Independent Study Sings the Praises of PVC Water Pipe

By Craig Fisher
Association Engineer

W

e here at Uni-Bell have never been shy about singing the praises of PVC water pipe. However, in this article, we will save those and let an AWWARF study do the singing for us. The study, entitled "Evaluation of Polyvinyl Chloride (PVC) Pipe Performance," documents PVC's exceptional track record in the water industry. This article will provide some background on the study, outline the approach, and review the findings.

Background

As you are well aware, AWWARF has been instrumental in generating quality research on a number of topics of interest to you, the water supply professional. One topic you have told AWWARF that you wanted investigated is PVC water pipe performance. As a result, AWWARF contracted various research facilities early in 1991 and requested research proposals on the subject. The Research Foundation awarded the $133,000 project to Utah State University (USU). That should come as no surprise. With USU’s thirty-five-year record of pipe research experience, it has earned its long-standing reputation as the premiere site for pipe research, regardless of pipe type.

The members of the USU research team may sound familiar to you. Most of them have contributed to the engineering community. Dr. Al Moser was the Principal Investigator for the research team. Co-Principal Investigators were Dr. Reynold Watkins, Dr. Roland Jeppson, and Dr. Ronald Canfield, Ph.D. Candidate Ken Kellogg served as the Research Assistant.

Approach

The first phase of the research may best be described as assembling and analyzing the collective knowledge of many individuals. The means to be used to tap this collective knowledge was, of course, a questionnaire. Crafting the perfect questionnaire involves eliminating any subject area.

In 1992, the questionnaire was sent to all the major manufacturers of PVC pipe. Over a period of several months, approximately fifty individuals participated. The data collected included the following:

- Size of pipe
- Diameter of pipe
- Material of pipe
- Pressure of pipe
- Temperature of pipe
- Service conditions
- Service life

The data collected were then analyzed to determine the performance of PVC pipe under various conditions. The results were then compared to those obtained from similar studies conducted by other organizations.

Results

The results of the study were compiled and analyzed to determine the performance of PVC pipe under various conditions. The results were then compared to those obtained from similar studies conducted by other organizations. The study concluded that PVC pipe is an excellent choice for water distribution systems, providing it is properly installed and maintained.

Discussion

The study’s findings suggest that PVC pipe is an excellent choice for water distribution systems. However, proper installation and maintenance are crucial to its long-term performance. As with any material, PVC pipe requires periodic inspection and maintenance to ensure its continued effectiveness.

Conclusion

In conclusion, the study conducted by AWWARF on PVC pipe performance demonstrates its exceptional performance in the water industry. Proper installation and maintenance are essential to achieving the full benefits of using PVC pipe. As water utilities continue to expand and upgrade their systems, the use of PVC pipe will continue to grow in popularity due to its reliability, durability, and cost-effectiveness.

By Dave Eckstein
Deputy Executive Director

A new standard for ductile iron pipe may be on the horizon. The new standard is called AASHTO/AWWA C210.05, "Polyvinyl Chloride (PVC) Water Transmission Pipe, Nominal Diameter 14 inches through 36 inches," and it is intended to replace the existing standard for ductile iron pipe with a new "pressure" classification. The new standard is designed to accommodate changes in the industry over time, but it is also intended to provide a framework for future development.

The new standard is intended to be a "pressure" classification, which means that the standard will define the maximum pressure that the pipe can withstand. This will allow for greater flexibility in the design of water systems, as the new standard will allow for pipes to be designed for a wider range of pressures.

The new standard is also intended to be more flexible in terms of the materials used in the manufacture of the pipe. The current standard is very specific in terms of the materials that can be used, but the new standard will allow for greater flexibility in terms of the materials that can be used.

In conclusion, the new standard for ductile iron pipe is an important development for the water industry. It will allow for greater flexibility in the design of water systems, and it will also provide a framework for future development in the industry. The new standard is intended to be a significant improvement over the current standard, and it is expected to be adopted by water utilities around the country.

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Ductile Iron/Why A New Standard?

By Dave Eckstein
Deputy Executive Director

As I travel the United States, many of you have two questions about iron pipe: (1) What does the revised AWWA standard really say? and (2) What are people saying about pressure class ductile iron?

Canadian water suppliers have almost unanimously said "No" to ductile iron and "Yes" to PVC. (Yamnair is an exception.) Our Canadian constituent, therefore, may choose to skip to another article but are welcome to continue reading for sheer curiosity's sake if they wish.

What does the standard really say? We just look at the standard itself. AASHTO/AWWA C210.05, "American National Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water or Other Liquids," is the standard in question. The first two pages jump out to most of this is not really a "new" standard. It carries a 1961 designation. The iron industry has continuously revised the standard. However, the AWWA C210.05 standard is now "special classes" and the norm is now "pressure class" designation.

The huge success of AWWA C210.05, "Polyvinyl Chloride (PVC) Water Transmission Pipe, Nominal Diameter 14 inches through 36 inches," has certainly played a role in the design of new pipes. In essence, the design was that the iron industry would introduce Class 48, 48, etc., in larger diameters.

Understanding the marketing lingo doesn't think much of introducing a new "lower" classification. The Class 49. A good deal of current iron users don't think much of Class 50 and 51 due to tapping problems and, of course, corrosion in general. It was predictable to see a 'new' classification system. What was completely unpredictable was which products were included in the new classification and which and where were deleted.

Table 1 (see page 5) compares BS 12, 12, and 24 inch diameter pipes.

Basically, the larger diameter scenario was accurately. In 24, pressure classes 350, 300, and 200 are marginally good than Class 52, 51, 50, and 48 respectively. 530 and larger, however, have been deleted. At 30" a pressure Class 150 or 200 is more common.
Ductile Iron

Class 48 kicks in. Certainly, the designer will need to scrutinize the appropriateness of these thinner walls. Currently, almost all iron pipe designs are limited by external load considerations, not internal pressure. Burial depths, live loads, selection of import materials, and care in placement take on greater importance. In addition, appurtenances will need re-evaluation. Torque requirements

expressed concern has been tapping. The brass industry has a stated need of some threads to ensure against leakage of corporations stops placed directly into a pipe wall. If you run the numbers you will see that pressure class iron will saddle tap only.

The small diameter changes are actually the most dramatic. The “old” thickness class designations offer a range of choices to the user. Pressure class up to 12? There are no choices. Pressure Class 350, take it

thickness is 8%. If you were more realistically a Class 52 user, the change is 32%. Some of the large old communities which the iron industry touts so vocally have traditionally been Class 54 users. Their hit? 56%. In 12 inches the corresponding percentages are 11, 32 and 64 respectively. The answer to the second question, “What are people paying about pressure class ductile iron?” is wholly dependent on where you are and to whom you are talking.

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<tr>
<th>“Old” AWWA C151</th>
<th>“New” AWWA C151</th>
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<td>Outside Diameter (in.)</td>
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<td>51</td>
<td>0.260 (350)</td>
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<td>56</td>
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for saddles and joint restraint devices are in need of amendment. Without doubt, your most or leave it. The change is significant. In 8” for a Class 50 user, the reduction in wall
thickness is 8%. If you were more realistically a Class 52 user, the change is 32%.

Second Symposium on Buried Plastic Pipe Technology

By Dave Eckstein

Symposium Chairman


The session began with a one day tutorial on basic design concepts followed by the two day symposium. Seventeen papers were presented on design, installation, laboratory testing, rehabilitation and trenchless technology.

The purpose of these papers was to establish a forum for discussion of new ideas. The papers presented a special technology publication (STP) to include all of the symposium papers. STP 1222 is scheduled to be available beginning May 31, 1994. To obtain a copy, contact ASTM Customer Service Department, 1916 Race Street, Philadelphia, PA 19103-1187 (telephone 215/299-5585).

Having had the honor to serve as symposium chairman and editor of the STP, I would like to extend my personal gratitude to all who contributed to this most successful effort. Special thanks to the ASTM staff, the Steering Committee, the authors, and the many peer reviewers.

Certainly, I am not the keeper of the tally but not one municipality has told me they will use the press-

SEE YOU IN NEW YORK!

By Dave Eckstein

Editor

The American Water Works Association annual convention and exhibition will be in New York City June 19-23 and so will we. Specifically, Uni-Bell will be in booth spaces 810 and 812. We sincerely hope you'll stop by. The only reason we go is to see you. Were happy to answer questions, or best of all, say hello and meet the folks that read this paper.

And if all else fails stop out of pity for me. Standing in that booth all day on those hard convention floors is murder. When I have some badly to visit with, the times flies by.

Tell me you read this article and I’ll present you with a lovely gift - free piece of literature!