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Bill Burnette

File: 4300410 - Pipe Culverts and Storm Sewers-Laying Pipe  
Username: Bill Burnette,P.E., NCSPA  
UserEmail: burnetteb@contech-cpi.com  
UserTel: 727-544-8811  
UserFAX: 727-541-2371  
Date: Friday, April 29, 2005  
Time: 11:49:20 AM

Comments:

ASTM Specifications D3212 and C13 both have a plant hydrostatic test period of 10 minutes as compared to the proposed 1 hour period.We recommend a 10 minute testing period for all types of pipes.

Allowance for minor leakage in the field for storm and sanitary sewer joints is a nationally accepted practice.ASCE,ASTM A760 and AWWA set forth a max. infiltration/exfiltration of 200 gals/in dia./mile/day. Design for bottletight ( zero leakage)joints is ,we believe, not necessary nor practical for storm sewers and ,if imposed ,will result in only a few accepted products and much higher construction cost for the State.We recommend an allowance of 200 gals.

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Bob Graham

File: 4300410 - Pipe Culverts and Storm Sewers-Laying Pipe  
Username: Bob Graham  
UserEmail: bobgraham9@aol.com  
UserTel: 813 623 2856  
Date: Wednesday, April 06, 2005  
Time: 10:43:08 AM

Comments:

Is it the intent of this spec to require the contractor to perform a water pressure test on all pipe runs on the entire project?

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Jeffrey Chastain

File: 4300410 - Pipe Culverts and Storm Sewers-Laying Pipe  
Username: Jeffrey C. Chastain  
UserEmail: jeff.chastain@hardiepipe.com

UserTel: 813.707.5378  
UserFAX: 813.707.5375  
Date: Wednesday, April 13, 2005  
Time: 10:29:29 AM

Comments:

It is unclear whether or not the intent of this specification is to have the manufacturer test their product in the plant, or if the test must be conducted post installation by the contractor. Also, is it the intent of the department to require this hydrostatic test be conducted on all pipe installed on every project?

It would seem that an effective way to control joint performance in the field, and to minimize taxpayer dollars spent on projects, would be to hold the manufacturer to a higher standard in their facility. The intent would be to impose a Factor of Safety on joint performance in the plant over installed product in the field. Has this option been considered by the Department?

Currently, ASTM C443 requires concrete pipe joints to be hydrostatically tested to stand under a pressure of 13 psi in the straight position, and 10 psi when the joint is put in a deflected position.

This 13 psi hydrostatic test would provide the department with a FS of 2.6 over the proposed 5 psi "water-tight" joint. If a manufacturer has proven that their product meets or exceeds this criteria, it may be considered adequate to exclude that pipe product from the requirements of being hydrostatically tested by the department (or contractor) after it has been installed.

Would this option be considered by the department?

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**Marshall H. Dougherty**

File: 4300410 - Pipe Culverts and Storm Sewers-Laying Pipe  
Username: Marshall H. Dougherty, Jr.  
UserEmail: marshall.dougherty@dot.state.fl.us  
Date: Tuesday, May 03, 2005  
Time: 11:12:54 AM

Comments:

I apologize for the late submission of comments on this proposed new specification language. The ability to comment was still available despite the closing date for

comments of 5/2/05 shown on the specifications web site, so I thought I'd give you some more input.

The desire to require soil-tight and water-tight joints, by way of quantified testing, is a good attempt to ensure that drainage system breaches are held to a minimum. It also could be quite costly. Has the cost of this performance testing been considered in the possible impacts to overall project cost analysis, especially in large urban reconstruction projects?

The continued acceptance criterion for side drains is a soil-tight joint, per the table. Does the new acceptable soil-tight testing loss of 0.1 gallon apply to each joint or the entire length of the pipe run regardless of the number of joints? The implication seems to be regardless the number of joints.

And WOW!! Water-tight cross drains!?! The filling of lift holes and structure attachments may not allow for achievable acceptance. The expectation of compliance with zero tolerance seems almost unachievable.

More critical than even the testing is the timing of the testing. It should be done at the time of each run of pipe is completed and not at project completion when reconstruction of non-compliant sections may require demolition of already completed, overlain improvements. This timing should be stated in the new specification verbiage to avert situations of having to accept non-compliant sections, even at reduced pay or no pay.

Thank you for the opportunity to provide comments on this proposed specification change.

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**Paul Harkins**

File: 4300410 - Pipe Culverts and Storm Sewers-Laying Pipe  
Username: Paul Harkins  
UserEmail: paul.harkins@hardiepipe.com  
UserTel: 813-478-6240  
UserFAX: 866-329-3727  
Date: Tuesday, April 05, 2005  
Time: 07:47:27 AM

Comments:

1. Is it clear that testing of joint is not required to be done in the field?
  2. Each of the materials specifications refer back to Section 430. Would it not be better to have Section 430 identify what is considered to be water and soil tight as tested in the plant and refer back to the individual material specifications.
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### **Committee C13 on CONCRETE PIPE**

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April 26, 2005

Mr. Steve Hiner, P.E.  
Rinker Materials – Hydro Conduit Division  
6560 Langfield Road  
Houston, TX 77092

Re: ASTM C443 “Standard Specification for Joints for  
Concrete Pipe and Manholes, Using Rubber Gaskets”

Dear Mr. Hiner,

This letter is in reply to your inquiry concerning clarification of the 10 minute test time required for hydrostatic testing per Section 10.

The original publication of ASTM C443 occurred in 1959. Though I was unable to locate the original debate, ballot and testing data, I have been informed by “old-timers” still on the committee that this standard was the product of much effort of owners, industry, and academia. Exactly how ASTM standards are meant to be developed. I was advised that the test time of 10 minutes was established and approved after being shown adequate to display joint performance verification. The decades of use of this standard throughout the country have proven this criterion correct in demonstrating whether appropriate gasket compression is obtained within the manufactured dimensional confines of the bell and spigot, thus proofing the design of joint. The 10 minute testing time criteria is accepted and specified as the standard testing time throughout the pipe industries (see ASTM D4161, D3212). Increasing the required test time does not affect the ability of the rubber gasket to provide a seal. The concrete surface on which the rubber gasket bears is not an impervious material. Experience has shown over extended time a small amount of moisture will penetrate that surface which can result in visible damp spots and a corresponding drop in pressure. Consequently, the test time of 10 minutes has long been an accepted standard in determining the ability of the joint to form a seal.

I trust this adequately answers your inquiry. Please feel free to contact me if you should have any additional questions.

Respectfully,

Eric A. Carleton, P.E.  
Chairman, ASTM Subcommittee C13.08



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April 29, 2005

Duane F. Brautigam, P.E.  
State Specifications Engineer  
Florida Department of Transportation  
605 Suwanee Street  
Tallahassee, Florida 32399-0450

Re: Proposed Specifications Change: 4300410 – Pipe Culverts and Storm Sewers-Laying Pipe  
Comments to Proposed Change

Dear Mr. Brautigam:

We appreciate the opportunity to provide comments on the proposed specification change referenced above. Per the Origination Form for the proposed specification, dated March 7, 2005, the purpose of the proposed change is to prevent trench backfill infiltration.

Currently, there are means by which the Department of Transportation can ensure the desired field joint performance and prevent trench backfill infiltration. The following measures are already in place for FDOT contracts:

1. Factory-run hydrostatic pressure testing of joints, which are witnessed by FDOT personnel;
2. Use of filter fabric wrap around joints;
3. Field installation of pipe joints observed by either FDOT inspectors or contracted CEIs; and,
4. Post-installation inspection of pipe and joints, including video inspection, inspection for leaks, and flexible pipe deflection such as with a mandrel pull.

It is my understanding that the proposed specification change refers to joint testing as performed in the plant. We are currently testing pipe in the plants to meet the FDOT hydrostatic performance criteria, and filter fabric is required around pipe joints. If the FDOT is proposing to increase the standard of factory-run joint testing for the purpose of realizing an acceptable joint performance outcome in a field installation, then is the Department also proposing changes to the standard of construction oversight and inspection?

Sincerely,

A handwritten signature in black ink that reads "Douglas J. Holdener". The signature is written in a cursive, flowing style.

Douglas J. Holdener, P.E.  
Regional Engineer



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April 28, 2005

Mr. Duane F. Brautigam, P.E.  
State Specifications Engineer  
Florida Department of Transportation  
605 Suwannee Street  
Mail Station 75  
Tallahassee, FL 32399-0450

**Subject: Proposed Specifications Change: 4300410 – Pipe Culverts and Storm Sewers, 430 – 4.1, Laying Pipe**

Dear Mr. Brautigam:

Please consider these comments regarding the proposed specification change to Section 430. It appears from previous Pipe Advisory Group meetings that the Department is determined to change the specification to watertight for all applications other than side drains. If that is correct, please accept our request to change the test time provision to 10 minutes as explained below.

We also have concerns with the rationale used in determining the need for the watertight requirement. It appears that the Department is raising its joint performance requirements to compensate for lack of enforcement of the current soil tight specification. Finally, if the watertight requirement is approved, will the test be a factory hydrostatic test? Or will the requirements be enforced as a post-installation test?

#### **Test Time**

The test time for the factory hydrostatic test should be changed to 10 minutes. Please find the attached letter from Eric Carleton, P.E., Chairman of ASTM Subcommittee C13.08. The C13.08 Subcommittee has jurisdiction over ASTM C 443; this letter supports our position that the test time of one hour in the proposed specification change is unnecessary and that a test time of 10 minutes is sufficient.

There is no benefit from requiring the joint integrity test to be conducted for one hour, and national standards for joint performance, although each is little different, reflect that if a "zero leakage" criterion is used, 10 minutes is the appropriate time:

- ASTM C 443, Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets Section 10.1.1 states: "After the pipe sections are fitted together with the gasket or gaskets in place, the assembly shall be subjected to an internal hydrostatic pressure of 13 psi (30 ft) pressure head for 10 min."
- ASTM D 3212, Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals Section 7.5.1 states: "Apply a pressure of 74 kPa (10.8 psi) (25-ft head) for 10 min."

- AASHTO Standard Specifications for Highway Bridges Section 26 Metal Culverts Subsection 26.4.2.4 (f) states: "The leakage rate shall be measured with the pipe in place or at an approved test facility." In other words, watertight is defined through an allowable leakage rate, and the test time is undefined.

### **Soil Tight versus Watertight Performance**

The current specification for soil tight joints, if enforced, is more that adequate to ensure the State receives suitable stormwater pipe systems. The primary function of the pipe joint is to maintain the structural integrity by keeping soil embedment out of the pipe. The current FDOT requirements include a factory hydrostatic test (witnessed by FDOT), videotape inspection after installation, and a geotextile wrap at every joint.

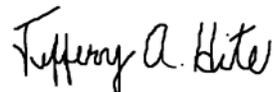
### **Factory Test versus Field Test**

We factory test our pipe to meet the FDOT's hydrostatic requirement, and these tests are witnessed by FDOT personnel. No leakage from the joint is permitted in the test. Our interpretation of this specification is that the proposed requirement will remain to be a factory hydrostatic test. However, District 7 is already experimenting with field-testing of pipe systems after installation, and we expect some to interpret the new specification as a post-installation test. A major issue that the Department will face with a post-installation test will be determining who is liable if a pipe system does not pass. If pipe passes the FDOT witnessed hydrostatic test and then fails to pass the field test, who will be responsible? Certainly manufacturers can provide installation recommendations for their product, but it is not practical to expect manufacturers to certify installations by others.

Thank you for providing this opportunity to review the proposed specification. Please don't hesitate to call me if you have any questions.

Sincerely,

Rinker Materials Hydro Conduit Division



Jeffery A. Hite, E.I.T.  
Technical Support Services

Cc: Steve Hoelsing  
Rick Traylor, P.E.  
Steve Hiner, P.E.  
Doug Holdener, P.E.  
Bob Burluson