SUBCOMMITTEE ON MATERIALS

100th Annual Meeting – Minneapolis, Minnesota
Tuesday, July 29, 2014
2:00 pm – 4:00 pm CST

TECHNICAL SECTION 4b
FLEXIBLE AND METALLIC PIPE
Meeting Minutes

I. **Call to Order and Opening Remarks:** The Chair called the annual meeting of Technical Section 4B, Flexible & Metallic Pipe to order at 2 pm on July 29, 2014 at Minneapolis, Minnesota. He welcomed members and visitors, thanked them for electing to attend the technical section meeting and providing support during the past year. The chair invited everyone to participate, ask questions and debate the issues.

II. **Roll Call:** The Vice Chair called role. 12 of 16 voting members of the technical section were present. 4 current friends of the technical section were also present. There were 77 attendees: 36 were from member DOTs, 7 from AASHTO, 1 from FHWA, and 33 from industry. **See Attachments 1** for the meeting attendance.

A. New Members – Florida, Michigan

Name	State	Present
Stolarski, Phil J	California	X
Fung, Clement W.	Connecticut	
Pinkerton, Jennifer M.	Delaware	
Paredes, Mario A	Florida	X
Douds, Richard	Georgia	X
Abadie, Christopher David	Louisiana	X
Bradbury, Richard L	Maine	
Kline, Therese R.	Michigan	X
Boisvert, Denis	New Hampshire	X
Streeter, Donald A.	New York	
Peoples, Christopher A.	North Carolina	X
Toney, Reynolds H.	Oklahoma	X
Ramirez, Timothy	Pennsylvania	X
Trolinger, Bill	Tennessee	X
Bailey, William R.	Virginia	X
Williams, Kurt	Washington	X

Name	Affiliation	Present
Malusky, Katheryn	AASHTO	X
Rothblatt, Evan	AASHTO	X
Lenker, Steven E.	AMRL	
Uherek, Greg	AMRL	
Knake, Maria	AMRL	

Knight, Chase Constantine	Florida	
McGough, Michael	NCSPA	X
Beakley, Josiah W	ACPA	X
Chestnut, Brian W	Lane	X
Currence, Daniel	PPI	X

III. Approval of Technical Section Minutes

A. August 6, 2013 Stateline, Nevada

B. February 20, 2014 Mid-Year Webinar - A motion was made by PA to accept the minutes from the annual meeting and the mid-year webinar. The motion was seconded by FL, all were in favor.

IV. Old Business

A. Previous Year SOM Ballot Items

i. Status of Action Items from TS Mid-Year Webinar

1. M 167 - Mike McGough talked with Dr. McGrath and the chair. It was decided that Note 2 will remain a note and not be incorporated into Table 2. M 167 was published without making this change.
2. M 36 – Because a joint specification was not added to the standard, Section 1.3 was removed from standard and the revised standard was published. Section 1.3 was only to be added to the scope if a joint specification was incorporated into the standard.

ii. M 278 Class PS46 Poly(Vinyl Chloride) (PVC) Pipe – recycled/rework material in Multilayer PVC Type MP pipe – Larry Gill

A slide, **Attachment 2 - slide 2,** showing the cross section of a multilayer pipe was shown to the technical section before the discussion began. Modifications were proposed to M 278-12 to replace Section 3.4 which contained the definition for Industrial plastic scrap that was allowed for the multilayer pipe with an external recycled material definition and an internal recycled material definition labeled section 3.4 and section 3.5 respectively. At the Mid-year meeting the technical section (TS) decided to remove these changes in definitions for external and internal recycled material balloted because the definitions were unclear. There was discussion during the mid-year meeting about recycled and reworked material. Larry Gill and Mario Paredes worked together to provide better definitions for each of these. Larry Gill discussed the revisions made to M 278, which are included as **Attachment 3** to these minutes. Mike Pluimer (TRI/Villanova) is in agreement with the definitions provided by Larry for reworked and recycled material. Tim Ramirez had a concern with contamination and how the cell class was determined. Larry explained how they came up with the cell classification values. Chris Peoples asked if the manufacturer retested the cell class when they brought in the reworked and recycled material and Larry said a pipe manufacturer would need to start with this PVC cell class when they began manufacturing a pipe product with a recycled or reworked inner layer. Larry indicated the technical section could include wording so that a manufacturer provides evidence that the reworked or recycled material being used to manufacture the pipe met the cell class specified for this product. Larry proposed using language similar to what is noted in AASHTO M294 for blending of resins. Larry can provide verbiage for the testing conducted for blending the recycled/reworked material with the virgin material and include this in Section 6. Mario and Larry will work together to put together the requested language to address contamination concerns.

A motion was made by PA and seconded by OK to make the suggested changes and move to a concurrent SOM and Technical Section ballot. All were in favor. The motion passed.

iii. M 294 High Density Polyethylene Pipe – Flatness testing/wall buckling interpretation – TF 2014-1 PENNDOT, Dan Currence, Michael Pluimer, Illinois DOT, Dave Meggers and Chris Peoples

There was discussion at the end of the mid-year webinar on the interpretation of buckling. PENNDOT posed the questions: Is buckling defined solely as the decrease or

downward deviation in the load-deflection curve in running the pipe stiffness test until the diameter is reduced by 20%? Or is buckling defined by observation of a deformation in the pipe wall with an unaided eye? Do both of these conditions need to be met to pass? If a deformation is observed but there is not a decrease or downward deviation in the load-deflection curve does the sample fail?

This has also been an issue with NTPEP testing labs and industry test labs. NTPEP Corrugated HDPE Pipe Technical Committee Chair, Dave Meggers KSDOT submitted an email to the Chair of TS 4b asking for an official interpretation and a resolution of this issue. The Chair of TS 4b scheduled a teleconference to discuss how testing laboratories (NTPEP, DOT and Industry) are interpreting the testing and identifying visual wall buckling. At the teleconference it was decided to set up a Task Force (TF 2014-1) composed of PENNDOT, Dan Currence PPI, Michael Pluimer TRI, Illinois DOT, Dave Meggers KS and Chris Peoples NC. The groups charge was to determine the best way to resolve the various interpretations. Dave Kuniega (PA) took the lead on this task force and worked with members of NTPEP and a few industry members to revise the standard to indicate what the interpretation of what buckling should be. This required changes to be made in Sections 3.4, 7.5 and 9.2. The version discussed during the meeting included PENNDOT's revisions and industry's comments is as follows:

Section 3.4 buckling - 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 wall-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.

Section 7.5 Pipe Flattening—*Pipe specimens shall show no visual evidence of cracking, splitting, delamination, or buckling. Pipe specimens shall not show a decrease or downward deviation in the load-deflection curve during the pipe stiffness test when the pipe is tested in accordance with Section 9.2. Either visual evidence or a downward deviation in the load-deflection curve would constitute a failing test result.*

9.2. Pipe Flattening—Flatten the two-pipe specimens from Section 9.1 until the vertical inside diameter is reduced to the buckling deflection limit calculated in Section 9.2.1. The rate of loading shall be the same as in Section 9.1. The specimen shall fail if the load-deflection curve decreases in load-carrying capacity (i.e., buckling) at or below the deflection point determined by the equation in Section 9.2.1. The specimen shall fail if buckling, cracking, splitting, or delamination is observed with the unaided eye. These observations shall be made while the specimen is at maximum deflection, and immediately after the load is released from the specimen.

The task force agreed some more clarification may need to be made in these sections to include parallel plate indentation information and a definition for wall/liner. Industry will help propose language for these areas. This standard is 90% ready to go to tech section ballot. The Task force needs to include any additional modifications by the first week in September so M 294 can go to concurrent tech section and SOM ballot, **Attachment 4**.

A Motion was made by NC, seconded by PA to consider M294 changes plus allow the TF to come up with a definition for the indentation left by the parallel plate test and also include verbiage for wall liner, for concurrent SOM and Technical Section ballot. All were in favor. The motion passed.

It was noted that these changes are being made through ASTM for PVC and polypropylene pipe and will be forwarded onto SOM for consideration.

B. Previous Year TS letter ballots

i. TS4B-14-01 Reconfirmation Ballot – March/April 2014

1. T341 the Standard Method for Stub Compression Test, PP63 the Provisional Practice for Pipe Joint selection and MP20 the Provisional Specification for Steel Reinforced HDPE Pipe all passed reconfirmation ballot with 10 affirmative votes and 0 negatives. There were 5 members that did not vote.
All of these standards have been reconfirmed.

C. Task Force Reports

i. TF 2013 -1 - Chris Peoples

1. Video/Slides - Mike McGough

Chris Peoples provided a report during the meeting. This Task Force was formed at the 2013 annual meeting. They were responsible for developing a test method for a water tight joint to be incorporated into M36. A Joining System Demonstration video and pictures were shown by Mike McGough during the session which showed the testing of a watertight joint in the straight alignment with a neoprene band underneath a flat metal band at a metal pipe manufacturer in VA. A deflected watertight joint test was not performed. NCSPA is working with a test facility to establish a deflection test protocol. This completed the work assignment of this task force. The video and pictures were too large to incorporate into the minutes.

ii. TF 2013-2 Disband

V. New Business

A. Research – Questions and Answers on Plenary Session Presentation

i. Project Number 20-07/Task 347 "Test Methods for Water tightness of Culvert Joints" **Attachment 5** – Ian Moore PhD. PE.

In the morning plenary session, Dr. Moore presented an update on his research on developing test methods for water tightness of culvert joints. The chair invited Dr. Moore to the technical section to answer any questions that members or guests had on his research. AK DOT posed a question to Dr. Moore regarding the frame used for the application of joint shear forces. Mike San Angelo stated, when structural engineers want to understand a structures response to external loads, they typically draw deflection shapes. The question asked "Did the research consider using the deflected shapes observed in the field?" Dr. Moore said he had not.

Bill Bailey asked how Dr. Moore thought the results from the research will be incorporated in PP63. Dr. Moore answered by saying the normal conventional methods may not be applicable to the forces that a pipe actually encounters in situ and over time. For example in service pipe pressures are not exposed to the conventional lab/plant test pressure. Dr. Moore indicated that the new test methods would be a little different from those used today. The test pressures used in this study are 5 and 8 psi. A follow up question was related to whether or not these tests would be used as qualifying tests for joint systems or could they be performed per project. Dr. Moore indicated that these types of tests would be more suited as qualifying tests. Dr. Moore also indicated that other labs could also perform these tests with some investment in frames and equipment. An estimate of $60 to $100 K was mentioned. KS DOT asked about repeatability of results with performing this test. Dr. Moore indicated that this was a good point and repeatability testing had not been performed yet.

B. Research Proposals

i. Any new research ideas

A Problem statement for Fundamental Correlation of Highway Drainage Systems Design and Service Life Limit States, **Attachment 6**, was presented to the technical section from Michael L.J. Maher, PhD, PE and Gregory L. Hebeler, PhD, PE *On behalf of the NCHRP 20-05 / 45-01 Project Panel*. This research will develop deterioration models to determine the service life and time to ultimate failure for drainage systems.

A motion was made by AK, seconded by NC to move this problem statement or research needs statement forward to the entire SOM with the support of Technical Section 4b. All were in favor. The motion passed. The chair will submit to Executive Council for discussion on Friday August 1, 2014.

C. NTPEP Issues

i. 5 Issues with M 294 HDPE testing

There were 5 issues identified at an NTPEP High Density Polyethylene (HDPE) Pipe Committee conference call on May 15th and discussed at the NTPEP Annual Meeting in Greenville, SC as ambiguities in HDPE pipe testing. The Committee and industry wish to resolve these ambiguities and collectively they wished to make TS 4b aware of these issues.

1. Blend Resins: What do you do if a blended resin is from two PPI certified resins? The final blend could have reduced testing. The Chair decided that this issue should be resolved within the NTPEP group.
2. Stub Compression testing

   Stub compression is being done according to the NTPEP work plan which is less frequent than what is required in M294. This makes it difficult for an auditor to enforce, since the pipe is stamped "M294" but does not meet the requirements. Section 7.7 of M 294 states that; "the stub compression test, AASHTO T 341, shall be a material and wall design qualification test conducted twice a year **or** whenever there are changes in wall design or material distribution. For the NTPEP auditors, the "or" in M294 is a sticking point. Auditors will make a note in the audit as to what the plant is doing for stub compression frequency, and it will be up to the individual states to determine if that meets their specification. The NTPEP Corrugated HDPE pipe technical committee decided to send the SOM TS 4b a letter **(attachment 7)** requesting the technical section to remove the stub compression test from the manufacturing and quality control requirements of M 294, M 304, M 330 and any other thermoplastic pipe. They recommend that the stub compression test frequency be relegated to another portion of M 294 which addresses design or to AASHTO LRFD Bridge Design Specifications 12.12.

   Bill Bailey said the SOM TS 4B was adamant that the manufacturers conduct this test twice a year because this test was new. The NTPEP letter recommends not conducting this test at all unless the wall designs of the pipe changes. Mike San Angelo stated his recollection from Madison, WI (2010) was the NCHRP (Report 631) reported the test to be used as a design and NTPEP QC test, however, industry claimed the test was meant for design and inaccurately labeled QC. Industry also commented how difficult sample preparation was and if not done correctly it produced variability in the test data making it a problem for QC, which was the technical session key concern in 2010. The technical section decided to follow the researcher's NTPEP QC recommendation because additional QC type tests were needed for HDPE pipe products. A task force was formed to determine the frequency of the test, which recommended a twice-per-year frequency. It was agreed that, once sufficient data had been gathered the data could be analyzed for testing variability and used to improve the test and or make adjustments to the testing frequency reported in M 294.

   The chair put together a Task Force **(TF 2014-2)** to (a) gather the historical data from NTPEP's testing laboratories, Mike Plummer, TRI and Steve Ferry, MICROBAC to assist, (b) analyze the data with AMRL's Assistance, (c) engage the NCHRP Stub Compression Test Lead Researcher, Timothy McGrath Ph.D. P.E., regarding the historical data & analysis, so as to revisit the original intent/recommendations for the test (i.e. was the test for design, and, or, NTPEP QC) and once these tasks are completed. The final step (d) the Task Force (TF 2014-2) will report back to the Technical Session their finding and recommendations regarding the (1) stub compression testing data analysis, (2) M 294 stub compression testing frequency requirements, and (3) reporting if the NCHRP 631 recommendations will remain unchanged or if a revision/addendum could be made to help the Technical Section.

   Members of this TF 2014-02: Dan Currence (PPI), Mike McGough (NCSPA), Michael San Angelo (AK), Dave Meggers (KS), Steve Ferry (Microbac), Bill

Bailey (VA), Dr. McGrath, and a couple members of T13 from AASHTO Subcommittee on Bridges.

3. NCLS Liner Testing
   NTPEP performs NCLS liner testing quarterly according to the NTPEP work plan as one test per plant, per different platform, per size produced that quarter. The word "platform" needs to be defined. Is platform defined as extrusion equipment? The Chair decided that this issue should be resolved within the NTPEP group.
4. Stiffness Testing Frequency
   The Chair decided that this issue should be resolved within the NTPEP group.
5. Flatness Testing Interpretation
   See IV Old business A. iii. M 294 High Density Polyethylene Pipe for the discussion on Flatness testing/wall buckling interpretation

D. NCHRP Issues

E. Correspondence, calls, meetings/ Presentation by Industry

i. Flanged Joint Connection for Deep Corrugated Structures - Tim McGrath, Ph.D, P.E
   Dr. Tim McGrath was unable to attend the meeting so Joel Hahm P.E. gave a short presentation on Flanged Joint Connection for Deep Corrugated Structures. The presentation is **Attachment 8** to the minutes.

ii. Proposed change to M 246 Polymer coating for corrugated metal pipe – Mike McGough, NCSPA
   The proposed change is to include **25 % Maleic Anhydride Grafted Polymer** as an option to the required laminated film comprised of at least 85 % ethylene acrylic acid copolymer. Mike McGough discussed these changes and gave a PowerPoint presentation to show the performance results of the testing on this new polymer coating. The presentation is **Attachment 9** of these minutes.
   The change to Section 6.2 as discussed at the meeting is:

   6.2 The polymer coating shall be a laminated film comprised of at least 85 % ethylene acrylic acid copolymer or at least 25 % Maleic Anhydride Grafted Polymer, which is partially hydrolyzed and be capable of being applied to the sheet specified in 6.1. After application, the polymer coating shall be free of holes, tears, and discontinuities, and shall be sufficiently flexible so that it will withstand the corrugating, forming, and lockseaming operations, and punching of holes for rivets or perforations.

   A motion to move M 264 with the proposed change to both concurrent SOM and Technical Section ballot was made by OK, seconded by GA. All were in favor. The motion passed.

iii. KanaPipe has a new type of steel reinforced PE ribbed pipe ASTM 2435-12 that uses a corrugated metal rib for additional support. Mr. Trent Lowe P. E. is interested in presenting this pipe as a new standard to TS 4b or seeing if this pipe will fit into the standard for MP 20-11. The chair will advise Mr. Lowe that this design needs to be presented and approved by T13 of AASHTO Subcommittee on Bridges before TS 4b moves ahead with a materials specification. It was suggested that this pipe could be submitted through APEL for evaluation.

F. Proposed New Standards – None at this time

G. Proposed New Task Forces

i. TF 2014-1 is charged with developing an acceptable definition and interpretation for wall buckling when performing the pipe flattening test in section 9.2 of M 294 High Density Polyethylene Pipe for concurrent SOM and TS ballot. Members of this task Force are PENNDOT, Dan Currence (PPI), Michael Pluimer (TRI), Illinois DOT, Dave Meggers (KS), Chris Peoples (NC), and Bill Bailey (VA).

ii. TF 2014-2 is to make a recommendation to the technical section on what the frequencies of conducting the stub compression test should be for M 294. The task force is to gather data from the NTPEP testing laboratory, examine this data and review the NCHRP research conducted by Timothy McGrath Ph.D. P.E. to determine the

recommendation of that research. Members of this task force are Dan Currence (PPI), Mike McGough (NCSPA), Michael San Angelo (AK), Dave Meggers (KS), Steve Ferry (Microbac), Bill Bailey (VA), Dr. McGrath, and a couple members of T13 from AASHTO Subcommittee on Bridges.

H. Standards Requiring Reconfirmation
   i. M 197, M 218, M 304, T 249

I. SOM Ballot Items (including any ASTM changes)
   i. M 246, M 278 and M 294 will be concurrent ballot items **Attachment 10.**

J. Bill Bailey announced that he had made standard assignments to each state. These assignments are **Attachment 11** to the minutes.

VI. Open Discussion

PENNDOT: Asked for an Interpretation on wall thickness measurements in Section 7.2.2 of M 294 when measured in accordance with Section 9.6.4. Section 9.6.4 references ASTM D 2122 which calls for multiple readings (8) to be taken. In ASTM D 2122 the Report calls for the following information:

1) The minimum and the maximum wall thickness measured
2) The calculated average wall thickness as the average of all eight readings and
3) The calculated range in percent.

One interpretation is that the calculated wall thickness must meet the minimum thickness requirement in Section 7.2.2. The other interpretation is that all individual measurements of the wall thickness must meet the requirement in Section 7.2.2. PENNDOT interpretation is that all 8 individual values need to meet the minimum value of wall thickness in the AASHTO standard. The question was asked because NTPEP, Industry and individual states are interpreting the standard differently. The chair did not want to make a ruling on this issue without investigating further but he noted that the issue should be investigated and one interpretation should be established that all could agree with in future evaluations/testing of pipe.

VII. Adjourn Motion made by VA, seconded by CA.

Mid-Year Webinar – February 19, 2015 at 2 pm to 4 pm EST

2014 SOM ANNUAL MEETING
TS 4b
Flexible and Metallic Pipe
Tuesday, July 29, 2014 (2:00pm-4:00pm)

Attendance Sheet

Name	Employer	Email Address	Phone Number	Member of TS?	Would you like to join this TS?
Bailey, William R. W. R Bailey	Virginia Department of Transportation	bill.bailey@vdot.virginia.gov	804-328-3106	☑	☐
Peoples, Christopher A.	North Carolina Department of Transportation	cpeoples@ncdot.gov	919-329-4000	☑	☐
Rothblatt, Evan	American Association of State Highway and Transportation Officials	erothblatt@aashto.org	202-624-3648	☐	☐
Malusky, Katheryn	American Association of State Highway and Transportation Officials	kmalusky@aashto.org	202-624-3695	☑	☐
Lenker, Steven E.	AASHTO Material Reference Laboratory	slenker@amrl.net		☐	☐
Uherek, Greg	AASHTO Material Reference Laboratory	guherek@amrl.net		☐	☐
Knake, Maria	AASHTO Material Reference Laboratory	mknake@amrl.net		☐	☐
Stolarski, Phil J	California Department of Transportation	phil.stolarski@dot.ca.gov	9162277254	☑	☐
Pinkerton, Jennifer M.	Delaware Department of Transportation	Jennifer.Pinkerton@state.de.us		☐	☐
Knight, Chase Constantine	Florida Department of Transportation	chase.knight@dot.state.fl.us		☐	☐
Paredes, Mario A	Florida Department of Transportation	mario.paredes@dot.state.fl.us		☐	☐
P.W. Douds, Richard (Peter Wu for)	Georgia Department of Transportation	rdouds@dot.ga.gov		☒	☐
Abadie, Christopher	Louisiana Department of Transportation and	Chris.Abadie@la.gov		☐	☐

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David	Development				
Name	**Employer**	**Email Address**	**Phone Number**	**Member of TS?**	**Would you like to join this TS?**
Bradbury, Richard L	Maine Department of Transportation	Richard.Bradbury@maine.gov		☐	☐
Fung, Clement W.	Massachusetts Department of Transportation	clement.fung@mhd.state.ma.us		☐	☐
Kline, Therese R.	Michigan Department of Transportation	klinet@michigan.gov		☐	☐
~~Rawson, Alan D.~~ DENIS BOISVERT	New Hampshire Department of Transportation	DBOISVERT ~~arawson~~@dot.state.nh.us	603-271-1545	☐	☐
Streeter, Donald A.	New York State Department of Transportation	donald.streeter@dot.ny.gov		☐	☐
RHT Toney, Reynolds H.	Oklahoma Department of Transportation	rtoney@odot.org	405 521 2677	☒	☐
TR Ramirez, Timothy	Pennsylvania Department of Transportation	tramirez@pa.gov	717-783-6602	☑	☐
~~Trolinger, Bill~~ DANNY LANE	Tennessee Department of Transportation	~~bill.trolinger@tn.gov~~ danny.lane@TN.GOV	615-350-4175	☑	☐
Williams, Kurt	Washington State Department of Transportation	willikr@wsdot.wa.gov		☐	☐
Beakley, Josiah W	American Concrete Pipe Association	jbeakley@concrete-pipe.org		☒ Friend	☐
BC Chestnut, Brian W	Lane Enterprises, Inc	bchestnut@lane-enterprises.com	717-804-0059	☑ Friend	☐
DW Currence, Daniel	Plastics Pipe Institute	dcurrence@plasticpipe.org	816 916-3470	☒ Friend	☐
McGough, Mike	NCSPA	mmcgough@ncspa.org		☐	☑
Sanders, Darrell	Contech	dsanders@conteches.com	513 645 7954	☐	☐
LARRY GILL	IPEX	larry.gill@ipexna.com		☐	☐
Greg Schieber	Kansas DOT	greg@ksdot.org	785-291-3856		

Subcommittee on Materials 2014
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Minneapolis, Minnesota

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Name	Employer	Email Address	Phone Number	Member of TS?	Would you like to join this TS?
MICHAEL PLUIMER	VILLANOVA UNIV. / TRI-ENV	mpluimer@tri-env.com	612-236-8169	☐	☒
Steve Ferry	Microbac Laboratories	STEVE.FERRY@MICROBAC	720-406-4805	☐	☒
Rick Kreider	KS DOT	rickk@ksdot.org	785 296 1195	☐	☐
Barry Bauer	OLDCASTLE PRECAST	barry.bauer@oldcastle.com	678 209 9287	☐	☒
RICHIE CHAROENPAP	LOUISIANA DOTD	richie.charoenpap@la.gov		☐	☐
JASON DAVIS	LOUISIANA DOTD	jason.davis@la.gov	225.248.4106	☐	☐
Michael Sandoval	Alaska DOT & Public Facilities	Michael.sandoval@alaska.gov	907 269-6284	☐	☐
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DAVE KUNICZA	PennDOT	dkuniczа@pa.gov	(717) 787-3966	☐	☒ T. Ramirez PA's rep
DOUG BAKER	SPRINGFIELD PLASTICS, INC.	dbaker@spipipe.com	(217) 438-6167	☐	☒
JOHN KURDZIEL	ADS	john.kurdziel@ads-pipe.com	614-658-0211	☐	☒
Greg Barylak	ADS	greg.Barylak@ads-pipe.com	614-658 0126	☐	☐
RICK TRAYLOR	RINKER MATERIALS CONCRETE PIPE	rick.traylor@cemex.com	281 352 4735	☐	☐
Jeff Hite	✓	jefferya.hite@cemex.com	813 220 4076	☐	☐
Gerry Carnate	HI DOT	gerobin.carnote@hawaii.gov	(808) 832 3405 x131	☐	☐
GREG BOHN	ADS	GREG.BOHN@ADS-PIPE.COM	(614) 588-6850	☐	☐
Crista McNish	ADS	crista.mcnish@ads-pipe.com	419-424-8305	☐	☐
DAN FIGOLA	ADS	dfigola@ads-pipe.com	630 768 2988	☐	☐

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Name	Employer	Email Address	Phone Number	Member of TS?	Would you like to join this TS?
Shawn Coombs	Advanced Drainage Systems	shawn.coombs@ads-pipe.com	7044518844	☐	☐
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Larry Tomkins	Ergon	larry.tomkins@ergon.com	601 988-3755	☐	☐
HEATHER CHRISTENSEN	PRINSCO	heatherc@prinsco.com	320.222.6845	☐	☐
CARL DOUGLASS	PRINSCO	CARLD@PRINSCO.com	320.222.6825	☐	☐
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Bob Lutz	AASHTO	RLUTZ@AMRL.NET		☐	☐
Russell Dabbs	AASHTO	rdabbs@aashto.org	202-624-7743	☐	☐
JEFF SEIDERS	RKI	jseiders@rkci.com		☐	☐
Dennis Castle	Kentucky Transportation Cabinet	Dennis.Castle@ky.gov	502.564.3160	☐	☐
Michael Black	Ky Transportation Cabinet	michael.black@ky.gov	502-564-3160	☐	☐
Matt Jeffers	Ergon	matt.jeffers@ergon.com	615-504-1312	☐	☐
Joel Hahm	Big R Bridge	jhahm@bigrbridge.com	970-347-2208	☐	☒
Ian Moore	Queen's University	idmoore@queensu.ca	613 533 3160	☐	☐
Brian Kurschner	AASHTO	bkurschner@aashto.org	202-621-8166	☐	☐
Matt Childs	ACPA	matt@concrete[illegible]			
Barry Paye	Wisconsin DOT	barry.paye@dot.wi.gov	608-246-7945		

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Minneapolis, Minnesota

L – Katheryn Malusky

S – Evan Rothblatt

Matt Mueller – Illinois DOT 217-782-4423

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Heidi Helmink	Bekaert	heidi.helmink@bekaert.com	404.453.6825
Merrill Zwanka	SCDOT	zwankame@scdot.org	803-737-6681