



Florida Department of Transportation

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GOVERNOR

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Tallahassee, FL 32399-0450

JARED W. PERDUE, P.E.
SECRETARY

October 23, 2023

Khoa Nguyen
Director, Office of Technical Services
Federal Highway Administration
3500 Financial Plaza, Suite 400
Tallahassee, Florida 32312

Re: State Specifications Office
Section: 948
Proposed Specification: **9480203 Optional Drainage Products and Repair Systems.**
Associated with Proposed Specification: 4300201 Pipe Culverts.

Dear Mr. Nguyen:

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

The changes are proposed by Jason Russell to integrate language pertaining to gasket pipe sleeve adapters for thermoplastic pipes used in structures with resilient connectors and conform to current requirements.

Please review and transmit your comments, if any, within two weeks (10 business days). Comments should be sent via email daniel.strickland@dot.state.fl.us.

If you have any questions relating to this specification change, please call me at (850) 414-4130.

Sincerely,

Signature on File

Daniel Strickland, P.E.
State Specifications Engineer

DS/dh

Attachment

cc: Florida Transportation Builders' Assoc.
State Construction Engineer

OPTIONAL DRAINAGE PRODUCTS AND REPAIR SYSTEMS.
(REV 8-4-23)

SUBARTICLE 948-2.3.2 is expanded by the following:

948-2.3.2 Additional Requirements for Class II (100-Year Design Service Life), Type S HDPE Pipe: Class II HDPE pipe shall meet the requirements in Table 948-1 in addition to those in 948-2.3. Perforations will not be allowed. Manufacturers may only use ground Class II HDPE pipe for reworked plastic.

948-2.3.2.1 Requirements for Use in Structures with Resilient Connectors: Use gasketed corrugated pipe sleeve adapters to completely seal to and cover the pipe corrugations. Corrugated pipe sleeve adapters shall be an elongated bell with a smooth outer wall, manufactured at a minimum of 12-inches in length and inserted over the double gasketed corrugations. The sleeve adapters shall be manufactured from polypropylene resin compounds in accordance with ASTM F2881. Upon installation, the connection with the resilient connector shall meet the requirements of ASTM F2510.

SUBARTICLE 948-7.2 is expanded by the following:

948-7.2 Additional Requirements for Class II (100-Year Design Service Life) PP Pipe: Meet the requirements in Table 948-3 in addition to those in 948-7.1. Manufacturers may only use ground Class II PP for reworked plastic.

948-7.2.1 Requirements for Use in Structures with Resilient Connectors: For PP pipe 24 inches and less in diameter, use gasketed corrugated pipe sleeve adapters to completely seal to and cover the pipe corrugations. Corrugated pipe sleeve adapters shall be an elongated bell with a smooth outer wall, manufactured at a minimum of 12-inches in length and inserted over the double gasketed corrugations. The sleeve adapters shall be manufactured from polypropylene resin compounds in accordance with ASTM F2881. Upon installation, the connection with the resilient connector shall meet the requirements of ASTM F2510.

For PP pipe 30 inches or greater in diameter, use at least one section of AASHTO M330-Class II Type D (triple wall) pipe at the pipe to structure connection.

Table 948-3 Stress Crack Resistance			
Pipe Location	Test Method	Test Conditions	Requirement
Pipe Liner	FM 5-572, Procedure A	10% Igepal solution at 50°C and 600 psi applied stress, 5 replicates	Average failure time of the pipe liner shall be ≥100 hours, no single value shall be less than 71 hours. ⁽¹⁾
Oxidation Resistance			
Pipe Location	Test Method	Test Conditions	Requirement
Pipe Liner and/or Crown ⁽²⁾	OIT Test (ASTM D3895)	2 replicates (to determine initial OIT value) on the as manufactured (not incubated) pipe.	25.0 minutes, minimum
Pipe Liner and/or Crown ⁽²⁾	Incubation test FM 5-574 and OIT test (ASTM D3895)	Three samples for incubation of 264 days at 85°C ⁽³⁾ . One OIT test per each sample	Average of 3.0 minutes ⁽⁴⁾ (no values shall be less than 2.0 minutes)
Pipe Liner and/or Crown ⁽²⁾	MI test (ASTM D1238 at 230°C/2.16Kg)	2 replicates on the as manufactured (not incubated) pipe.	< 1.5 g/10 minutes
Pipe Liner and/or Crown ⁽²⁾	Incubation test FM 5-574 and MI test (ASTM D1238 at 230°C/2.16Kg)	2 replicates on the three aged sampled after incubation of 264 days at 85°C ⁽³⁾	MI Retained Value ⁽⁴⁾⁽⁵⁾⁽⁶⁾ shall be greater than 80% and less than 120%.

Note: FM = Florida Method of Test.

(1) If due to sample size this test cannot be completed on the liner then testing shall be conducted on a molded plaque sample. Samples can be removed if test time exceeds 100 hours without failure.

(2) OIT and MI tests on the crown are required when resin used in the corrugation is different than that of the liner.

(3) The incubation temperature and duration can also be 192 days at 90°C or 140 days at 95°C.

(4) The tests for incubated and “as-manufactured” pipe samples shall be performed by the same lab, same operator, the same testing device, and in the same day.

(5) Within each replicate set of tests, the discrepancy range shall be within 9%. If an out-of-range discrepancy occurs, repeat the two MI tests on the same pipe sample. If insufficient material is available, a repeat of one test is acceptable.

(6) The MI retained value is determined using the average MI value of incubated sample divided by the average MI value of as-manufactured pipe sample.

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