Florida Department of Transportation

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ANANTH PRASAD, P.E.
SECRETARY

June 27, 2012

Monica Gourdine
Program Operations Engineer
Federal Highway Administration
545 John Knox Road, Suite 200
Tallahassee, Florida 32303

Re: Office of Design, Specifications
Section **430**
Proposed Specification: **4300202 Pipe Culverts.**

Dear Ms. Gourdine:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

These changes were proposed by Larry Ritchie of the State Construction Office to clarify the requirements for the inspection of pipe.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via email to SP965TT or trey.tillander@dot.state.fl.us.

If you have any questions relating to this specification change, please call me at 414-4140.

Sincerely,

Signature on file

V. Y. “Trey” Tillander, III, P.E.
State Specifications Engineer

TT/dt
Attachment
cc: Florida Transportation Builders' Assoc.
State Construction Engineer

PIPE CULVERTS.
(REV ~~4-19-1~~*25-3-12*~~6-2~~*06-12*)

ARTICLE 430-2 (Page 446) is deleted and the following substituted:

430-2 Materials.

430-2.1 Pipe: Meet the following requirements:

Concrete Pipe	Section 449
Round Rubber Gaskets	Section 942
Corrugated Steel Pipe and Pipe Arch	Section 943
Corrugated Aluminum Pipe and Pipe Arch	Section 945
Corrugated Polyethylene Pipe	Section 948
Polyvinyl Chloride (PVC) Pipe	Section 948

430-2.2 Joint Materials: Use joint materials specified in 430-7 through 430-~~10~~ *9* according to type of pipe and conditions of usage.

430-2.3 Mortar: Use mortar composed of one part ~~portland~~ *Portland* cement and two parts of clean, sharp sand, to which mixture the Contractor may add hydrated lime in an amount not to exceed 15% of the cement content. Use mortar within 30 minutes after its preparation.

SUBARTICLE 430-4.8 (Pages 448 – 449) is deleted and the following substituted:

430-4.8 ~~Final~~ Pipe Inspection: *For pipes installed under the roadway, inspection is to be conducted when backfill reaches 3 feet above the pipe crown or upon completion of placement of the stabilized subgrade. For pipe installed within fills, including embankments confined by walls, inspection is to be conducted when compacted embankment reaches 3 feet above the pipe crown or the finished earthwork grade as specified in the plans. Prior to conducting the inspection, provide the Engineer with a video recording schedule for videoing, dewater installed pipe, and remove all silt, debris and obstructions.* ~~*and provide the Engineer with a video recording schedule allowing for*~~*Submit pipe videoing and reports* ~~*to be completed and submitted*~~ *to the Department* ~~*and*~~*for review*~~*ed*~~ *prior to the continuation of pav*~~*ement*~~*ing.*~~Based on contract pavement type, upon completion of placement of concrete pavement or the placement of structural asphalt, but prior to placement of asphalt friction course, dewater installed pipe and provide the Engineer with a video recording schedule allowing for pipe videoing and reports to be completed and submitted to the Department and reviewed prior to continuation of pavement.~~*Upon completion of placement of the stabilized subgrade, dewater installed pipe, remove all silt, debris and obstructions and provide the Engineer with pipe videos and reports of the installed pipe. Submitted videos and reports will be reviewed by the Engineer prior to completion of placement of concrete pavement or placement of base materials. For pipe installed within MSE wall embankments or in embankment fills greater than 3 feet, including embankments confined by walls, inspection is to be conducted when compacted embankment reaches 3 feet above the pipe crown.*

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Comment [lr21]: Correction to reference the appropriate section of the Spec.

Comment [lr22]: This language allows final pipe inspection to begins earlier in the project and provides the CEI and the Contractor more time to review and remediate any deficiencies.

For pipe 48 inches or less in diameter, provide the Engineer a video DVD and report using low barrel distortion video equipment with laser profile technology, non-contact video micrometer and associated software that provides:

1. Actual recorded length and width measurements of all cracks within the pipe.
2. Actual recorded separation measurement of all pipe joints.
3. Pipe ovality report.
4. Deflection measurements and graphical diameter analysis report in terms of x and y axis.
5. Flat analysis report.
6. Representative diameter of pipe.
7. Pipe deformation measurements, leaks, debris, or other damage or defects.
8. Deviation in pipe line and grade, joint gaps, and joint misalignment.
9. A video record of the actual speed at which the camera is traveling through the pipe, ensuring that the rate of travel does not exceed that limit defined in 430-4.8.1 below.

Laser profiling and measurement technology must be certified by the company performing the work to be in compliance with the calibration criteria posted at: www.dot.state.fl.us/construction/contractorissues/laser.shtm . Reports ~~may be~~ submitted in electronic media ~~if approved by the Engineer~~*are preferred*.

~~For video recorded, laser profiled pipe that indicates deflection that appears to be in excess of that allowed by Specification, the Engineer may require further testing of the pipe. If directed by the Engineer, test pipe using a mandrel. The mandrel shall be pulled by hand and be approved by the Engineer prior to use. If use of a mandrel is selected as the means of further testing, the mandrel's diameter, length, and other requirements shall conform to 430-4.8.2. Remove, replace, and retest pipe failing to meet the specific deflection requirements for the type of pipe installed, at no cost to the Department. Should the deflection test prove that the pipe met specifications, the Department will bear the cost of the deflection testing.~~

The Engineer may waive this requirement for side drains and cross drains which are short enough to inspect from each end of the pipe.

430-4.8.1 Video Report: Provide a high quality DVD in a MPEG2 format video with a standard resolution of 720 ~~-~~x ~~-~~480. Use a camera with lighting suitable to allow a clear picture of the entire periphery of the pipe. Center the camera in the pipe both vertically and horizontally and be able to pan and tilt to a 90 degree angle with the axis of the pipe and rotating 360 degrees. Use equipment to move the camera through the pipe that will not obstruct the camera's view or interfere with proper documentation of the pipe's condition.

The video image shall be clear, focused, and relatively free from roll, static, or other image distortion qualities that would prevent the reviewer from evaluating the condition of the pipe. The video will include identification before each section of pipe filmed. The identification will include the project number, the structure number corresponding to the structure number on the set of plans for the project, size of pipe, the date and time, and indicate which pipe is being filmed if multiple pipes are

Comment [lr23]: The laser profiling and video inspection report is the mechanism by which the Department accepts or rejects pipe installation.

connected to the structure. Notes should be taken during the video recording process. Provide the Engineer with copies of these notes along with the video.

Move the camera through the pipe at a speed not greater than 30 feet per minute. Mark the video with the distance down the pipe. The distance shall have an accuracy of one foot per 100 feet. Film the entire circumference at each joint. Stop the camera and pan when necessary to document *and measure* defects. *Position the camera head perpendicular to all defects requiring measurement by the video micrometer.*

Errors and omissions found in the video and laser profiling report must be corrected before the Engineer's review can be completed. Any work performed to address errors or omissions in the inspection report will be done at no cost to the Department.

~~**430-4.8.2 Mandrels**: Use mandrels which are rigid, nonadjustable, odd-numbered legged (minimum 9 legs) having a length not less than its nominal diameter. The diameter at any point shall not be less than the allowed percent deflection of the certified actual mean diameter of the pipe being tested. The mandrel shall be fabricated of metal, fitted with pulling rings at each end, stamped or engraved on some segment other than a runner with the nominal pipe size and mandrel outside diameter.~~

430-4.8.2 Reinspection: *At any time after reviewing the submitted pipe inspection reports, the Engineer may direct additional inspections. If no defects are observed during the reinspection, the Department will pay for the cost of the reinspections in accordance with 4-3. If defects are observed, ~~found that require removal and replacement or repair,~~ the ~~cost of the~~ reinspection and all work performed to correct~~ion of~~ the defects ~~are~~will be done at no ~~expense~~cost to the Department. Acceptance of all replacements or repairs will be ~~in accordance with 431-5~~based on video documentation of the completed ~~repair~~ work prior to Final Acceptance.*

Comment [lr24]: Requirements for mandrels are no longer necessary as the Department has moved to the laser profiling and video inspection report for pipe acceptance.

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