4300100-2 PIPE CULVERTS
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

Charles Boyd
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Comments: (11-16-15, Internal)
Should "(newly added for pipes near walls)" be included with #7? If so, how/where is "near" defined?

Response:

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Dan Hurtado
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Comments: (11-16-15, Internal)
What does the phrase in parenthesis “(newly added for pipes near walls)” mean?

Response:

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Jason Russell
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Comments: (11-23-15)
The new language is fine, but it may make more sense to place the new language in 430-2 Materials or 430-3 Type of Pipe or 430-4 Pipe Laying.

Response:

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Foster Bachschmidt
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Comments: (11-24-15)
This change does not seem appropriate for construction specifications. These limitations should be placed by the EOR when designing the project. The limitation should appropriately be reflected in the Optional Materials table in the job specific plans. This specification could lead to ambiguity and claims when plans specifically allow for one or more of the pipes specified yet the specifications require additional testing. The plans in this scenario would supersede the Specifications thereby rendering the testing requirement moot. I think added clarity in the Plans Preparation Manual as well as added requirements for detailed soil testing as it relates to pH in areas where these pipes are intended for use would provide a fare more effective restriction.

Response:

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Bill Sears
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Comments: (11-24-15)
Please add the below comment: EOR must identify in the plans the PH of the existing soils at all permanent pipe culvert and embankment cut section locations in order for the contractors to bid on the added statement “Do not use the following pipe with alkaline soil or backfill materials having a pH greater than 9.0 when tested in compliance with FM 5-550:”

Response:

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Erin Yao
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Comments: (12-1-15)
1) Regarding the list of pipes that are not allowed, it appears structural plate (pipe arches) are not included in this list and metal box culverts are acceptable due to wall thickness, is this correct?

Response:

2) The Drainage Manual doesn't use CMP anymore, should this spell out CSP (corrugated steel pipe) instead, or is this referring to the old CMP? Should CSP be added to this list (unless it falls under steel pipe)?

Response:

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Pat McCann
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Comments: (12-4-15)
Do not use the following pipe with alkaline soil or backfill materials having a pH greater than 9.0 when tested in compliance with FM 5-550:". Suggest eliminating the term "alkaline soils" as it not defined and it sounds you have two different parameters for acceptance. The rest of the sentence goes on to give a ph limit, so I assume that is what the Dept. will accept.

Response:

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Rodney G. Powers
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Comments: (12-10-15)

1. The problem that the proposed revision appears to attempt to address is that of metal pipe and high pH backfill such as that which may be encountered with crushed limestone or recycled concrete aggregate. However, the problem goes beyond pH concerns for metal pipe. In practice, all FDOT approved pipe types and structures have environmental limitations. While the design process adequately deals with on-site soil environmental properties, there is disconnect between design practice and field practice because of the inherent weakness in Section 125 wherein environmental tests are not specified for backfill materials brought in from outside the project limits. In practice, measures should be in place to require physical properties and environmental testing of all backfill materials (brought into the project from off-jobsite locations) for both structures and pipe. All such testing should be reviewed by the Engineer for compliance with design and specification requirements and or Culvert Service Life Estimator (program) for pipe.

Response:

2. The proposed revision unnecessarily singles-out metal pipe and places the metal pipe industries in a defensive position with competitors when in fact, all of the competing pipe products have environmental or other limitations and therefore those products should likewise be subjected to review when backfill materials are brought in from outside the project limits (non-pretested materials).

Response:

3. It would appear more appropriate to modify the portions of the specifications relative to backfill materials (Section 125) instead of modifying Section 430 since the latter deals with backfill materials. Recommendations for Consideration:
Withdraw the presently proposed revision to Section 430 and implement the following revisions to Section 125:
Backfilling. (Rev. xx-xx-xxxx) Subarticle 125-8.1.3 is deleted and the following substituted:
125-8.1.3 Backfill Materials: Backfill to the original ground surface or subgrade surface of openings made for structures, including pipe, with a sufficient allowance for settlement. The Engineer may require that the material used for this backfill be obtained from a source entirely apart from the structure. Backfill materials from outside the jobsite or other non-pretested backfill materials shall undergo mechanical and environmental testing as directed by the Engineer. The Engineer shall determine suitability of the materials for the intended purpose using applicable design guidelines and specifications.

Response:

4. Add the following new Subarticle to Section 125: 125-8.1.3.1 Backfill Material Testing: Backfill materials from outside the jobsite or from other non-pretested materials shall be tested for each soil source or type for pH, resistivity, sulfate and chloride content by a Department approved independent testing laboratory prior to placement. Provide certification to the Engineer that the results have met the requirements of this Section and are signed and sealed by a Professional Engineer, registered in the State of Florida. Use only material accepted by the Engineer. Do not allow heavy construction equipment to cross over culvert or storm sewer pipes

until placing and compacting backfill material to the finished earthwork grade or to an elevation at least 4 feet above the crown of the pipe.

Response:

5. Add the following new Subarticle to Section 125: 125-9.2.2 Additional Testing: For all structures and pipe backfill materials from outside the limits of the jobsite, or other non-pretested materials, test for environmental properties at a minimum frequency of one test per soil type at the stockpile or point of placement. Test according to the table below. The Engineer will collect enough material to split and create two separate samples and retain one for resolution at point of placement until LOTs represented by the samples are accepted. The Engineer will perform verification tests for corrosiveness at a minimum frequency of one test per soil type per source. FDOT Environmental Tests on Backfill Materials for Structures and Pipe Property Florida Test Method pH FM 5-550 Resistivity FM 5-551 Chloride content FM 5-552 Sulfate content FM 5-553
We believe the recommended revisions to Section 125 will properly address the Department's concern with high pH media in contact with structures and metal pipes and will also address a long needed provision to require environmental testing of backfill materials brought into the project

Response:

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James Evans
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Comments: (12-16-15)
Metal Pipe products are being unreasonably singled out to accommodate concerns related to high pH backfill. Responsible stakeholders should determine the suitability of imported backfill to be used on a project based on soil test results. This will ensure that the service life of metal products, and other buried structures, is not diminished or compromised. This will not eliminate the use of high pH, recycled concrete and crushed limestone in roadway construction, but will restrict it such that any negative effect on metal products is eliminated.

Response:

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Katie Bettman
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Comments: (12-21-15)
The added language restricts the use of certain types of pipe when the pH is greater than 9.0 only when tested. A frequency for this testing needs to be specified. Otherwise, there is nothing requiring the material to be tested. In Section 548, the following language requires testing for every source: "Have the backfill material tested for every soil type for pH, resistivity, sulfate and chloride content by a Department approved independent testing laboratory prior to placement."

Response:

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Michael McGough
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Comments: (12-22-15)
Good Afternoon, Upon review of proposed specification revision 4300100-2, our industry recommends that this be withdrawn from consideration based on the following rationale: This proposed revision unnecessarily singles-out metal pipe when all pipe products have environmental or other limitations. Appendix B of FDOT's Drainage Handbook Optional Pipe Materials clearly provides the recognized limits for various materials, which values are then implemented within the Culvert Service Life Estimator. The upper pH limit for galvanized, aluminized Type 2 and aluminum pipe is 9. EPA regulations limit the acceptable pH for run-off water to 9. Therefore, including this proposed revision adds unnecessary redundancy to the specification. If the problem that is attempting to be addressed with this revision is high pH backfill, such as that which may be encountered by utilizing crushed limestone or recycled concrete aggregate in the backfill material, then it would seem more appropriate to modify the portions of the specifications relative to backfill materials (Section 125) instead of modifying Section 430. While the design process adequately deals with on-site soil environmental properties with Florida Test Methods FM5-550 (pH), FM 5-551 (Resistivity), FM 5-552 (Chloride content), and FM 5-553 (Sulfate content); there seems to be a disconnect with practice in the field. Section 125, in practice, should require physical properties and environmental testing of all backfill materials brought into the project from off-jobsite locations for both structures and pipe where the environmental properties are not pre-qualified. All such testing should be reviewed by the Engineer for compliance with design and specification requirements.

1. Our industry recommends for consideration, that the presently proposed revision to Section 430 be withdrawn and implement the following revisions to Section 125:
Backfilling. (Rev. 12-xx-2015) Subarticle 125-8.1.3 is deleted and the following substituted: 125-8.1.3 Backfill Materials: Backfill to the original ground surface or subgrade surface of openings made for structures, including pipe, with a sufficient allowance for settlement. The Engineer may require that the material used for this backfill be obtained from a source entirely apart from the structure. Backfill materials from outside the jobsite or other non-pretested backfill materials shall undergo mechanical and environmental testing as directed by the Engineer. The Engineer shall determine acceptance of the materials for use in applicable design guidelines and specifications.

Response:

2. Add the following new Subarticle to Section 125: 125-8.1.3.1 Backfill Material Testing: Backfill materials from outside the jobsite or from other non-pretested materials shall be tested for each soil source or type for pH, resistivity, sulfate and chloride content by a Department approved independent testing laboratory prior to placement. Provide certification to the Engineer that the results have met the requirements of this Section and are signed and sealed by a Professional Engineer, registered in the State of Florida. Use only material accepted by the

Engineer. Do not allow heavy construction equipment to cross over culvert or storm sewer pipes until placing and compacting backfill material to the finished earthwork grade or to an elevation at least 4 feet above the crown of the pipe.

Response:

3. Add the following new Subarticle to Section 125: 125-9.2.2 Additional Testing: For all structures and pipe backfill materials from outside the limits of the jobsite, or other non-pretested materials, test for environmental properties at a minimum frequency of one test per soil type at the stockpile or point of placement. Test according to the table below. The Engineer will collect enough material to split and create two separate samples and retain one for resolution at point of placement until LOTs represented by the samples are accepted. The Engineer will perform verification tests for corrosiveness at a minimum frequency of one test per soil type. FDOT Environmental Tests on Backfill Materials for Structures and Pipe Property Florida Test Method pH FM 5-550 Resistivity FM 5-551 Chloride content FM 5-552 Sulfate content FM 5-553 Thank you for your consideration and the opportunity to comment. Please feel free to contact me with any questions.

Response:

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