

**Florida Pipe Advisory Group Meeting
October 6, 2009
Meeting Minutes**

Morning Session 9:00 AM – 11:30 AM

Attendees:

Blanchard, Brian, FDOT	Nanfheldt, Jim, Cemex
Bohn, Greg, ADS	Park, Jim, ADS
Botts, Jerry, Botts Consulting Group, LLC	Pennington, Dale, Metal Culverts, Inc.
Childs, Matt, American Conc. Pipe Assoc.	Pickett, Jim, Quality Concrete
Craig, Ron, Hanson	Pluimer, Michael, PPI
De Jesus, Angel, Hanson	Powers, Rod, RGPA & Associates
Hite, Jeff, Cemex	Putcha, Sastry, FDOT
Hoesing, Steve, Cemex	Sadler, David, FDOT
Hogan, AL, ACPA	Shepard, Michael, FDOT
Holdener, Doug, Cemex	Sickels, Jon, ADS
James, Justin, Contech	Stepanovich, Ron, Tone & Associates
Johnston, John, J. Johnston Company	Todd, Doug, Contech
Kerr, Bob, KWH Pipe	Tone, Bill, Tone & Associates
Kessler, Richard, FDOT	Traylor, Rick, Cemex
Kurdziel, John ADS	Tyner, Carl, Quality Culvert
Lattner, Tim, FDOT	Renna, Rick FDOT
Lepley, Donald, Hanson	Ritchie, Larry, FDOT
McGrath, Tim, SGH, Inc.	Vanhoose, Bill, ADS

Welcome and Announcements

- a) Rick Renna welcomed everyone and thanked everyone for taking the time to attend the meeting.
- b) Brian Blanchard, Chief Engineer welcomed all attendees and he thanked everyone for taking the time to attend. He also commented on the importance of FDOT transparency in all the actions it takes.
- c) All attendees introduced themselves.

2. Pipe Repair Investigations / Repair Matrix: David Sadler, Larry Ritchie

- a. David and Larry discussed the purpose of the Pipe Repair Matrix. The purpose of the Matrix is to provide guidance on repair methods for all pipe

types and to have statewide consistency. The draft Matrix is a compilation of repair methods received from Industry and FDOT research. It was noted that this would serve as a “living document” and changes would be made as new repair methodology was available. Also, David mentioned this format was more desirable than having it in the specifications. David stated that the Matrix would not take the place of an engineering analysis but will become a toolbox to be used when justified in an engineering analysis by a specialty engineer. Sadler indicated that the FDOT is allowing the AASHTO LRFD Bridge Construction Specifications, Section 27 (Concrete Culverts) as the basis for its post-installation assessment of RCP. The contractor’s specialty engineer review of RCP issues such as cracks should address loading and environment in addition to the crack width. This is consistent with AASHTO.

- b. Rick Renna indicated that the pipe repair matrix is intended to establish repairs based on an understanding of the nature of the pipe material. He said that if flexible pipe is racked or buckled, then it is structurally compromised; also, no internal re-rounding of flexible pipe will be accepted. Rick expressed that FDOT expects to receive the safety factor assumed in the installed pipe design; i.e., don’t use the safety factor designed to cover a number of the facets of the installed pipe design to justify a single deficient aspect of the installation.

The following comments were received on the Matrix:

General Comments:

1. Like the format of the Matrix and agreed it could be useful to contractors, CEI and industry.
2. Consider having more detailed statements of the problem in the matrix. The current statements are too general in some cases and need to be expanded.
3. All industry comments on the Matrix are to be submitted to the Department by the end of October.
4. Suggest adding pictures to each type of pipe defect in the Matrix

Metal Pipe:

5. As discussion took place regarding the service life of paintings/coatings used to repair metal pipe. Justin stated that there are several methods that will provide adequate service life and he will provide that information for review and inclusion into the Matrix.
6. Suggest placing limits/thresholds on the extent of a repair that would be acceptable to the Department. Some damage may be too significant and would need to be replaced instead of repaired.

FCPI:

7. Doug Holdener submitted written comments (September 30th, 2009) prior to the meeting.
8. Holdener indicated that the RCP repair matrix could be inappropriately inferred that all cracks would need to be sealed, regardless of size. Ritchie agreed and stated that he would clarify this.
9. Concerned about cracks in plastic pipe and the proposed repair methods. It was noted that drilling the crack tips to mitigate propagation should be included in the Matrix.
10. A suggestion was made to insure that the CEI Resident Engineer is aware of all pipe inspections and the results.
11. Concerned that crack width criteria is too conservative for concrete pipe. They stated that the 0.01" crack width is an unloaded acceptance criteria, not an installed acceptance criteria.

PPI:

12. Cautioned that proper welding is required to have a desirable repair. They will provide language for review and inclusion of the Matrix.
13. Objected to some of the concrete industry comments that were submitted. Rick responded that they could submit comments if desired.
14. Suggested to remove the reference "Fermco" from the Matrix since this is a proprietary name.

Pipe Inspection:

15. Jerry Botts discussed key design details involved in placing a sectional in-situ liner. The Drainage or Construction Office will coordinate with Botts to develop a sectional liner repair procedure to include in the pipe repair matrix.

3. *Laser Ring Spec Refinements / Meetings with Laser Ring Industry: Larry Ritchie*

- a) Larry discussed the topics of the Laser Ring Industry Meeting. Topics included: Independent third party certification of laser profiling equipment, revised calibration criteria, standardized inspection report forms and operator certification/training.
- b) Larry suggested that there may be inspection technology testing that puts different products "head to head." There is a need to assess the accuracy across technologies in terms of shape deformation measurement, crack width

measurement, and joint gap measurement. Certification tests should be representative of field conditions. FDOT is also interested in training video inspection operators so that they understand the effect of proper versus improper inspection techniques, such as not being 90 degrees perpendicular to the pipe wall when measuring widths.

Comments:

1. Require video documentation for all repairs.
2. Suggest providing the inspection operator with general information on the pipe type being inspected.
3. Suggest that DOT's and Industry approach NASSCO to encourage them to take the lead with pipe inspection and laser profiling.

Lunch

Afternoon Session 1:00 PM – 3:00 pm

4. *Autogenous Healing Research Project: Sastry Putcha*

- a) Sastry discussed the scope of the project. The autogenous healing study would include no field work except to possibly review some videos. The testing would mainly be lab tests to examine porosity and rust development. A copy of the scope is being provided with the meeting minutes. The project is still in the literature review phase and is expected to have a duration of 18 months. Quarterly updates will be posted on the Drainage Web site.

Comments:

1. ACPA requested to be involved in the autogenous healing research project and to contact the American Concrete Pipe Institute for literature on autogenous healing.
2. Doug Holdener suggested that the study use actual RCP specimens. Doug also expressed concern that the study would be able to clearly identify autogenous healing in a review of videos because the video operator would have likely just passed on by the potential auto healing location or would not have provided an effective visual review that clearly establishes the auto healing characteristics. Instead, manual observation inside of installed pipes in the field would be needed. Holdener indicated that he knows of several locations to which the investigator could be directed if they wanted to have actual field data. Sastry indicated they would consider this. It was also mentioned that the videos are usually

newly installed pipe that may not show autogenous healing at such an early stage.

5. Update on Implementation of Early Pipe Inspection: David Sadler

- a) The specification requiring early inspection is currently on hold pending the result of the time dependent creep research being conducted at the University of Florida (maybe 2.5 – 3 years). However, the Department plans to move forward with revisions to section 430-4.8 regarding pipe inspection reports and laser profiling requirements as previously mentioned in Section 3 of the minutes.
- b) The contracting industry is in favor of early pipe inspection and desire an expedited implementation.

Comments:

- 1. ACPA concerned with repaired cracks in plastic pipe. They stated that the impingement is structural and the repair does not address the reason/cause for the crack. Vanhoose indicated that cracks in HDPE will not propagate as long as a “blunt crack tip” is made by drilling holes at both ends of a crack before the crack repair; this will be added and clarified in the pipe repair matrix.
- 2. ADS representative indicated that the ZIP TIES used to erect the HDPE coupler around the two adjoining pipes would have all stresses removed because it is under pressure and that its purpose is to just hold the coupler in place during installation.
- 3. PPI indicated that the sealants used to seal cracks and tears in HDPE are actually stronger than the pipe material.

6. Update on UF Pipe Deflection Research: Rick Renna, Dr. Tim McGrath (by phone).

- a) This project has just begun. FDOT will conduct an open house, possibly in March, to observe the research in Gainesville. The focus of the project is to determine early inspection warning targets for flexible pipe deflection. The project is not attempting to improve pipe installation specifications.
- b) FDOT is coordinating with District Offices to obtain field data on flexible pipe inspections at 3-feet of backfill and then to obtain the currently-required inspections just before friction course in effort to supplement the soil box testing efforts.

Comments

- 1. Concerned about the temperature at lab and the effects on the test.

Tim indicated that it would be considered if significant.

2. Requested what is meant by “flooding and consolidation”.

Tim responded that the installation would be flooded, as sometimes occurs in actual installations, to encourage soil consolidation within the pipe backfill. Post installation soil consolidation can increase vertical deflection of the pipe diameter.

3. Questioned if the compaction would be similar to current FDOT specifications.

Rick responded that haunch compaction will be deliberately poor to encourage initial deflection.

4. Requested that the Department provide regular progress updates on research efforts.

Rick stated that Quarterly Research Reports will be posted on the FDOT Drainage Website.

7. Status of HDPE Pipe Final Protocol Research: Rick Renna

- a) Dr. Hsuan is working on the protocol for establishing the long term tensile modulus for HDPE pipe. This is an important part of establishing the target design stress for acceptance. We expect the protocol to be finished by Spring 2010.

Comments:

1. Question what the Department going to do with the long term modulus results.

Rick responded that the modulus will be used to refine the target stress used in the slow crack growth testing

2. How does the Department plan to do the calculations

Rick responded that the modulus is multiplied by the established long term modulus to establish the target design stress under service load.

3. What measures are in place for Class II HDPE?

Rick Renna stated that Class II HDPE has not been installed on many current projects to date. Rick Kessler stated that the Department is currently training staff for the Quality Assurance.

8. National Pipe Research & Events: Rick Renna, Michael Shepard, Dr. Tim McGrath (by phone).

The NCHRP projects and AASHTO Task Force scopes were briefly presented by the listed persons. Background documents for these national activities are included with the minutes transmitted to PAG members.

- a) NCHRP 20-07(264) Tim McGrath & Rick Renna
- b) NCHRP 20-07(284) Rick Renna
- c) NCHRP 14-19 Tim McGrath & Michael Shepard
- d) Joint Task Force on Pipe Issues Rick Renna

Meeting Adjourned: 3 pm