

9600202 POST-TENSIONING COMPONENTS  
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

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No Name

Comments: (Industry, 12-3-18)

: Under 960-2.4.4, 1st paragraph, 2nd line, should read, "All other HDPE components are to "meet" the requirements...."

Response: Agree, delete the "s". "meet" not "meets".

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Comments: (Industry, 12-27-18)

Response to Florida DOT Specification 960 REV 11-7-18 Section 960-2.2.2.2 Inlets, Outlets, Drains, Ports, Valves, and Plugs 2. Noticed that this section "For unbonded post-tensioning systems using flexible filler..." Only specified inlets, outlets, drains and valves to be "made from brass or steel", we also noticed that approved flexible filler system on Florida DOT website has the plugs (temporary or permanent) made from polypropylene material. we assume that plugs do not need to be made from brass or steel as long as they have the 150 psi pressure rating.

Response: The concern is that the valves and injection pipes will deform when it is exposed to the heat and pressure from the wax and the weight from the injection hose. Plugs may be made from HDPE or PP provided the material meets the requirements of the Specifications. Plugs must meet all requirements of the Specifications, not just the 150psi pressure rating.

Section 960-2.4.3 through 960-2.4.4 Polypropylene Item 4 -Remolded finished material for stress crack resistance This testing criteria has been revised multiple times over the evolution of the Florida DOT specifications: 1. 9-26-2002 Revision on 2-20-2003 "Test the finished material for these ancillary items for environmental stress cracking per ASTM D 1693, Condition C. All ancillary items shall have an endurance rating of not less than 192 hours". 2. Revision 5-7-2003 Test the finished material for stress crack resistance using ASTM D 5397 resulting in a minimum endurance rating of 200 hours. 3. Revision 10-15-2003 Test the finished polyolefin material for stress crack resistance using ASTM F 2136 at an applied stress of 800 psi. [116 kPa] resulting in a minimum failure time of 200 hours. 4. Revision 5-7-2004 Test the remolded finished polyolefin material for stress crack resistance using ASTM F 2136 at an applied stress of 348 psi. [2.4MPa] resulting in a minimum failure time of 3 hours. 5. Between 5-7-2004 to Date: Testing criteria is same as in 4 above, and this testing criteria has been adopted by many other DOTs as well as PTI /ASBI M50.3-12 Section 4.3.5.2-Corrugated Plastic Duct. 6. Here yet again, the specification has changed to Remolded finished material has a minimum failure time of 100 hours when tested for stress crack resistance using ASTM F2136 at an applied stress of 600 psi. 7. We reached out to the experts on plastic testing, their explanation is that this updated criteria was adopted from AASHTO M330 "Standard Specification for Polypropylene Pipe (12 – 60 IN) Diameter", they don't think the corrugated duct manufactured from cell class specified by Florida DOT has any concerns not passing this specification, we don't think the materials used in previous FODT projects showed any issues on stress crack either, Bottom line is: The testing method specified here (ASTM F2136) is not even designed for this material. ASTM F2136 is

“Standard Test Method for Notched, Constant Ligament-Stress (NCLS) Test to Determine Slow-Crack-Growth Resistance of HDPE Resins or HDPE Corrugated Pipe” Section 960-2.4.4 through 960-2.4.4 High Density Polyethylene Item 3 -Remolded finished material has a minimum failure time of 24 hours when tested for stress crack at an applied stress of 600 psi This testing criteria, similar to the comments we have on 960-2.4.3 polypropylene, has been revised multiple times over the evolution of the Florida DOT specifications as well: 1. 9-26-2002 Revision on 2-20-2003 “Test the finished material for these ancillary items for environmental stress cracking per ASTM D 1693, Condition C. All ancillary items shall have an endurance rating of not less than 192 hours”. 2. Revision 5-7-2003 Test the finished material for stress crack resistance using ASTM D 5397 resulting in a minimum endurance rating of 200 hours. 3. Revision 10-15-2003 Test the finished polyolefin material for stress crack resistance using ASTM F 2136 at an applied stress of 800 psi. [116 kPa] resulting in a minimum failure time of 200 hours. 4. Revision 5-7-2004 Test the remolded finished polyolefin material for stress crack resistance using ASTM F 2136 at an applied stress of 348 psi. [2.4MPa] resulting in a minimum failure time of 3 hours. 5. Between 5-7-2004 to Date: Testing criteria is same as in 4 above, and this testing criteria has been adopted by many other DOTs as well as PTI /ASBI M50.3-12 Section 4.3.5.2-Corrugated Plastic Duct. 6. Here yet again, the specification has changed to Remolded finished material has a minimum failure time of 24 hours when tested for stress crack resistance using ASTM F2136 at an applied stress of 600 psi. 7. We reached out to the experts on plastic testing, their explanation is very similar but made more sense this time that this updated criteria was adopted from AASHTO M294 “Standard Specification for Corrugated polyethylene (12-60 in) Diameter Pipe” , they don’t think the any plastic components manufactured from cell class specified by Florida DOT has any concerns not passing this specification, we don’t think the materials used in previous FODT projects showed any issues on stress crack either. Bottom line is: The specification AASHTO M294 was designated for corrugate sewage pipe, which is the lowest grade industry would expect, if the corrugated sewage pipe can pass AASHTO M294, what is the point to specify this same testing criteria on the materials made from virgin resin and high grade. The testing method here -ASTM F2136 is for polyethylene materials though. Based on above reasons, I suggest that no change to be made on Sections 960-2.4.3 and 2.4.4 as it does not provide any technical merits other than causing unnecessary confusions in PT Industry. This may not be the last version on stress crack either if it is indeed updated as it is.

**Response: The current requirements for stress crack in Polyethylene and Polypropylene are too low and do not provide a valuable assessment of the material. The Department is currently reviewing additional test methods which may be used as an alternative test to the F2136 requirement. Any additional tests will be added to later versions of the specification.**

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