

**American Concrete Pipe Association  
Proposed Changes to Post Installation Inspection  
March 2015**

**Industry Proposed Change.** Change the minimum standard in subarticle 430-4.1 from water tight and soil tight to leak resistant and silt tight as defined in AASHTO PP 63-09.

**Department Response.** The Department has reviewed and discussed this proposed change and decided to not move forward with implementation. First, the Department's current criteria of water tight to 5 psi for storm, cross and gutter drains addresses environmental concerns that are outside the realm of pipe installation. The Department is listed as the permittee or co-permittee on 29 separate National Pollutant Discharge Elimination Systems (NPDES) Phase I or Phase 2 Municipal Separate Storm Sewer Systems (MS4) permits. Part of the permit criteria for all of these systems includes water quality monitoring and action by the permittee in the event that contamination is detected. Since the Department is the largest MS4 permit holder in the State of Florida, one of the methods used to mitigate exposure to potential contamination entering the Department's stormwater systems is the use of water tight joints. Aside from the NPDES permits, FDOT is also required to obtain Environmental Resource Permits (ERP) for the construction and operation of our stormwater management systems. Part of the ERP criteria includes designing stormwater ponds that provide treatment for stormwater that enters the system. By allowing installed culverts to leak continually, the Department would be introducing additional groundwater into the stormwater system and impacting the pond's recovery time between rain events. This action would make ponds less efficient and negatively impact their ability to treat stormwater. Finally, any infiltration into the pipe system removes groundwater from the aquifer and negatively impacts groundwater recharge. Groundwater recharge is a critical component of wetland health as well as drinking water supply and is quickly moving to the forefront of water quality issues. Even though the quantity of infiltration based on the criteria in AASHTO PP 63-09 would be minimal, the Department is concerned with any impacts to recovery time and groundwater recharge.

The proposed plant test for proof of design for silt tight or leak resistance would also create several challenges for implementation in the field. By allowing each pipe producer to develop their own acceptable joint gap tolerance for either silt tight or leak resistant joints, the Department would have to develop unique specifications for each producer and continue to track the pipe supplier throughout the life of the project. If a Contractor decided to change producers under this scenario, the Contractor would have to inform the Department of the change to ensure the correct gap tolerances were being measured in the field. Finally, issues over unique gap tolerances may occur if pipes from two different producers with two different gap tolerances are joined together in the field.

The Department has reviewed the criteria for soil tight joints and will remove the soil tight requirements for side drains. Side drains are typically located above the water table and connect two ditches allowing water to continue to move without sending it to a treatment system so the concerns with contamination, pond recovery, and groundwater recharge are not applicable

**Industry Proposed Change.** Add a requirement to note the crack pattern and location along the circumference of the pipe in the report in subarticle 430-4.8.

**Department Response.** The Department has reviewed this proposed change and will move forward with implementation. The Department will review the language in the current Specification scheduled for July 2015 implementation with regard to observations concerning crack patterns and will work with ACPA to determine which crack patterns can be indicators of improper installation. The Department will also include language directing the inspection contractor to include the location of defects along the circumference of the pipe wall.

**Industry Proposed Change.** Change the requirement to record the length and width of all cracks to cracks 0.05” and greater in subarticle 430-4.8.

**Department Response.** The Department has reviewed and discussed this proposed change and decided to not move forward implementation. The 0.01” crack criteria has been an ongoing debate for quite some time. The Department is aware of ACPA’s concerns about the accuracy of the inspection equipment and has participated in many discussions at the local and national level regarding this issue. While the 0.01” crack criteria is considered questionable by some, the proposed change to 0.05” does not address the Department’s concerns about the installed condition of the pipe. The 0.05” criteria appears to be based on the perceived ability to accurately measure in the field instead of the impact to the service life of the pipe. At this time, the Department has not seen any data confirming the accuracy at 0.05” or refuting it at 0.01”. The bigger question at hand is what size crack is detrimental to the service life of the pipe in an installed condition. The Department is researching this issue now and will produce a white paper with the findings.

Currently, Section 449-3 Construction Requirements for Precast Concrete Drainage Products states that “unless otherwise stipulated within the Contract Documents, meet the following requirements for concrete mix, product design, fabrication, transportation and installation”. This Section specifically references ASTM C 76 for the requirements Steel Reinforced Round Concrete Pipe must meet. In working with ACPA, the Department is aware of and acknowledges that ASTM C 76 is considered a production Specification and is not intended for use under installed conditions. However, in the absence of suitable guidance for allowable crack tolerances under installed conditions, the Department uses the 0.01” crack criteria found in ASTM C 76 as a basis for review. This is also why installed pipe that exhibits 0.01” cracks is not rejected immediately even though the Specification allows for it. Instead, the Department allows the Contractor to either repair the cracks in question or provide an Engineering Analysis in accordance with AASHTO LRFD Chapter 27 considering the structural integrity, environmental conditions, and the design service life of the culvert. Once the contractor determines his course of action he can either use the pipe repair matrix as a guidance document for acceptable repair methods or he can present the Department with an acceptable Engineering Analysis that shows the cracks can be left in place with no repair and no significant impact to the design service life of the culvert.

**Industry Proposed Change.** Change the requirement to record all joint gaps to joint gaps exceeding 1” or infiltration in subarticle 430-4.8.

**Department Response.** The Department has reviewed and discussed this proposed change and decided to not move forward implementation. All pipe joints would have to be measured to see if they exceed the allowable tolerance regardless of what that tolerance may be. Since the joint gaps must be measured they will be recorded as well. The proposed 0.5” gap criteria is actually more restrictive than the current Specification for 18”- 24” diameter pipe. The Department is interested in any research or data regarding the proposed 0.5” criteria.

**Industry Proposed Change.** Provide a link to example reports in subarticle 430-4.8.

**Department Response.** This language was found in the initial draft I provided to the Pipe Advisory Group and the Pipe Inspection Industry group but was removed before the Specification was submitted to the Specs. Office. To my knowledge, ACPA was not advocating for report examples.