



Joint FDOT/Industry Precast Concrete Annual Teleconference

Minutes – Precast (Pipe, Drainage Structures, Incidental)

Wednesday, October 6, 2021

Teleconference Attendees:

Rob Wilson (PCSA) Fred McGee (CCI), Doug Holdener (FPCA), Angel De Jesus (County Materials), Jason Lambert (Forterra), Tina Ward (PCSA), Doug Wurstle (County Materials), Joe Zachara (Concrete Impressions), Robert Frieszell (RECo), Michael Wiggins (Meyer Concrete Structures), John Snowe (American Concrete Industries), Jeffery Hite, Chet Simmons, Kevin Auliffe, Melitza Avila, Samuel Gallagher, Richard Baier, Tatum Mall, Keegan Homan, Blake Stallworth (D1/7), Joe Miller (D1/7), Shawn Connolly (D1/7), David Henderson (D1/7), Jose Hernando (D2), Sam Middleton (D2), Bo Cumbo (D2), Toby Dillow (D2), Vincent McCoy (D2), Heath Henderson (D3), Kyle McDaniel (D3), Jean Malvoisin (D4/6), Fred Robinson (D4/6), Tom Kunzen (D5), Ken Shartle (D5), Sue Zheng (TP), Scott Arnold (CO), David Wagner (CO), Jason Russell (CO), Steven Nolan (CO), Jennifer Green (CO), Tim Holley (CO), Tim Ruelke (SMO), Charles Holzschuher (SMO), Susan Musselman (SMO), Jose Armenteros (SMO), Ghulam Mujtaba (SMO), Richard DeLorenzo (SMO), Pat Carlton (SMO), Michael Kain (SMO), Brad Pearson (SMO), Thomas Frank (SMO)

Welcome and Introduction

The remote teleconference was called to order at 1:15 PM on Wednesday, October 6, 2021. Thomas Frank welcomed the attendees and announced that Craig Roberts, who previously served as the SMO Precast Concrete Specialist, has accepted a position in D2 Maintenance.

Discussion items:

1. *Specification updates for January 2022 book.*
 - a. Section 346 and Materials Manual (MM) 9.2:
 - The 25 – 70% slag cement proportion range under “General Use” in Table 346-2 has been removed due to durability issues.
 - The specific concrete admixture sub articles in 346 have been deleted, since this is handled by the Concrete Producer rather than the Contractor. The admixture language has been moved to MM 9.2.
 - 346-3 Classification of Concrete has been updated to clarify specifics on the various concrete types.
 - Class I and Class V Special concrete will be eliminated on a future revision given their overlap with adjacent concrete classes.
 - b. Precast Concrete related MM sections (6.3, 8.2, 8.4, 8.6):
 - Clarified the attainment of stripping strength prior to form removal, and the attainment of the specified strength prior to shipment in 6.3 and 8.2.



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- Adjusted the minimum slump flow target to accommodate producers who wish to target on the lower end (8.4).
- Clarified the field demonstration requirement when the precast plant is receiving concrete from a ready-mix plant (8.4).

2. Pipe Joint Performance (hydrostatic) Test.

A reinforced concrete pipe (RCP) Producer has submitted a proposal for the Department to only require the pipe joint performance (hydrostatic) test *once* for each joint design. Currently, the Department requires that the test be performed for each gasketed joint design, on each diameter range in Tables 1 and 2 of MM 6.2, every 5 years. There are currently six diameter ranges for round pipe, and five diameter ranges for elliptical pipe, as seen below.

Table 1									
Hydrostatic Test Approval Size Ranges (Round)									
Range 1				Range 2			Range 3		
12"	15"	18"	21"	24"	27"	30"	33"	36"	42"
Range 4				Range 5			Range 6		
48"	54"	60"	66"	72"	78"	84"	90"	96"	
Note: All pipe sizes above 96" must be tested on each individual size.									
Table 2									
Hydrostatic Test Approval Size Ranges (Elliptical)									
Range 1				Range 2				Range 3	
18"	24"	27"	30"	33"	36"	39"	42"	48"	54"
								60"	66"
								72"	78"
								84"	90"
								96"	
Note: All equivalent designated pipe sizes above 96" must be tested on each individual size.									

- A competing RCP manufacturer states that they perform the test *on each gasketed joint, each diameter, annually*, to verify its sealing capacity. They also perform periodic measurements on the pallets and headers.
- American Concrete Pipe Association (ACPA) Q-Cast program requires the test be performed:
 - ✓ Once on each pipe diameter (size) for each joint design.
 - ✓ As local requirements dictate.

The submitter of this proposal also mentions the safety issue when performing the full-barrel *internal* test due to the extreme pressure put on the restraints that hold the two pipes together during the test. However:

- ASTM C497, which is referenced by Department Specifications, states "The manufacturer has the option to test the pipe joint for watertightness to the parameters established in 9.3.4 by methods that pressurize the joint either internally or externally."



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- Materials Manual 6.2 states “For Pipe with diameters 36” or larger, the Plant has the option to perform hydrostatic test on the Pipe joint by pressurizing the rubber gasketed joint either internally or externally.”
- Other companies state that the full barrel internal joint test is not required unless pipe is designed for sewer or a water treatment plant.

Comments from the submitter of the proposal included:

- They have 4 different joint details, and contend that the test should be performed only on pipe with different joint detail, regardless of diameter.
- They would like to get together with the Florida Concrete Pipe Association (FCPA) and other pipe producers to come up with a recommendation to FDOT on what they would like to see modified regarding the pipe joint testing requirements.

Comments from the group included:

- The State Drainage Office is currently seeing leaking pipe joints on shallow pipes, which is affecting resiliency initiatives. Issues are reported where groundwater is entering through the joints and creating enough head to open the backflow preventer devices (installed to prevent sunny day flooding). A case was reported where the backflow preventer was not closing, and water was gushing in through the pipe joint.
- The Department needs to ensure/verify that the 5-psi joint is being provided by the manufacturer.
- A Producer asked about the pressure rating of the backflow preventers. The information was provided during open forum.
- The Department would not be willing to reduce the current requirements unless there were sufficient alternate QC measures to ensure verification of the 5-psi joint.

3. *Section 942-2 Cold Adhesive Preformed Plastic Gaskets for Pipe Joints.*

The Cold Adhesive Preformed Plastic Gaskets for Pipe Joints in Section 942-2 appear to be limited to sealing elliptical pipe. These materials are also referred to as Preformed Flexible Joint Sealants in ASTM C990 – Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants. Images of these materials are depicted below.



FLORIDA DEPARTMENT OF TRANSPORTATION
STATE MATERIALS OFFICE
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Cold Adhesive Preformed Plastic Gaskets (aka Preformed Flexible Joint Sealants)



These Cold Adhesive Preformed Plastic Gaskets are generally not seen used currently on reinforced concrete pipe.

Profile Rubber Gaskets (includes a pre-lubricated variety)





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A distinction between two types of Profile Rubber Gaskets:

- A. Standard Profile Rubber Gaskets require that the gasket surface (once stretched around the spigot and the tension is equalized) and the inner surface of the bell be lubricated with the appropriate pipe gasket lubricant at the jobsite prior to “homing” the pipes during installation.
- B. “Pre-lubricated” Profile Rubber Gaskets contain a thin layer of silicone lubricant installed on the inner surface of the tube during the manufacturing process, so no lube is applied at the job site. Given that the lubricant is sealed in the tube, no field lubrication is required.

Concrete Pipe manufacturers approached FDOT Materials earlier this year regarding a potential shortage of the pre-lubricated gaskets that they regularly utilize. They inquired about the possibility of using the Cold Adhesive Preformed Plastic Gaskets specified in Section 942-2 if needed. They inquired about using these gaskets on both round and elliptical pipe. However, the title and content of 942-2.1 appears to limit the use of this material to elliptical pipe. It appears that this *may* be outdated language that was specified prior to profile rubber gaskets being manufactured for elliptical pipe.

Section 942 of the 1991 Standard Spec book contains 942-1 Round Rubber Gaskets for Pipe Joints, and 942-2 Cold Adhesive Preformed Plastic Gaskets (For Sealing Elliptical Concrete Pipe Joints), similar to how they exist today. However, **Section 942-4 Profile Rubber Gaskets for Concrete Pipe Joints, which allows profile rubber gaskets for both round and elliptical pipe does not exist in the 1991 book, as it does today, supporting the presumption that the 942-2 language is outdated and needs to be addressed.**

Comments from the group included:

- ✓ The Preformed Flexible Joint Sealants are used on precast box culverts and very large diameters of elliptical pipe.
- ✓ Section 430 contains language regarding how the joint is inspected and accepted, when using these materials. It discusses evidence of “squeeze out” around entire joint circumference during installation. It may be beneficial to insert similar language regarding installation of pipe joint using this material.

Proposal: Either remove Section 942-2 from the Standard Specification, given that these materials are not seen used on precast concrete pipe (an emergency bulletin could be issued if pipe producers could not procure the commonly used profile rubber gaskets, and happened to need to use Preformed Flexible Joint Sealants during a shortage), or remove the apparent restriction that limits their use to elliptical pipe.

Action: SMO will work with the State Drainage Office and propose updating the language on a future revision cycle.



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4. *Incidental Precast Concrete QC data in the Materials Acceptance and Certification system (MAC).*

SMO's concrete mix design team is performing periodic statistical analysis on Section 346 Structural Concrete mix designs. Historically, concrete from Incidental Precast Concrete plants has not been entered into the Department's database. This is now being enforced in order to include those 346 mixes from Incidental plants in the analysis.

Two MAC roles needed for personnel performing this task are Data Entry and Data Reviewer.

QC concrete data from each production LOT at Incidental Precast Concrete plants must be entered into the Department's MAC database in accordance with Section 346.

5. *Buy America Foreign Steel Declarations from Precast Concrete Producers.*

It was reiterated that there are two documents sent to the Project from Precast Concrete Producers which contain Buy America / source of steel references:

A. **Material Certification** – this document is provided at the beginning of the project stating that the Producer will manufacture the products in accordance with their QC Plan and the Contract Documents. It contains a reference to Section 6 of the Standard Specifications (Source of Supply – Steel). Examples of acceptable material certifications are available on the [SMO website](#).

B. **Delivery Ticket (for each shipment)** – must contain a Buy America compliance statement, **and** the dollar amount of any foreign steel used (producer must put \$0 if none).

6. *Open Forum.*

A. A Pipe Producer stated that it is a cumbersome process to meet the requirement in MM 6.2 for the cast date to be included on the delivery ticket with each load.

Each delivery ticket shall include the list of Pipe being shipped, be on the Plant's letterhead and include as a minimum the following information:

A. Financial Project Number

B. Date Shipped

C. Cast Date

D. Type of Pipe

E. Quantity of Products

F. Serial Number

G. Buy America compliance statement and dollar amount of non-domestic steel and iron used in the finished products for each delivery

Comments from the Producer included:

- The cast date listed on the delivery ticket does not appear to have been a requirement prior to July 2020.



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- Loads of Pipe to the jobsite may contain multiple cast dates.
- Pipe could potentially be mixed at job site.
- They have a procedure to include the cast dates on the delivery ticket. However, it is an extra step in the process.

Comments from the Department included:

- The requirement was added for the July 2020 book for traceability, and for consistency with other precast MM sections.
 - The goal is to be able to track the pipe shipments. On a particular day, there may not have been sufficient cage clips installed, which could create cover issues. Or, during random testing, the results from an absorption test may fail, but the pipe may have already been shipped.
 - The Department realizes that multiple dates would often need to be listed on the delivery ticket, but other producers have been able to comply.
 - Common practice is that products receive the QC stamp after they are loaded on the truck, and during that time of stamping is when the inspector has the ability to obtain the cast date for each piece.
 - If there are several hundred pipe installed on a project, the Department may not be able to determine exactly which station the pipes with particular cast dates are installed, but in the event of a material defect (e.g. low absorption value, where results were obtained after shipment) the Department would be able to go through the delivery tickets, and determine at a minimum which projects the defective pipe went to.
 - It is not necessary for the cast dates on the delivery ticket to be printed. The dates could be handwritten on the delivery ticket.
- B. Information was provided on the pressure rating of the backflow preventers inquired about earlier in the meeting.

The district said they have experienced issues on several different valves. Below is information on various valves that have been used by the Department.

Check valve information:

- WAPRO Inline Check valve Inline check valve = shall withstand up to 8 meters / 26' water column (7.25 psi) back pressure depending on the dimension and durometer of the membrane.
- Proco Valves = large diameter back pressure limitation 12 psi - cracking pressure to allow valve to open is 1"-2" of water column over the back flow pressure will normally drain the pipe.



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- Tideflex - When line pressure exceeds the backpressure, the line pressure forces the bill and disc of the valve open, allowing flow to pass. When the backpressure exceeds the line pressure, the bill and disc of the valve is forced closed, preventing backflow. 24" pipe back pressure rating = 20 ft.

Meeting was adjourned at approximately 3:05 PM on Wednesday, October 6, 2021. Minutes submitted by Thomas Frank.