

SUBCOMMITTEE ON MATERIALS

**Mid-Year Web Meeting
 Wednesday, January 27, 2016
 2:00 pm – 4:00 pm EST**

**TECHNICAL SECTION 4b
 FLEXIBLE AND METALLIC PIPE**

I. Call to Order and Opening Remarks

II. Roll Call

Voting Members:

Name	State	Present
San Angelo, Mike	Alaska	X
Paul Lukkarila	California	X
Pinkerton, Jennifer M.	Delaware	
Knight, Chase C.	Florida	X
Douds, Richard	Georgia	X
Abadie, Christopher David	Louisiana	
Bradbury, Richard L	Maine	X
Kline, Therese R.	Michigan	X
Fung, Clement W.	Massachusetts	
Trautman, Brett	Missouri	X
Streeter, Donald A. , Brian Carmody	New York	X
Peoples, Christopher A.	North Carolina	X
Ramirez, Timothy	Pennsylvania	X
Short, Temple	South Carolina	X
Bailey, William R.	Virginia	X
Williams, Kurt	Washington	
Kemp, Peter	Wisconsin	X

Friends:

Name	Affiliation	Present
Malusky, Katheryn	AASHTO	X
Rothblatt, Evan	AASHTO	X
Lenker, Steven E.	AMRL	
Uherek, Greg	AMRL	
Knake, Maria	AMRL	
Mock, Shelby	MICROBAC	
McGough, Michael	NCSPA	X
Beakley, Josiah W	ACPA	
Chestnut, Brian W	LANE	X
Currence, Daniel	PPI	X
Christensen, Heather	PRINSCO	
Michael Pluimer	Crossroads Eng.	

III. Approval of Technical Section Minutes

A. Pittsburgh, PA – August 4, 2015 Meeting sent out September, 2015

Clarification/change to meeting minutes: Task Forces 2015-02 is the task force on Provisional Practice PP 63 and Task Forces 2015-03 is on the new provisional test method for the Determination of Culvert Pipe Joint leakage Under Shear.

- **There were no objections on the call to the clarification made to the minutes. Michigan made the motion to approve the minutes, seconded by Pennsylvania. All were in favor of approving the minutes.**

IV. Old Business

A. SOM Rolling Ballot #2 Items:

- i. **Item 2 was to propose a new provisional test TP XXX-xx (2015) Standard Method of Test for Determination of Culvert Pipe Joint leakage Under Shear.** This proposed new test method will determine the shear force that initiates leakage at culvert pipe joints. The test simulates the shear conditions experienced by pipe joint systems in service where a joint is subjected to various dead and live loads. The test method was developed as part of NCHRP 20-07, Task 347.

This SOM ballot item passed with 41 affirmative, 4 negative and 6 no votes. Bill asked Dr. Ian Moore to respond to each of these negatives. These responses were sent out with the meeting minutes. Industry does not think this test method is relative. Pipes do not undergo shear as advised by this test method. Dr. Moore disagrees with this and provided those responses.

- Michigan wanted to know if the only place that has a test machine is at Queens University, Bill indicated this is correct.

Negatives

Arkansas – Michael Benson

The comments from ACPA and PPI are persuasive. There are already similar tests for both the concrete and plastic pipe industries. Since adequate test methods already exist, this specification provides no benefit to the DOT and only creates additional cost for the pipe industry. Furthermore, the material characteristics between concrete, metal and plastic pipe are so variable that generating a realistic comparison of all three types of pipe is not possible using this test method.

Nebraska - Mick Syslo

The method appears to be applicable to rigid as well as flexible pipe. Reactive shear forces for flexible pipe are quite different than those for rigid pipe, as well as load transfer between pipe sections. Method seems to over-simplify and quantify forces obtained in the lab which probably will not correlate for both flexible and rigid pipe in actual service conditions.

Tennessee – Brian Egan

We have reviewed the issues that the RCP and PP industry has presented, and feel this method may need to be reexamined by the tech section to address the issues.

It is our understanding that the inclusion of all types of culvert pipe (RCP, CMP, PVC, HDPE, PP, etc.) shows less than desirable and inconsistent testing results when using the current apparatus.

The specifications for these products already resemble the proposed test method proposed in this standard. These tests are based on the respective type of pipe culverts used in state highway projects.

The different types of culvert pipe each have their own tests methods to determine similar results proposed in this test method; therefore, it is Tennessee recommendation for the tech section to continue to review and research this or other methods to include all types of culvert pipe.

- TN is sticking by their comment. They don't want to stop this provisional standard from being used. More research does need to be done.

Virginia – Andy Babish

It is clear all Industry participants are against this proposal. Pipe shear should be avoided by proper installation.

- Willing to withdraw their negative.

Letter from Friend – Mr. Jim Goddard (see attachment for complete letter)
Mr. Jim Goddard letter was sent out with the minutes of the TS 4b meeting in Pittsburgh, Pa. to all SOM members before the Mid-year TS 4b meeting.

Response to Negatives – Dr. Ian Moore (see attachment for complete response)
Dr. Moore's responses to negatives and Mr. Goddard's letter were sent out with the minutes of the TS 4b meeting in Pittsburgh, Pa. to all SOM members before the Mid-year TS 4b meeting. Dr. Moore's responses were discussed on the conference call.

Affirmative with comment

Missouri – Brett Steven Trautman

I agree with having a new provisional spec for this purpose.

Please note that during the AASHTO SOM TS 4b meeting all three pipe industries (concrete, plastic, and metal) stated that this test method was not needed nor representative of field conditions. All three don't believe this test will predict leakage of pipes. If the bedding is done properly the pipe will not experience shear. Shear will only occur at stress points such as when a pipe enters a drop inlet or manhole. The manufactures utilize other test methods to evaluate leakage. The TS barely passed the proposed specification to the full committee. A task force was named to monitor its use. I don't see any DOT's purchasing this equipment. The industry currently utilizes different test methods to evaluate leakage. For these reasons, I see limited use of this new test method. Brett T.

- His comment is similar to Michigan. He wants to know how many states can afford to purchase this equipment. Bill believes having a task force (Task Force 2015-03) to see if this provisional test method doesn't get used in a year or two, then it can be removed.

Pennsylvania – Bob Horwhat

1. In Section 3.1, last sentence, add a second closing parenthesis by revising from "(200 gallons/inch-diameter/mile/day)" to "(200 gallons/inch-diameter/mile/day))". This closes the opening parentheses earlier in sentence "generate excess leakage (i.e.,".

Rhode Island – Mark Felag

It is APPENDIX G, not Attachment 4

Louisiana – Chris Abadie

Comments made at meeting were addressed by creating a provisional test and a task group to further evaluate.

Discussion captured during the meeting.

- Dan Currence explained a similar test is already being done. This is a way to express joint shear to cover height. This may be the case, but he doesn't know how many DOTs have a joint performance criteria.
- Mike McGough echoes some of Dan's comments. Repeatability is one of his concerns.
- Mike San Angelo is concerned with the professor not engaging the industry during the work. When asked if he looked at pipe that had failed, he did not receive anything. For the future, if an NCHRP

- study is done that generates a test apparatus and method, there needs to be some extra implementation time so equipment needs/changes can be addressed.
- The original research (190), industry disagreed with. The original hope was to come up with a test that is equal across all pipe types.
 - How many states that are on the line specify water tight joints? MI, MT and TN responded that they specified water tight joints.
 - WI doesn't want to get in the way of a provisional standard.
 - FL is willing to see what possibilities can come from this provisional.
 - The provisional test method and the testing apparatus were discussed a lot at the AASHTO flexible liaison pipe committee meeting. The flexible pipe liaison committee is a committee established between the AASHTO Bridge Subcommittee Technical committee (T -13) on culverts and industry, researchers, to make introduce changes to the AASHTO Bridge design code on culverts. Dr. Moore was there to make introduce some changes for the design equations for joints. The industry doesn't believe there are any pipe to pipe joints that experience shear in service.
 - CA is trying to use a national standard whenever they can. They are concerned the provisional test method may not cover what is needed. CA specifies water tight joints.
 - NY voted affirmative. Their intent was if someone wanted this test method to move forward, they didn't want to prevent them from doing this. They have never seen shear to be a problem.
 - NY made the motion to find the negatives on the SOM Ballot persuasive and the standard should not be published. AK seconds this motion. A roll call vote was requested by the chair to insure that a 2/3 vote was obtained in order to publish or not publish the standard. There were thirteen (13) voting members present. Three (3) states FL, MO, WI voted to find the motion by NY not persuasive (they voted to publish the provisional standard). The remaining ten (10) states present voted to find the motion by NY persuasive (they voted to not publish the provisional standard).
 - The motion to find the negatives persuasive and not publish the standard passed.
 - **Action Item: The provisional Standard Method of Test for Determination of Culvert Pipe Joint leakage Under Shear will not be published.**

- ii. **Item 3 was to revise M294 Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter.** This change revises the buckling definition in Section 3.4 of Terminology by deleting the last sentence. In deleting this sentence, buckling due to direct contact of the specimen with the parallel plates during pipe stiffness/flattening testing may be considered buckling. This revision was endorsed by TS 4b Task Force 14-01.

This SOM ballot item passed with 43 affirmative, 1 negative and 7 no votes.

Negatives

North Carolina – Chris Peoples

If the turquoise highlighted section is removed, and the yellow highlighted [word] additionally is interpreted to mean either or then NC does not feel that this is clear and may cause confusion. We don't feel that buckling without a drop in the stiffness test curve should be cause for rejection. Especially, if it [the buckle] was caused by contact with the test plates.

During pipe stiffness testing, any decrease or downward deviation in the pipe stiffness test curve at or below the calculated buckling deflection limit shall be considered a buckling point. Additionally, any irrecoverable longitudinal crease or similar irrecoverable artifact that spans three or more corrugations and is present after 30 minutes following removal of the test specimen from the parallel plate test machine shall be considered as buckling. Deformation in the corrugations due to direct contact of the test specimen with the parallel plates shall not be considered as buckling.

- Bill talked with Microbac testing laboratories about their procedure in performing the pipe flattening test. Microbac performs pipe flattening testing for NTPEP. If the equation calls for buckling to take place at 14 or 15%, by the new specification, they (Microbac) run the test until it gets to 14%. Then

they take the load off of the pipe specimen and look for buckling. If there is no visual buckling, then they resume running the test until there is a downward deviation in the curve which may be 17, 18, 19 or 20%.

- Bill asked does testing in this manner meet the intention PA was looking for.
- PA indicated that if they did not see a downward trend in the load curve but a buckling of the corrugation, this would be considered a buckling failure.
- Dan asked if PA runs the test similar to Microbac.
- The Chair proposed NC withdraw their negative in light of putting a task force together to look at this issue. Also, the chair has asked industry to put together a webinar on how to run this test.
- PA wants to have the word "or" put in the standard. Either a downward deviation or a crease in 3 consecutive corrugations.
- Removing "additionally" and the last sentence, NC is okay with this.
- All were in favor of making these revisions.

Affirmative with comment:

Missouri - Brett Steven Trautman

I listened to the discussion on this and am agreeable with the purpose.

Ohio – Lisa Zigmund

Ohio agrees with the Buckling Definition clarification, but we have other concerns with the test method, particularly the application of the formula in Section 9.2, as discussed with Tech Section chair.

- **Action Item: In reviewing these minutes it does not appear that the suggested change agreed upon by the technical section is editorial in nature. It also does not appear like the issue is resolved. Therefore the chair will advise the publication staff to print the standard as approved (written above without any revision) and attempt to resolve the negative during the April Webinar on Pipe flattening testing.**

- iii. **Item 4 was to revise M36 Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains.** This revision is to improve manufacturing efficiencies around the corners of the box rib of Type IR galvanized coated, Aluminized Type 2 coated, polymer coated and aluminum corrugated steel pipe. This revision also includes a notes which reminds specifiers to request independent verification calculations if they deem it necessary as well as adding guidance on the measurement of the ribs. The revision also includes a new nominal size 19 x 25 x 222 mm rib.
This SOM ballot item passed with 44 affirmative, 0 negative and 7 no votes.

Affirmative with comment

Missouri – Brett Steven Trautman

Mike M. didn't believe he had enough information to make a recommendation. Missouri vote affirmative at the AASHTO SOM TS 4b meeting.

Pennsylvania – Bob Horwhat

In the TS-4b Minutes for Ballot Item 4 and Table 1 (page 10 of 88), is the nominal size correct as shown in the table "19 by 25 by 216" as the commentary in the TS-4b minutes at top of page 10 of 88 and the TS-4b Item #4, Item Description both make reference to "19 x 25 x 222 mm"?

See Comment for Item 5 which applies to Items 4-6 (submitted by B. Ebersole - PennDOT Physical Lab.

- The chair acknowledged the discrepancy between the commentary and Table 1 in the standard. The correct dimension is "19 by 25 by 216" as shown in Table 1. Mike McGough with NCSA verified that the correct dimension is "19 by 25 by 216".
- **Action Item: Chair will make sure that Table 1 of the standard has the "19 by 25 by 216" dimensions.**

- iv. **Item 5 was to revise M196 Standard Specification for Corrugated Aluminum Pipe for Sewers and Drains.** This revision is to improve manufacturing efficiencies around the corners of the box rib of Type IR galvanized coated, Aluminized Type 2 coated, polymer coated and aluminum corrugated steel pipe. This revision also includes a notes which reminds specifiers to request independent verification calculations if they deem it necessary as well as adding guidance on the measurement of the ribs. The revision also includes a new nominal size 19 x 25 x 222 mm rib.

This SOM ballot item passed with 44 affirmative, 0 negative and 7 no votes.

Affirmative with comment

Missouri – Brett Steven Trautman

Mike M. didn't believe he had enough information to make a recommendation. Missouri vote affirmative at the AASHTO SOM TS 4b meeting.

Pennsylvania – Bob Horwhat

In the TS-4b Minutes for Ballot Item 4 and Table 1 (page 10 of 88), is the nominal size correct as shown in the table "19 by 25 by 216"? The commentary in the TS-4b minutes at top of page 10 of 88 and the TS-4b Item #5, Item Description both make reference to "19 x 25 x 222 mm"?

...also (from Physical lab - for items 4-6):

For Table 1, Rib Requirements, note 'd' applies to both Minimum and Maximum averages. Believe the table would be improved if 'Bottom Outside Radius' were upper column headings for columns 5/6 and 'Top Outside Radius' for columns 7/8, below which the Minimum and Maximum averages (mm) were indicated.

- The chair acknowledged the discrepancy between the commentary and Table 1 in the standard. The correct dimension is "19 by 25 by 216" as shown in Table 1. Mike McGough with NCSA verified that the correct dimension is "19 by 25 by 216".
- In table 1, note "d": Mike McGough and Bill believe this is editorial. Dr. Tim McGrath also believes this is editorial. The Chair will work with NCSA and PA to develop an editorial solution for note "d".
- **Action Item: Chair will make sure that Table 1 of the standard has the "19 by 25 by 216" dimensions. The Chair will also work with NCSA and PA to develop an editorial solution for note "d".**

- v. **Item 6 was to revise M245 Standard Specification for Corrugated Steel Pipe, Polymer-Precoated, for Sewers and Drain.** This revision is to improve manufacturing efficiencies around the corners of the box rib of Type IR galvanized coated, Aluminized Type 2 coated, polymer coated and aluminum corrugated steel pipe. This revision also includes a notes which reminds specifiers to request independent verification calculations if they deem it necessary as well as adding guidance on the measurement of the ribs. The revision also includes a new nominal size 19 x 25 x 222 mm rib.

This SOM ballot item passed with 44 affirmative, 0 negative and 7 no votes.

Affirmative with comment:

Missouri – Brett Steven Trautman

Mike M. didn't believe he had enough information to make a recommendation. Missouri vote affirmative at the AASHTO SOM TS 4b meeting.

Pennsylvania – Bob Horwhat

In the TS-4b Minutes for Ballot Item 4 and Table 1 (page 10 of 88), is the nominal size correct as shown in the table "19 by 25 by 216"? The commentary in the TS-4b minutes at top of page 10 of 88 and the TS-4b Item #6, Item Description both make reference to "19 x 25 x 222 mm".

....also see comment for Item 5 above regarding Table 1

- The chair acknowledged the discrepancy between the commentary and Table 1 in the standard. The correct dimension is "19 by 25 by 216" as shown in Table 1. Mike McGough with NCSA verified that the correct dimension is "19 by 25 by 216".

- In table 1, note “d”: Mike McGough and Bill believe this is editorial. Dr. Tim McGrath also believes this is editorial. The Chair will work with NCSPA and PA to develop an editorial solution for note “d”.
- **Action Item: Chair will make sure that Table 1 of the standard has the "19 by 25 by 216" dimensions. The Chair will also work with NCSPA and PA to develop an editorial solution for note “d”.**

B. TS letter ballots – None

C. Task Force Reports

- i. **Task Force 2015-01** - The Task force was to update and improve the Section 13 Quality Assurance Section of M278 standard to include tests to verify contaminants in recycle did not affect integrity of PVC pipe. This task was completed before the SOM meeting. The task force has been asked to reconvene to add specific test methods for each QC test cited in Section 13.1 along with a pass fail criteria. **No action to report.**
 - ii. **Task Force 2015-02** – the task force will look at PP 63. The objective will be to move this standard to a full standard. The members of this task Force are VA, NC, Theresa Kline (MI), NCSPA, ACPA and PPI. **No action to report.**
 - iii. **Task Force 2015-03** - The task force was formed with the following members: NC, AK, MO, FL, NCSPA, PPI, ACPA and Dr. Moore. The charge for the task force will be to monitor the use/acceptance of the new provisional test method for the Determination of Culvert Pipe Joint leakage Under Shear and report back to the TS in 2 years. Updates will need to be given at the midyear and annual meetings.
 There was much discussion at the Flexible Culvert Liaison Committee meeting with AASHTO Subcommittee on Bridge Structures Technical Committee T-13 at TRB on this test method. Some members do not think shear occurs at the joint in the same manner as represented by the provisional test methods. Dr. Moore disagrees with these opinions.
- **The Chair feels there is no need to continue this task force since the provisional standard will not be published.**
 - **Action Item: Task Force 2015-03 is retired.**

V. New Business

A. Research Proposals

- None

B. AMRL/CCRL Issues

- None

C. NCHRP Issues

- None

D. Correspondence, calls, meetings/ Presentation by Industry

- i. Webinar on M 294 pipe flattening test – Michael Pluimer Crossroads Engineering
 1. Discuss reasons behind switch from 20% deflection limit to equation in Section 9.2.1 of M294.
 2. Factor of safety included in equation
 3. Supported by Research NCHRP Report 631
 4. How to measure height of corrugation (hp) in plastic pipe.
- **This webinar will be conducted in April. Information on the time for Webinar will be sent out at the beginning of March.**

E. Proposed New Standards

- i. Add a “Flanged Joint Connection for Deep Corrugated Structures” to M167- Tim McGrath, Ph.D, P.E
 1. TS ballot in spring, resolve negatives then SOM ballot
- ii. Move PP 63 to full standard practice
 1. TS ballot in spring, resolve negatives then SOM ballot
- iii. Add height of corrugation definition and figure to M 294

F. Proposed New Task Forces

- i. Task Force 15-02 will review PP 63

G. Standards Requiring Reconfirmation

- i. Check with publication staff

H. SOM Ballot Items (including any ASTM changes)

- i. Dependent on TS ballots and task force recommendations

VI. Open Discussion

VII. Adjourn

FirstName	LastName	State	Email	CommitteeC	Designation	MemberType
William	Bailey	VA	bill.bailey@vdot.virginia.gov	SOM_TS4B	Chair	Voting
Christophe	Peoples	NC	cpeoples@ncdot.gov	SOM_TS4B	Vice Chair	Voting
Michael	San Angelo	AK	michael.sanangelo@alaska.gov	SOM_TS4B	Member	Voting
Phil	Stolarski	CA	phil.stolarski@dot.ca.gov	SOM_TS4B	Member	Voting
Jennifer	Pinkerton	DE	Jennifer.Pinkerton@state.de.us	SOM_TS4B	Member	Voting
Chase	Knight	FL	chase.knight@dot.state.fl.us	SOM_TS4B	Member	Voting
Richard	Douds	GA	rdouds@dot.ga.gov	SOM_TS4B	Member	Voting
Christophe	Abadie	LA	Chris.Abadie@la.gov	SOM_TS4B	Member	Voting
Clement	Fung	MA	clement.fung@mhd.state.ma.us	SOM_TS4B	Member	Voting
Richard	Bradbury	ME	Richard.Bradbury@maine.gov	SOM_TS4B	Member	Voting
Therese	Kline	MI	klinet@michigan.gov	SOM_TS4B	Member	Voting
Brett	Trautman	MO	brett.trautman@modot.mo.gov	SOM_TS4B	Member	Voting
Donald	Streeter	NY	donald.streeter@dot.ny.gov	SOM_TS4B	Member	Voting
Timothy	Ramirez	PA	tramirez@pa.gov	SOM_TS4B	Member	Voting
Temple	Short	SC	shorttk@scdot.org	SOM_TS4B	Member	Voting
Kurt	Williams	WA	willikr@wsdot.wa.gov	SOM_TS4B	Member	Voting
Peter	Kemp	WI	peter.kemp@dot.wi.gov	SOM_TS4B	Member	Non-Voting
Evan	Rothblatt	DC	erothblatt@aashto.org	SOM_TS4B	Liaison	Non-Voting
Katheryn	Malusky	DC	kmalusky@aashto.org	SOM_TS4B	Liaison	Non-Voting
Greg	Uherek	MD	guherek@amrl.net	SOM_TS4B	Member	Non-Voting
Steven	Lenker	MD	slenker@amrl.net	SOM_TS4B	Member	Non-Voting
Maria	Knake	MD	mknake@amrl.net	SOM_TS4B	Member	Non-Voting
Heather	Christensen	MN	heatherc@prinsco.com	SOM_TS4B	Friend	Non-Voting
Michael	Pluimer	MN	michael.pluimer@crossroads-engineering.com	SOM_TS4B	Friend	Non-Voting
Brian	Chestnut	PA	bchestnut@lane-enterprises.com	SOM_TS4B	Friend	Non-Voting
Daniel	Currence	TX	dcurrence@plasticpipe.org	SOM_TS4B	Friend	Non-Voting
Josiah	Beakley	TX	jbeakley@concrete-pipe.org	SOM_TS4B	Friend	Non-Voting
Michael	McGough	TX	mmcough@ncspa.org	SOM_TS4B	Friend	Non-Voting