

Evaluation and Repair Guidelines for New Drainage Pipe



American **Concrete Pipe** Association
www.concretepipe.org

All newly-installed pipe installations should require post installation inspection (PII) to determine the condition of the pipe. The following criteria should be applied to all pipe material types and should be utilized to determine the course of action, if any, to be taken when there are cracks, deflections, bulges, creases, tears, spalls, or delaminations in the pipe. The final decision on course of action and acceptability will be determined by the Engineer.

XXDOT requires inspection on newly-installed drainage pipe to determine the condition of the pipe. Initial analysis shall be performed upon delivery of PII Report to determine if any major problems exist with the contractor's installation methods. The analysis of the information provided in the PII Report will be performed by an Engineer within XXDOT. The following criteria will be applied to all pipe material types and will be utilized to determine the course of action, if any, to be taken when there are cracks, deflections, bulges, creases, tears, spalls, or delaminations in the pipe. The final decision on course of action and acceptability will be determined by the XXDOT Engineer.

Cracks (Rigid Pipe):

- Cracks < 0.01” typically do not require repair or remediation.
- Cracks > 0.01” and < 0.05” are acceptable. However, multiple cracks of this size in an 8’ section may require minor repair.
- In accordance with AASHTO LRFD Bridge Construction Specifications Section 27.6.4, record cracks greater than 0.01” wide. Monitor these cracks in any subsequent inspections.
- Cracks > 0.05” but < 0.10” are acceptable unless the following additional conditions exist:

- Minor repair is required if the pipe is located in a corrosive environment.
- If vertical offset across a crack is exhibited, the following guidelines shall be followed:
 - When vertical offset is less than 0.10” provide minor repair.
 - For vertical offset greater than 0.10” a determination will be made by the Department on the repair method or acceptability of the pipe.

- Cracks > 0.10” will be given consideration by the Department to replace the pipe or allow a Site Specific Repair. See the last section of these guidelines for details concerning Site Specific Repairs.

Cracks or Tears (Flexible Pipe)

HDPE, PVC, or CMP exhibiting any crack/tear

- Consideration will be given by the Department to replace the pipe or allow a Site Specific Repair for any tear that is through the liner of HDPE or for any tear in the wall of CMP or PVC. See the repair section of these guidelines for details concerning Site Specific Repairs.

Deflection (Flexible Pipe)

- Base all deflection measurements on the certified-actual inside pipe diameter supplied by the manufacturer or actual measurements obtained on the project.
- Pipe deflections > 0% but < 5.0% typically do not require repair or remediation.

Repairs (All Pipe Types)

- Pipe deflections > 5.0% but < 7.5% will be evaluated by the Department and a determination made as to acceptability or replacement.
- Pipe deflections > 7.5% require replacement.

Joint Separation (All Pipe Types)

- For joints that are Soil Tight – If infiltration of soil is observed and the joint gap is less than AASHTO guidelines and the manufacturer’s requirements, provide minor repair. If not able to repair, replace as needed. If Infiltration of soil is evident and the joint gap is greater than AASHTO guidelines and greater than manufacturer’s recommendations, provide Site Specific Major Repair or replace as needed.

Slabbing (Rigid Pipe)

- For pipe with slabbing, provide a site specific repair or replace pipe.

Spalling (Rigid Pipe)

- For pipe with spalling that does not have exposed reinforcement, evaluate to determine if a minor repair is necessary.
- For pipe with spalling that has exposed reinforcement, evaluate to determine if site specific major repair will be appropriate. If not, replace the pipe.

Minor Repairs

Can be made with approved materials or methods and do not require a site specific analysis.

Examples of minor repairs can be found in ASTM C990 14.1 and the ACPA “Post Installation Evaluation and Repair of Installed Reinforced Concrete Pipe” Manual.

Other repair resources can be found by visiting the following link <http://www.dot.state.fl.us/construction/ContractorIssues/PipeMatrix/MatrixMain.shtm> and choosing the type of pipe under evaluation.

Site Specific Repairs

Will be designed by a Professional Engineer, sealed and submitted to XXDOT by the contractor for evaluation and approval. Examples of major repairs can be found in the ACPA “Post Installation Evaluation and Repair of Installed Reinforced Concrete Pipe” Manual.

Any repairs made to the installed pipe must be certified by the contractor and the repair contractor. This certification will state that all repairs will have the same service life as newly-installed pipe.

By applying the outlined evaluation and repairs to a post installation inspection report, an owner can be confident that the installed pipe will meet or exceed national standards.

