible & Metallic Pipe to order at 2 pm on August 6, 2013 at Stateline, Nevada. He welcomed members and visitors, invited everyone to participate in the meeting.
- II. Roll Call:** Technical Section Vice-Chair, Mr. Chris Peoples called roll. 7 of 14 voting members of the technical section were present. There were 46 visitors: 17 were from member DOTs, 3 from AASHTO, 3 from FHWA, and 23 from industry. See [Attachments 1 and 2](#) for the meeting attendance and membership rosters, respectively.

The seven members of Technical Section present were:

Timothy Ramirez (PA)	Bill Bailey (VA)
Reynolds Toney (OK)	Kathy Malusky (AASHTO)
Chris Peoples (NC)	Alan Rawson (NH)
Bill Trolinger (TN)	

There were 46 visitors present as follows:

Michael Benson (AR)	Gerg Bohn ADS
Derrick Castle (KYTC)	Timothy Lewis (FHWA)
Reid Castrodale (ESC&SI)	Michael McGough (NCSPA)
Sean Coombs (ADS, Inc)	Crista McNish (ADS)
Dan Currence (PPI)	Ross "Oak" Metcalfe (MT)
Carl Douglass (Prinsco, Inc.)	Greg Barykle (ADS)
Brain Chestnut (Lane Enterprises, Inc.)	Allen Myers (KY)
Paul Farley (WV)	Tony Radoszewski (PPI)
Steve Ferry (Microbac Labs)	Dan Edwards (AIL Group)
Aaron Gillispie (WVDOT)	Evan Rothblatt (AASHTO)
Francisco Gudiel (LA DOTD)	Jon Sickels (ADS)
Charles Hasty (GA)	Jack Springer (FHWA)
Darren Hazlett (TX)	Merrill Zwanka (SCDOT)
Trygve Hoff (ACPA)	Darin Tedford (NV)
Robert Horwhat (PA)	Heidi Helmink (Berkaert)
Steven Ingram (AL)	Timothy Toliver (APS)
Chip Johnson (Sprayroq, Inc)	Kurt Williams (WA)
David Kuniega (PA)	Cecil Jones (DES, Inc.)
John Kurdziel (ADS)	Danny Lane (TN)
Steven Lenker (AASHTO)	Iwad Alattar (FHWA)
Darryl Sanders (Contech)	Joel Hahm (Big R Bridge)
Gregory Hebel (Golder Assoc.)	Michael Pluimer (Tri/Environmental)
William Ahern (VT)	Greg Uherek (AASHTO)

III. Approval of Technical Section Minutes: The Chairman advised the technical section that the August 7, 2012 minutes of the meeting in Biloxi Mississippi had been approved at the mid-year meeting held February 12, 2013. He then asked the technical section if there were any changes or amendments to the minutes of the mid-year webinar held on February 12, 2013. Hearing no suggested changes or amendments, PA made a motion to accept the minutes from the 2012 mid-year meeting. The motion was seconded by NH. A voice vote to approve the minutes was taken and passed. There were no dissenting votes.

IV. Old Business:

A. Review of 2012 Subcommittee on Materials (SOM) Ballot

The chair quickly reviewed the SOM ballot items with the technical section members. These items were discussed and resolved at the mid-year meeting.

(1) Ballot Item No. 67 Subcommittee ballot to adopt a New Standard Practice for High Density Polyethylene (HDPE) Conduit RXX-12.

There were 47 affirmative votes, zero negatives and five no votes. The New Standard Practice for HDPE Conduit has been published as R63 in the 33rd edition of the AASHTO standards.

(2) Ballot Item No. 68 Subcommittee ballot to revise M294 Corrugated Polyethylene Pipe.

There were 46 affirmative votes, one negative and five no votes. The negative was from Pennsylvania and was in regards to the change in the definition of buckling in Section 9.2. The negative was resolved by reinserting the term “wall bucking” in Section 9.2 as a visual failing criteria and changing the percent deflection back to 20% from 40%. Pennsylvania’s comments on Section 9.2.1 about placing the proper units next to each parameter in the equations were also accepted. The revised M294 has been published in the 33rd edition of the AASHTO standards.

(3) Ballot Item No. 69 Subcommittee ballot to adopt MP21-11, Provisional Standard for Corrugated Polypropylene Pipe, as a full standard.

There were 47 affirmative votes, zero negatives, five no votes and one comment. MP 21 has been adopted as a full Standard Specification for Polypropylene pipe which has been published in the 33rd edition of the AASHTO standards with the designation M 330.

(4) Ballot Item No. 70 Subcommittee ballot to revise MP20, Steel Reinforced High Density Polyethylene (SRHDPE) Pipe, to increase the diameter to 60 inches.

There were 47 affirmative votes, zero negatives and five no votes. MP 20 for SRHDPE pipe has been published in the 33rd edition of the AASHTO standards with the increased diameter of 60 inches.

B. Review of Technical Section Mid-Year (Meeting) Webinar Tuesday February 12, 2013

After the SOM ballot items were reviewed and discussed. The chairman stated the task for coming year was a TS ballot on standards M 36, PP 63 and M 167. The chair also informed the technical section about the possible solicitation for an NCHRP 20-7 research project on Joint Test Methods to Determine the Hydraulic Performance of Culvert Joints.

C. Task Force Reports

(1) TF 2010-6 M36 Section 7.5.2 Tensile testing of lock seam joint

There has been no action taken by this task force. Two of the three state members have retired on this task force. The task force was looking at the tensile testing of the lock seam joint in M36. The task force members were going to review Section 7.5.2 which requires testing according to T249. According to past minutes there is a visual evaluation of the lock seam that is in conflict with the tensile test in T249. This conflict needs to be resolved.

D. Review of TS 4b Summer Ballot 2013-1 Ballots Items

(1) Item 1 Propose an update to M167 Corrugated Steel Structural Plate, Zinc-Coated, for Field-Bolted Pipe, Pipe-Arches, and Arches M 167M/M 167-09 (2012) to incorporate deeper corrugations for structural steel plate for pipe and arches. (Attachment 3)

There were 11 affirmative votes, zero negatives and three no votes. There were several editorial comments from Washington, Pennsylvania and Virginia. The comments were as follows:

Washington comments:

Table 4: The 20 by 91/ does not appear to be showing up correcting at the bottom of the table or is in error. I think this is supposed to be 9-1/2 inches and is missing the 2 below the slash. Section 6.3.1: Missing a bracket] at the end of 2.00 in. in middle of paragraph.

Pennsylvania comments:

In Section 5.1.3, 3rd line from bottom, revise open bracket to closed bracket (i.e., revise from "[16 by 6 in.[" to "[16 by 6 in.]".

In Table 4, in the M 167 (mm) Section, delete the bottom border below row for Nominal Size 400 by 150.

In Table 5, revise "4d" to "4' with italicized superscript "d" in two locations within Table 5 and also at bottom of Table 5.

In Table 6, in the rows with the proposed revisions and the columns where the proposed revision ends in "]b", revise to "]" with italicized superscript "b". Also make same revision at bottom of Table 5.

Virginia comments:

Table 6 - add a right bracket after "91/2" and superscript the references to footnote "b".

A motion was made by NH to accept these editorial comments into the standard and move the standard to SOM ballot. The motion was seconded by OK. A voice vote to approve the motion was taken and passed by the technical section. There were no dissenting votes.

Action item: M 167 will be moved to SOM Ballot

(2) Item 2 Propose updates to AASHTO M36 Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains M 36-03 (2011)

There were 9 affirmative votes, two negatives, three no votes and several comments. The negatives were from California and Virginia. Pennsylvania provided several comments.

California Negative:

- Test criteria in Section 9.6 should be separate ASTM or AASHTO specification.

The National Corrugated Steel Pipe Association (NCSPA) Chief Engineer, Mike McGough had provided the proposed updates for the technical section ballot. The chair asked Mr. McGough if he would like to address this negative. Mike indicated that NCSPA does not have a problem with developing a separate standard containing this information. NCSPA thought it fit best in M 36 and pointed out that several other standards within TS 4b had test methods incorporated into the standard such as M 294. After some discussion by the Technical section, TN made the motion to find this portion of the negative non-persuasive. NC seconded the motion. A voice vote to approve the motion was taken and passed by the technical section.

- Section 9.2.1, 9.2.2 & 9.2.3 describe soil tight, silt tight and leak resistant requirements differently than Sections 6.1.3, 6.2.3 and 6.3.3 of PP-63. These sections must conform.

The Chair and NCSPA had discussed this portion of the negative prior to the meeting. NCSPA thought the wording and meaning in the proposed update was the same. NCSPA understood the intent is to have sections 9.2.1, 9.2.2 & 9.2.3 describe soil tight, silt tight and leak resistant requirements wording be the same as Sections 6.1.3, 6.2.3 and 6.3.3 of PP-63 6.1.3. The Chair informed the TS that this change would be made before the next ballot.

- Section 9.2.3 & 9.6.1.2 - disagree with allowing acceptance of "leak resistant" joint when tested at zero pressure. Minimum test pressure should be the same for all pipe material types in order to be defined as leak resistant.

The Chair stated this negative by California and the Virginia negative were similar. "These updates are not comparable to the leak resistant criteria established in PP63 for the other species of pipes. Accepting these updates to M36 will allow multiple interpretations of water tightness and leak resistance for metal pipe based on individual project requirements". See Virginia negative below for further details.

The chair asked the TS to consider both of these negatives at the same time. NCSPA opened the discussion by indicating it was not the intent of the updates that a Zero head pressure meets the performance criteria as laid out in PP63. NCSPA recommends taking out the statement "the joint is qualified at zero external pressure".

NH stated that the technical section should keep the pipe joints testing at an equivalent level for all pipe types and therefore made the motion that the technical section should find the CA and VA comments persuasive. This motion was seconded by NC. In the subsequent

discussion the TS Chairman said if a joint is called water tight at zero pressure and then the pressure is increased for that joint, this is setting a different standard than PP63. TS Vice-Chair agrees with this. The NCSPA commented that there is a potential for another standard set by a state or city to require a different pressure. LA DOTD requests a vote on the question under discussion. A voice vote to approve the motion to find the negative votes and comments from CA and VA persuasive was taken and passed by the technical section.

The TS Chairman requested a motion to move the changes within M36 related to references in the specification to a steel sheet Zinc and Aramid fiber composite coating to tech section ballot and concurrent SOM ballot in the fall. PA proposed this motion and NC seconded the motion. During the discussion NH requested that a task force be put together to rewrite the language for joint testing in M36 that would meet the TS approval. TN, NC and NCSPA volunteered to be a part of this task force. The chairman designated this task force as **TF 2013-01**. The charge for this group will be to make sure the joint test in M36 for corrugated metal pipe is equivalent to the other joint tests specified for plastic and concrete pipe in PP63. NCSPA agreed to prepare wording by the end of next week for the states on the task force to review. The target date for completion of this task is September 8th so that the joint requirements could be included in a concurrent TS and SOM ballot. The motion to move M36 with the joint requirements determined acceptable by the task force recommendations to tech section and concurrent SOM ballot was approved by voice vote.

Action Item – Task Force 2013-1 prepare language that makes all joint requirements equivalent. Target September 8th. Send M36 to concurrent TS and SOM ballot.

- Specification carries over coupling band types (e.g., channel bands) that would seemingly not be allowed under PP-63. How is this to be addressed?

This specific comment was not discussed at TS meeting. The chairman will have the task force review this comment with the others related to Section 9 of M36.

- Due to inclusion of new text, several existing references in notes under tables, etc. will require updating.

The numbering of notes will be reviewed in the final version of M36 before publishing.

Note - upon finalization of joint definition language, will similar effort be conducted for AASHTO M 196?

This specific comment was not addressed at TS meeting. This will be a future consideration depending on the actions recommended from task force 2013-1.

Virginia Negative:

The changes to M36 do not follow the intent of PP63 which is to have a comparable leak resistant joint test for metal, plastic and concrete pipes. The plastic and concrete pipe joints are both tested for water tightness at the plant (lab test). There is a zero leakage requirement at a pressure of over 10.8 psi specified in each of their respective ASTM test methods for the plant testing of plastic and concrete pipe. Testing of the joint is performed in both the straight and in a deflected alignment. Once the pipe is installed the acceptance criteria moves to the 200 gals/inch of pipe diameter/mile/day allowance. The 200 gallon limit is the placement tolerance allowed for a pipe to be considered leak resistant after installation.

The corrugated metal standard M36 Section 9.6.1 calls for zero leakage of the joint at zero pressure for 10 minutes for a joint to be classified as water tight at the plant. If the joint allows less than 200 gals/inch of pipe diameter/mile/day at the plant the joint is classified as leak resistant. These updates are not comparable to the leak resistant criteria established in PP63 for the other species of pipes. Accepting these updates to M36 will allow multiple interpretations of water tightness and leak resistance for metal pipe based on individual project requirements.

[This negative was discussed in conjunction with CA negative. A voice vote found both the negative votes and comments from CA and VA persuasive. See discussion under California negative Section 9.2.3 & 9.6.1.2 on previous pages.](#)

Pennsylvania Comments:

- In Section 5.1.9, Suggest revising order of sentence to read "The pipe fabrication method for Type 1 and Type 2 pipe, whether with annular corrugations or helical corrugations (Section 7.1.1) (Note 1)".
- In Section 9.2, 2nd sentence, revise from "covered in 9.2.1, 9.2.2, 9.2.3, and 9.2.4" to "covered in Sections 9.2.1, 9.2.2, 9.2.3 and 9.2.4, respectively".
- In Section 9.2, at end of last sentence, revise from "of 9.5" to "of Section 9.5".
- In Section 9.2.1, last sentence, revise from "0.125 in. shall" to "0.125 in. [3.2 mm]" as dual units seem to have been provided in line immediately above.
- In Section 9.2.3, 5th line from top, revise from "kilometre" to "kilometer".
- In Section 9.2.3, 6th line from top, revise from ""(74kPa)" to "(74 kPa)".
- In Section 9.2.4, 2nd line from top, revise from "described in 9.2.3" to "described in Section 9.2.3".
- In Section 9.3 (i.e., the renumbered 9.3), Note 11, 3rd and 4th lines from top, revise from "Section 9.1" to "Section 9.3" and revise from "Section 9.2" to "Section 9.4" (We believe Section 9.4 would be the correct Section to reference).
- In Section 9.3.4, at end, revise from "Section 9.3.3" to "Section 9.4.3" due to renumbering of Sections for the proposed revisions.
In Section 9.3.7, 4th line from top, revise from "Section 9.3.1" to "Section 9.4.7". The "Section 9.2" in the 5th line still seems to be correct.
- In Section 9.4.1, last line, revise from "9.1.5" to "9.3.5".
- In Section 9.4.4, end of last line, revise from "9.3.1 and 9.3.2" to "9.2.1 and 9.2.2".
- In Section 9.4.5, revise from "Specification D 1056" to "ASTM D 1056" and revise from "Specification C 1619" to "ASTM C 1619".
- In Section 9.6.1.1, revise from "water tight" to "Special Design" (The proposed PP 63, Section 6.4.2 indicates water tight joints are included in Special Design joints - maintain consistency with language in PP 63).
- In Section 9.6.1.2, next to last line, revise from "leak resistant at this" to "leak resistant joining system at this".
- In Section 9.6.2.3, 2nd line from top, revise from "weighted" to "weighed" and revise from "or volume calculated" to "or the water volume calculated".
- In Section 9.6.2.3, 3rd line from top, add a comma after the word "used".
- In Section 9.6.3, revise from "M36 or M245" to "M 36 or M 245".
- In Section 9.6.4, what is the configuration of the test setup to add water for zero head conditions and greater than zero head conditions? A figure or more specific procedure for the test setup should be specified for consistency in the test method and test results.

- In Section 9.6.5, if the retest meets the limit, does it override the original failure and does it now qualify? Suggest adding some language here to make it clear how to handle a failing original test and a passing retest.
- In Section 9.6.6.4, add a comma after the word "agency".
- In Section 12.1, 1st line, revise from "his" to "their".
- In Section 12.1, 2nd line from top, revise from "him" to "purchaser".
- In Section X1.2, Step 1 last line, revise from "= weight of leakage" to "= weight (lbs) of leakage".

The comments related to Section 9 of M36 from PA will be forwarded to task force 2013-1 for consideration. The other editorial comments will be reviewed by the chair and the publication staff in preparation of the next edition of the AASHTO standards.

Summary: The changes within M36 related to references in the specification to a steel sheet Zinc and Aramid fiber composite coating will be sent to concurrent tech section and SOM ballot this fall along with the changes recommended by Task Force 2013-1 in Section 9 of M36 on the joint testing requirements for corrugated steel pipe. Task Force 2013-1 was not able to satisfy the negatives in time for SOM ballot. Therefore M 36 will move forward to concurrent ballot with only the changes related to the steel sheet Zinc and Aramid fiber composite coating. (Attachment 4)

(3) Item 3 Propose update to AASHTO PP 63 Pipe Joint Selection for Highway Culvert and Storm Drains PP 63-09 (2012)

There were 9 affirmative votes, two negatives, three no votes and several comments. The negatives were from California and Virginia. Pennsylvania provided several comments.

California Negative:

- 3.1.7 - Definition of leak resistant joint is inconsistent as it is project related. Should have single basis (e.g., no leakage at 10 psi for 10 minutes).
- 3.1.11 - definition of silt tight joint needs adjustment. Described joint will not stop all particles smaller than 200 sieve (down to microscopic?) from passing. Definition provided in 8.1.2 is more accurate.
- 3.1.13 - Same as above. Joint with 1" opening, even if 4"+ long, will not stop soil particles down to 200 sieve from migrating. Definition in 8.1.1 is better.
- 3.1.16 - Same as above. Should not limit sealing material to only rubber. Given language in various sections, there is considerable overlap between leak resistant and water tight definitions.
- 5.1.1 - Should not say "If infiltration of backfill material is not a concern..". Infiltration of backfill should always be a concern. Definition in 8.1.1 is better.
- Same as comment 2, above. Allowance of such large joint openings is incongruent with stated criterion of limiting passage of particles down to 200 sieve.
- 6.1.3.2 - While not disagreeing with requirement of 7.5" or wider bands, this will preclude many currently manufactured coupling bands. Is that the intent?
- 6.1.3 - Could other band couplers - e.g., channel bands, meet soil tight criterion is provided with a geotextile wrap?
- 6.1.4 - Should some description of acceptable joint configurations, similar to what is provided in 6.1.2.2 for concrete pipe, be provided for plastic pipe?

- 6.2.1 - Provision of AOS>70 as a generic catch all is unlikely to be appropriate for situations where percentage of particles smaller than 200 sieve exceeds 50% of backfill. For very high percentages of very fine particles, likely need specific design of geotextile.
- 6.2.2.3 - Why is test pressure a "maximum" of 2 psi? This means passing a 0 psi test would be acceptable. Prefer criterion indicated in 8.1.2, which mentions passage of a 2 psi test.
- 6.2.3.2 - Due to width of coupling bands, suggest width of geotextile be modified to be a minimum of 12" wider than the width of the band, and not just 12" minimum.
- 6.2.3.2 - Don't agree with definition. Described joints of CMP should have at least gaskets or filter fabric wrap in order to meet silt tight definition, or pass 2 psi test as required of bell and spigot joints.
- 6.2.3.4 - Unclear criterion - "...the maximum hydrostatic test pressure shall be a minimum of 2 psi." seems to be conflicting.
- 6.3.1 - Suggest adoption of specific head or pressure instead of this being project specific. Creates inconsistency as written.
- 6.3.2.3 - Suggest elimination of the word "maximum", or establishment of a lower value as the required minimum pressure.
- 6.3.2.4 - Don't agree that placement of external wrap as described will "verify compliance" as stated. The specification may allow this application to satisfy the requirements for a leak resistant joint, but there is no actual verification.
- 6.3.3.2 - Only mentions rubber gaskets conforming to ASTM 1056. M36 also references use of elastomeric seals conforming to C 1619. Why are these excluded?
- 6.3.3.3 - Suggest elimination of word "maximum", or establishment of a lower value as the required minimum.
- 7.4.1.2 - Reference to C 969 invokes a criterion of 200 gal/in. diam./mi./day at an average pressure head of 3 feet for exfiltration tests. This would seem relatively low and inconsistent with current requirement of 6.3.1 which suggests that leak resistance requirement be project specific.
- Section 8, Table 1, Soiltight Joint Description - why is opening size indicated in metric? Should this be either 1/8-inch or 0.125-inch?
- Section 8, Table 1, Leak Resistant, Laboratory Test - Suggest establishment of a minimum test pressure.

Virginia Negative:

The changes to M36 do not follow the intent of PP63 which is to have a comparable test for leak resistant joints for metal, plastic and concrete pipes. It is confusing to reference a standard that states a joint is watertight at 0 head level (zero psi), since other ASTM methods in this practice refer to a watertight joint at a pressure level greater than 10.8 psi.

New Hampshire proposed that the technical section handle the two negatives on PP 63 in the same way that the negatives were handled previously by having Task Force 2013-1 look at this concurrently with M 36. This motion by NH was seconded by PA. The motion by NH to handle the two negatives in **TF 2013-1** was approved by voice vote.

The chairman restated the charge for **TF 2013-1** will be to make sure the joint test in M36 for corrugated metal pipe is equivalent to the other joint tests specified for plastic and concrete pipe in PP 63. In addition the task force will address the negatives on PP 63 related to Section

6.3.3. The target date for completion of this task is September 8th so that both standards M 36 and PP 63 can go to concurrent TS and SOM ballot.

ACPA commented that they were disappointed that no one from CA or VA was included on TF 2013-01. They were further disappointed that none of the states that participated in the development of PP 63 were part of task force. VT replied that they had confidence in the state representatives selected to the task force.

Pennsylvania Comments:

- In Section 6.1.3.2, to help readability of the sentence, add commas after the words "banded" and the 2nd use of the word "corrugated".
In Section 6.1.3.3, revise from "Section 9.1.7" to "Section 9.3.7" due to proposed revisions in M 36.
- In Section 6.1.4., for consistency with the concrete pipe (Section 6.1.2.2) and corrugated metal pipe (Section 6.1.3.3), add a section indicating which plastic pipe joints are considered soiltight joints.
- In Section 6.2.2.2, 3rd line from top, revise from "the joint design be subjected to a production pipe proof test" to "the joint design, represented by a production pipe, proof tested" so it is consistent/same as language in Section 6.3.2.2 which is more clearly written.
- In Section 6.2.3.3, to help readability of the sentence, add commas after the words "banded" and the 2nd use of the word "corrugated".
- In Section 6.3.2.3, revise from "M 315 (ASTM C 443)" to "ASTM C 443" as M 315 does not exist as of the 2012 published AASHTO Materials Standards.
- In Section 6.3.3.2, 2nd line, revise from "gasket meeting ASTM D1056" to "gasket meeting the requirements of ASTM D1056". Also, consider adding "or elastomeric seal meeting the requirements of ASTM C 1619" as this is a proposed revision to M 36, Section 6.7 (TS ballot item 2).
- In Section 6.4.3, 2nd sentence, revise from "Pipe, gaskets, wraps, and all other" to "Pipe, gaskets, wraps, bands, and all other" to include standard "band" language for corrugated metal pipe in M 36.
- In Section 7.4.1.2, revise from "joint as specified in accordance with" to "joint in accordance with" (i.e., delete "as specified" due to redundancy with "in accordance with").
- In Section 8.1.2, 2nd line from top, revise from "infiltration or fines" to "infiltration of fines".
- In Section 8.1.4.2, 2nd sentence, revise from "Field welding of steel pipe" to "Field welding of corrugated metal pipe".
- In Section 8.1.4.2, 2nd sentence, revise from "be done as specified by M 36" to "be done in accordance with M 36" for consistency in use of language.
- In Table 1, 1st column, revise from "eak-resistant" to "Leak-resistant".

The Chairman would like to finalize PP 63 and move it ahead to a full standard. This will not be completed in a short amount of time. Based on conversations with Caltrans concerning their negatives plus PA comments the chair created a separate task force to work these items out. This will be Task Force **TF 2013-2**. The task force will include VA, Caltrans, WV and a member from each of the pipe industries.

Action Item - The goal of TF 2013-2 will be to review, consider and address all the negatives and comments made by CA and PA that were not related to Section 6.6.3 of PP 63 with the intent of preparing PP 63 for adoption as a full standard practice. The task force would include participation from each of the pipe industries.

Summary: Task Force 2013-1 was not able to satisfy the negatives on M 36, therefore PP 63 will not be submitted for SOM ballot this fall.

(4) Item 4 Propose to update AASHTO M278 Class PS46 Poly (Vinyl Chloride) (PVC) Pipe M 278-12

There were 11 affirmative votes, zero negatives and three no votes. There were editorial comments from Pennsylvania and Washington and one suggestion from ACPA.

The chair provided the comments from PA, WA and ACPA to Larry Gill prior to the technical section meeting. Larry prepared a Document titled "M278 Revised July 30, 2013 post ballot" (**Attachment 5**) which included revisions to address the comments. Larry reviewed this document with the technical section during the meeting.

Pennsylvania Comments:

- In Section 8.6, revise the Section title from "*Impact Strength*" to "*Impact Resistance*" to be consistent with language in Section 10.1 and the title of ASTM D 2444.

This change was made in the revised M 278 document dated July 30, 2013 presented to the technical section by Larry Gill.

- In Section 8.7.2, at end, revise from "Section 8.2" to "Section 10.2".

This change was made in the revised M 278 document.

- In Section 13.3.2, at end, revise from "manufacturer; and" to "manufacturer including data sheets or test results that any industrial plastic scrap added meets minimum cell classification requirements specified in Section 6.3;

This change was made in the revised M 278 document.

Washington Comment:

- This standard refers to ASTM D 5033 that notes it was withdrawn in 2007. If possible it would be better to refer to an active standard.

The reference to ASTM D 5033 was removed from Section 3.4 and the reference documents list. The definitions of internal and external recycled materials from ASTM F 1760 were inserted in Section 3.4 and 3.5. The terms internal and external recycled materials were used to replace the term "industrial plastic scrap" in Section 4.1.2 and 6.3.

ACPA Comment:

- AASHTO M278 should consider deleting the reference to ASTM D5033 and dropping the term, "industrial plastic scrap". D5033 was withdrawn in 2007, and the definition for "industrial plastic scrap" was actually removed from D5033 in 2000 prior to its withdrawal. D5033 was replaced with D7209, "Standard Guide for Waste Reduction, Resource Recovery, and Use of Recycled Polymeric Materials and Products", and I believe the appropriate term in this standard would be "industrial rework".
The reference to ASTM D 5033 was removed from Section 3.4 and the reference documents list. The definitions of internal and external recycled materials from ASTM F 1760 were inserted in Section 3.4 and 3.5. The terms internal and external recycled materials were used to replace the term "industrial plastic scrap" in Section 4.1.2 and 6.3.

After these changes were shown to the technical section, PA made a motion to move this to concurrent tech section and SOM ballot this fall. OK seconded the motion. A voice vote to approve the motion was taken and passed by the technical section. There were no dissenting votes.

Action item: M 278 will be moved to concurrent TS and SOM Ballot

E. Assignment of Standards

The chair asked for volunteers to be stewards for various standards. There are several standards that only have one steward. The goal is to have two members of the technical section share stewardship on each standard. If there are no volunteers, then the chair will review the list and assign members to at least one or two standards.

V. New Business

A. Correspondence

- 1) The Chair received a Memo from Tim McGrath addressed to AASHTO Subcommittee on Bridge T-13 and Materials TS 4b on M 167 outlining the revisions to incorporate deeper corrugations into the standard. These revisions passed technical section ballot and will be on the SOM ballot. **(Attachment 3)**.

B. Friends of the Tech Section

- 1) The chair sent the Technical Section 2013-1 summer ballot to several pipe industry technical experts seeking comments. The Chair received a couple of comments from these technical experts. The chair was unsure whether to publish these comments in the minutes or not since guidance had not been received from AASHTO leadership on the policy pertaining to friends of the committee.
- 2) At the Technical section chair's meeting the new policy was explained. The chair's interpretation of the current policy is that Friends of the committee will be expected to respond to TS ballots and participate in task forces. Friends of the committee will not have a vote but their comments will be addressed by the technical section on technical section ballots. Each Chair will require a person wishing to become a friend of the technical section to submit a letter to the TS chair requesting participation. The letter should state the reasons why the person wishes to be considered as a friend. The request

will be approved by TS chair and then sent to the SOM chair for approval. At the TS Chair's discretion friends can be removed. The friend can be from a company or an industry related to the mission of the technical section. The technical section will only consider one representative from a company or industry.

VI. AMRL/NTPEP

Ms. Katheryn Malusky with AASHTO gave the technical section an update on NTPEP Audits, Work plans and Testing.

- The 2013 HDPE pipe audits are going well.
- NTPEP have completed 24/43 audits.
- Manufacturers have adjusted to the few changes that were implemented at the beginning of the 2013 tour cycle.
- 32 states have responded to a survey NTPEP sent out, asking about the use of ASTM D 3212 the Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals. The following results came out of the survey:
 - 12 states require manufacturers to have this test completed for HDPE pipe they are supplying to the state
 - These states require this test to be done once or every 5 years
 - If NTPEP includes this test in the work plan, 23 states would utilize the data
 - 4 states have their own internal specification for this test
- AASHTO will be sending out a survey to see whether or not states want to have NTPEP audit steel reinforced polyethylene pipe.
- The NTPEP Audit Program for Polypropylene Pipe began in June 2013. Three audits have been completed, with four more to be done this year. The audits went well and operate very similar to HDPE pipe.
- MO, VA, FL, IN and WA utilize the results from these audits.

VII. Proposed Subcommittee Ballot Items/Reconfirmation Standards

- A. There will be three items on the SOM ballot this year. They are: 1) Updates to M167 Corrugated Steel Structural Plate, Zinc Coated, for Field-Bolted Pipe, Pipe Arches and Arches, 2) Updates to M36 Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains, 3) Updates to M278 Class PS46 PVC Pipe. The M167 standard will be a SOM ballot item, while M36 and M278 will be concurrent SOM and TS ballot items. [See Attachment 6.](#)**
- B. There will not be a Reconfirmation ballot for M 252-09 in the fall. It was incorrectly reported that M 252 was due for reconfirmation. M 252 -09 (2012) was updated last year.**

VIII. Proposed ASTM/AASHTO Standard Revisions

There was no proposed ASTM or AASHTO revisions brought to the attention of the technical section.

IX. Research Ideas

A. NCHRP 20-7 Task 347 Joint Test Methods to Determine the Hydraulic Performance of Culvert Joints

A panel for task 347 has been selected, a research needs statement has been prepared and a solicitation has gone out. Currently task 347 is awaiting award.

B. Update CANDE-2014 Proposal

The chair presented a 20-7 Research Needs Statement (RNS) on updating the Culvert Analysis and Design (CANDE) finite element program dedicated to the structural design and analysis of buried culverts of all sizes, shapes and types of materials including corrugated metal, reinforced concrete and plastics. This software program is free to registered users.

There was a little discussion from industry members stating that there are better programs available on the market today and CANDE is only a two dimensional analysis program. The value of investing in this older program was questioned. There was one question or concern that this was a structures tool and the RNS should go through the Subcommittee on Bridges.

The chair requested a motion from TS to move this forward as a 20-7 research needs statement on Thursday. Not hearing any motion or interest from the technical section, this 20-7 Research Needs Statement will not move forward as a recommendation from TS 4b to the full subcommittee.

C. Update of Ongoing Project NCHRP 10-86 Bidding of Alternative Drainage Pipe Systems

Dr. Greg Hebel, who updated the SOM on Project 10-86 at the morning plenary session, asked the TS members to provide any comments they have once they review stage 1 and stage 2 of the ongoing project. Dr. Hebel indicated that these updates on the project are currently available on line. These comments can be sent to Mr. Moe Jamshidi, Chair of SOM, who will forward to Mr. Ed Harrington and the NCHRP panel members.

X. Research Liaison

Each technical section is seeking a volunteer from the membership to serve as a research liaison. This position would be responsible for identifying research opportunities that may present themselves during the technical section meeting. Nobody volunteered during the meeting.

XI. Mid-Year Meeting Webinar

The TS 4b semi-annual conference call/webinar is scheduled for

Thursday, February 20th, 2014 at 2PM (EST)

X. Adjourn

Having no more TS business, the meeting was adjourned at 4 pm.

Attachments:

Attachment 1 - Meeting Attendance Roster

Attachment 2 - Technical Section Membership Roster

Attachment 3 - Update to M 167 to allow deeper corrugations in steel plate and arches

Attachment 4 - Update to M36 to eliminate Zinc aramid composite coating

Attachment 5 - Update to M278 on cell classes and definitions for internal and external recycled plastic

Attachment 6 – Ballot Items

2013 AASHTO's Subcommittee on Materials Meeting
 Stateline, Nevada
 Attendance Sheet for TS 4b Meeting - August 6, 2013

Attending	TS Member	Last Name	First Name	Company	Email Address	Work Phone
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ahearn	William	Vermont Agency of Transp.	bill.ahearn@state.vt.us	802-828-2561
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Alattar	IYAD	FHWA	iyad.alattar@dot.gov	775-687-1266
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Bailey	Bill	Virginia DOT	Bill.Bailey@VDOT.Virginia.gov	804 328-3106
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Baryluk	Greg	Advanced Drainage Systems, Inc.	greg.baryluk@ads-pipe.com	614-658-0126
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Benson	Michael	Arkansas State Highway and Transp. Dept.	michael.benson@arkansashighways.com	501-569-2185
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bohn	Greg	Advanced Drainage Systems, Inc.	greg.bohn@ads-pipe.com	614-588-6830
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Castle	Derrick	KYTC Division of Materials	Derrick.Castle@ky.gov	502-564-3160
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Castrodale	Reid	Expanded Shale Clay & Slate Institute	rcastrodale@escsi.org	7049047999
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Chestnut	Brian	Lane Enterprises, Inc.	bchestnut@lane-enterprises.com	717-532-5959x1207
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Coombs	Shawn	Advanced Drainage Systems, Inc.	shawn.coombs@ads-pipe.com	704-457-8844
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Currence	Dan	Plastics Pipe Institute (PPI)	dcurrence@plasticpipe.org	469-499-1055
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Douglass	Carl	Prinsco, Inc	carld@prinsco.com	320-222-6825
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Edwards	Dan	AIL Group	dedwards@ail.ca	817-713-9163
<input checked="" type="checkbox"/>	<input type="checkbox"/>	FARLEY	PAUL	WV DIVISION OF HIGHWAYS	PAUL.M.FARLEY@WV.GOV	304-558-9880
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ferry	Steve	Microbac Laboratories	steve.ferry@microbac.com	720-406-4800
<input checked="" type="checkbox"/>	<input type="checkbox"/>	GILLISPIE	AARON	WVDOT	AARON.C.GILLISPIE@WV.GOV	304-558-9892
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Gudiel	Francisco	LA DOTD Materials & Testing	francisco.gudiel@la.gov	225-248-4111
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Hahm	Joel	Big R Bridge	jhahm@bigrbridge.com	970-347-2208
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Hasty	Charles	Georgia Department of Transportation	chasty@dot.ga.gov	404-608-4708
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Hazlett	Darren	Texas Department of Transportation	darren.hazlett@txdot.gov	512-416-2456
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Hebeler	Gregory	Golder Associates, Inc.	Ghebeler@Golder.com	770-329-2877
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Helmink	Heidi	Bekaert	heidi.helmink@bekaert.com	404-433-6823
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Hoff	Trygve	American Concrete Pipe Association	thoff@concrete-pipe.org	614-506-4867
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Horwhat	Robert	PennDOT	rhorwhat@pa.gov	717-787-4720
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ingram	Steven	Alabama Department of Transportation	ingrams@dot.state.al.us	334-206-2335
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<input checked="" type="checkbox"/>	<input type="checkbox"/>	Jones	Cecil	Diversified Engineering Services, Inc	cecil.jones@nc.rr.com	919-616-5139
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Kuniega	David	PennDOT	dkuniega@pa.gov	717 787-3966
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Kurdziel	John	Advanced Drainage Systems, Inc.	john.kurdziel@ads-pipe.com	614-658-0211
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lane	Danny	Tennessee DOT	Danny.Lane@TN.gov	615-350-4175
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lenker	Steven	AASHTO	SLENKER@AMRL.NET	240-436-4770
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lewis	Timothy	Federal Highway Administration	Timothy.Lewis@dot.gov	(804)775-3348
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Malusky	Katheryn	AASHTO	kmalusky@aaashto.org	202-624-3695
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<input checked="" type="checkbox"/>	<input type="checkbox"/>	McNish	Crista	Advanced Drainage Systems, Inc.	crista.mcnish@ads-pipe.com	419-422-1305
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Metcalfe	Ross "Oak"	Montana Department of Transportation	rmetcalfe@mt.gov	406-444-9201
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Myers	Allen	Kentucky Transportation Cabinet	allen.myers@ky.gov	502-564-3160
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Peoples	Chris	NCDOT	cpeoples@ncdot.gov	919-329-4000
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Pluimer	Michael	TRI/Environmental	mpluimer@tri-env.com	612-236-8169
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Radoszewski	Tony	Plastic Pipe Institute	tonyr@plasticpipe.org	469-499-1046
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<input checked="" type="checkbox"/>	<input type="checkbox"/>	Toliver	Timothy	Advanced Pipe Services	tim@4pipe.com	419-306-1129
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<input checked="" type="checkbox"/>	<input type="checkbox"/>	Williams	Kurt	Washington State DOT	WilliKR@wsdot.wa.gov	360-709-5410
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AASHTO Subcommittee on Materials

Technical Section 4b Roster

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TS 4B Ballot Items

Item #	Ballot Item	SOM	Concurrent
1	<p>SOM Ballot Item to revise M167 Corrugated Steel Structural Plate, Zinc-Coated, for Field-Bolted Pipe, Pipe-Arches, and Arches M 167M/M 167-09 (2012)</p> <p>This proposed update incorporates deeper corrugations for structural steel plate for pipe and pipe arches. The update includes the sizes of new corrugations, diameters, thicknesses and bolt hole alignment. See page 3 and 4 of TS 4b Minutes – D. Review of TS Summer Ballot 2013-1 Item 1 for discussion and Attachment 3 for Standard Practice.</p>	X	
2	<p>Concurrent Ballot Item to revise M36 Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains M 36-03 (2011)¹</p> <p>This proposed change removes steel sheet Zinc and Aramid fiber composite coating and related to references to this coating in the specification. The Zinc and Aramid coating is no longer being produced as a coating for corrugated steel pipe.</p> <p>See pages 4 through 7 of TS 4b Minutes – D. Review of TS Summer Ballot 2013-1 Item 2 for discussion, summary and Attachment 4 for Standard Practice.</p>		X
3	<p>Concurrent Ballot Item to revise M278 Class PS46 Poly (Vinyl Chloride) (PVC) Pipe M 278-12</p> <p>The industrial scrap layer in Section 6.3 used as the center layer 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). The standard still requires that the final product meet all of the requirements in the standard including stiffness, flattening, and impact. See pages 10 and 11 of TS 4b Minutes – D. Review of TS Summer Ballot 2013-1 Item 4 for discussion and Attachment 5 for Standard Practice.</p>		X