

4300202 PIPE CULVERTS  
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

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Charles Boyd  
4-26-12

Comments: (4-26-12, Internal)

The proposed spec should refer to something like "reinforced soil walls or slopes" instead of "MSE walls" to address all reinforced soil structures and walls, not just MSE walls. See Larry Jones for correct terminology to use.

Response: After discussing the language with Larry Jones, we removed the term "MSE walls" and replaced it with "embankments confined by walls".

Change made.

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John Previte  
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Comments: (5-4-12)

1. **430-4.8(9)** - I think this phrase needs work:

*9. A video record of the actual speed at which the camera is traveling ensuring that the rate of travel does not exceed that limit defined in 430-4.8.3 below.*

Response: Language changed to say "speed at which the camera is traveling through the pipe"  
Change made.

2. Is the speed of travel of the robot carrying the camera independent of the video speed (frequency or frames/per second)?

Response: Yes

3. Do we want to say that the video is to playback at the same speed that the camera records? (no slow motion or accelerated re-play)

Response: This is not necessary as the video must be free from any qualities that would prevent the reviewer from evaluating the condition of the pipe.

No change made.

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Comments: (5-7-12)

**Section 430-4.8.2** - What if reinspection is directed by the Engineer due to the travel speed of the camera, poor lighting, missing required data/information or because the pipe had water/silt in the bottom? Will this cost still be at the Departments expense? The answer is no but I think we need

to add this language to assure the Contractors know it.

Response: The Construction Office has added *the following* language at the end of 430-4.8.2 to discuss errors and omissions in the inspection report.

*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.*

Change made.

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Paul Harkins  
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Comments: (5-8-12)

1. This language allows for the early inspection of pipe and that is a good thing, however, we need to address what is required as a final inspection and acceptance. We can see cracks, splits, determine if the pipe is over deflected, or has exposed gaskets and excessive joint gap early, but when do we inspect for damage that may be caused by others, etc. For example, guard rail posts driven into the pipe, crushed end treatments, pipe silted up. As a suggestion add language that indicated that a visual inspection is required (as in the old days) prior to final acceptance. If issues are found reinspect by video. In all circumstance document findings as well as remedial actions taken.

Response: Language for visual inspection is not necessary *as this specification* is written for the contractor. It is incumbent upon the CEI inspector to conduct a prudent inspection and call for reinspection if they feel it is warranted.

No change made.

2. Might it be suggested that Section 125-8.1.3 be reviewed with regard to the statement which references heavy construction equipment over the culvert...specifically " to the finish grade" ? In your proposed change to Section 430 reference is made to when you have 3 feet of cover over the pipe what happens when you do not have tree feet of cover? Thus the need for a final final inspection of the pipe in the event damage occurred due to the shallow installation.

Response: **1. Section 125-8.1.3 has been reviewed. 2. Index 205** Inspection language has been changed (*as shown below*) to require inspection with at least 3 feet of cover over the pipe or at the stabilized subgrade or finished earthwork grade depending on the pipe's location.

**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, dewater installed pipe, remove all silt, debris and obstructions 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 the continuation of pavement.*

Change made.

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Henry Smith  
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Comments: (5-8-12)

1, The title of the section should have the word 'Final' removed. it provides a insinuation that the pipe is final accepted at that point. No part of the project is final accepted until all parts are accepted in accordance with Section 5-11.

Response: *430-4.8 title has been changed to "Pipe Inspection".*

Change made

2. There should be some language which requires that the pipe be clean (free of silting or debris) at the conclusion of the project, not just for the pipe inspection.

Response: *Cleaning of the pipe at the end of the project would be a punchlist item prior to final acceptance, similar to a cracked headwall or other item.*

No change made.

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Matthew Bare  
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Comments: (5-31-12)

1. The Final Inspection specification should allow the contractor the discretion to conduct the inspection at any time between 3 feet of backfill and the stabilized subgrade. The Final Inspection specification should be more clear about when to inspect pipe that is outside the roadway embankment. For example, conduct the inspection at the finished grade, or natural grade. The Reinspection specification should define the criteria that the CEI will use to authorize any reinspections. If that is not feasible, then the Reinspection requirement should simply define an area of the project (e.g., under paved areas, etc) that contractors will be required to re-inspect, rather than leave it open ended. The reference to Section 431-5 is confusing. It implies only one method of repair. The specification should refer to the Pipe Repair Matrix and should simply require video documentation of repairs.

Response: *See response to Doug Holdener's comments below.*

2. What types of scenarios does the Department envision would warrant a reinspection per 430-4.8.2?

Response: *See response to Doug Holdener's comments below.*

3. If the initial video inspection indicates damage, and the contractor makes a second video inspection to document the repair, is the Department also planning to require a Reinspection (third inspection) of that same line?

Response: See response to Doug Holdener's comments below.

4. If the underground utility contractor conducts a final inspection at the stabilized subgrade, then will the CEI have authority to require that same contractor to reinspect at a point after the structural pavement or friction course?

Response: See response to Doug Holdener's comments below.

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Comments: (5-31-12)

We are looking forward to the opportunity that this specification will allow to resolve pipe inspection issues earlier in the project. We have the following comments that we see as an even further improvement to the proposed specification.

1. The Final Inspection specification should allow the contractor the discretion to conduct the inspection at any time between 3 feet of backfill and the stabilized subgrade.

Response: Change made to allow inspection to be conducted when pipe backfill reaches 3 feet above the pipe crown or upon completion of the stabilized subgrade. See response Paul Harkins No. 2 above.

2. The Final Inspection specification should be more clear about when to inspect pipe that is outside the roadway embankment. For example, conduct the inspection at the finished grade, or natural grade.

Response: Change made to require inspection of pipe within fills to be conducted when the backfill reached 3 feet above the pipe crown or the finished earthwork grade as specified in the plans. See response Paul Harkins No. 2 above.

3. The Reinspection specification should define the criteria that the CEI will use to authorize any reinspections. If that is not feasible, then the Reinspection requirement should simply define an area of the project (e.g., under paved areas, etc) that contractors will be required to re-inspect, rather than leave it open ended.

Response: The CEI can request reinspection for any instance they deem necessary based on observation and prudent inspection during project construction. This authority is balanced by language that requires the Department to pay for any reinspections that do not reveal additional defects.

No change made.

4. The reference to Section 431-5 is confusing. It implies only one method of repair. The specification should refer to the Pipe Repair Matrix and should simply require video documentation of repairs.

Response: Section 431-5 does not reference any repair method. It simply states “inspect the complete rehabilitation by means of closed circuit television”.  
No change made.

5. What types of scenarios does the Department envision would warrant a reinspection per 430-4.8.2?

Response: The CEI can request reinspection for any instance they deem necessary based on observation and prudent inspection during project construction. This authority is balanced by language that requires the Department to pay for any reinspections that do not reveal additional defects.  
No change required.

6. If the initial video inspection indicates damage, and the contractor makes a second video inspection to document the repair, is the Department also planning to require a Reinspection (third inspection) of that same line?

Response: Reinspection could be possible based on the CEI’s direction.  
No change required.

7. Will the CEI have authority to require the contractor to reinspect at a point after the structural pavement or friction course?

Response: Yes, if there is suspicion of damage.  
No change required.

8. When would the clock expire as to when the CEI would be allowed to authorize a reinspection?

Response: Final acceptance  
No change required.

9. If a CEI requires a Reinspection, and a possible defect or concern is found, but it is ultimately decided not to repair or replace the pipe, then who pays? The FDOT or Contractor?

Response: If a defect is found during reinspection, the contractor pays for the reinspection.  
No change required.

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Comments: (5-31-12)

Thank you for the opportunity to review and comment on the proposed specification change to Standard Specification Section 430 – Pipe Culverts.

ADS fully supports and recommends post installation inspection for all installed pipes to ensure the pipe will perform as designed. The changes to allow earlier pipe inspection will permit the contractor to assess and remediate construction issues prior to placement of asphalt or concrete pavement. In reviewing past inspection results, the department has seen inconsistent laser video pipe deflection inspection results. At the last PAG meeting the department presented plans to improve the accuracy and repeatability of laser video inspection testing. Specifically, the need was discussed to develop an operator certification program, develop field verification methodology for equipment calibration, and improve standards for third party certification of the equipment. It was reported that research is underway in conjunction with UF to qualify both equipment and operators to perform post-installation pipe inspections on FDOT projects. The proposed specification removes mandrel testing completely from the specification. Removal of the mandrel from the specification would preclude FDOT from using mandrels as a means of field checking the accuracy or calibration of lasers and as another method to evaluate installed pipes for acceptance if needed. While laser profiling and video inspection report has been the mechanism which the Department accepts or rejects pipe installation, it is premature to remove other viable methods from the specification until accuracy and repeatability concerns are resolved. It is our recommendation to keep the current requirements for the mandrel in the specification to be used if directed by the engineer. Thank you again for the opportunity to comment.

Response: Historically, mandrels have only been used when a Contractor does not agree with the results of a pipe inspection report that he is required to provide. It is incumbent upon the Contractor to ensure that the pipe inspection report he supplies to the Department is accurate and meets all the requirements of Section 430. Removing the mandrel language from the Specification does not preclude a Contractor from using a mandrel to verify accuracy of his pipe inspection report prior to submitting it to the Department. It simply means the Department will no longer pay for it nor accept mandrel results for pipe acceptance.

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Comments: (6-1-12)

The Underground Contractors Association of Florida met to review the comments and concerns submitted by the Florida Concrete Pipe Institute regarding proposed specification 4300202 Pipe Culverts. UCA Florida concurs and supports their input.

Response: Thank you for your comment.

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