Test Report

CAST-A-SEAL 402 F
Pipe-To-Structure Connector

October 25, 2004

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Purpose of Test: This test was performed to measure performance of the CAST-A-SEAL 402 F Pipe-To-Structure Connector within the requirements of:

- ASTM C 923, Section 7
- ASTM C 1478, Section 7
- ASTM C 1227, Section 9.2.1
- ASTM C 1244, Section 7, for maximum duration.

Results of Test: The CAST-A-SEAL 402 F Pipe-To-Structure Connector documented herein has successfully passed all performance requirements of ASTM C 923, Section 7; ASTM C 1478, Section 7; ASTM C 1227, Section 9.2.1; and ASTM C 1244, Section 7 per Table 1.

Test Materials: The tests were conducted using a CAST-A-SEAL 402 F connector cast into a 24" x 24" x 5" test block. The CAS 402 F connector was integrally cast into the block using a standard casting mandrel. The test block was cured for approximately two weeks prior to testing. Additional test materials included a steel test fixture used previously for similar tests. This fixture includes piping for introducing water pressure, applying vacuum, measuring pressure and vacuum, and draining water from the test apparatus. The test fixture also includes means for restraining the test block, and for applying shear loads and angular deflection as required (see Fig. 1).

Fig. 1

Three calibrated measuring instruments were used: a 0-30 psi gauge for measuring internal hydrostatic pressure in the test apparatus, a 0-5000 psi gauge for measuring load applied to the pipe during the shear test, and a digital stopwatch for timing the tests. In addition, a 0-30 inch-Hg vacuum gauge was used, but could not be verified as calibrated. Accordingly, vacuum loads were applied at 125% of the requirement of the test.

Vacuum tests were conducted with the intact CAST-A-SEAL 402 F. After these tests were concluded, the "face" was cut away (see Fig. 2) and a length of Schedule 40 PVC DWV pipe with a solvent-welded cap on one end was attached using a standard stainless steel take-up clamp. This was the configuration used for hydrostatic testing.

Fig. 2

Test Methods: The apparatus was assembled and 5 inch-Hg vacuum was applied to the block and connector. The vacuum source was removed and the gauge was observed for two minutes. The gauge indicated less than 0.5 inch-Hg loss during the two minute period, satisfying the requirements of ASTM C 1227, Section 9.2.1. The vacuum source was re-attached and 12.5 inch-Hg vacuum was applied to the block and connector. The gauge indicated less than 1 inch-Hg loss during the 121 second test period. This test period is the maximum required under ASTM C 1244, Table 1.

Fig. 3

After completion of the vacuum tests, hydrostatic tests were performed. The proper pressure gauge was installed onto the test apparatus, the outlet vent was opened and the inlet tap was opened. After filling the apparatus completely as evidenced by its flowing from the outlet vent, the inlet valve was closed and then the outlet valve was closed. With the pipe in straight alignment, hydrostatic pressure in the assembly was raised to 13 psi (fig. 3). The assembly was observed for ten minutes and no evidence of leakage was noted from any part of the CAST-A-SEAL 402 F, the concrete test block, or from any other part of the assembly.

Fig. 4

Fig. 5

After the straight alignment test, the assembly was depressurized and the pipe was moved to a greater-than-seven-degree angle of deflection (see Fig. 4) Once set to this angle, pressure was re-established at 13psi and held for 10 minutes. As before, no leaks were observed at any point of the CAST-A-SEAL 402 F connector, or its interface with the pipe or concrete.

For the final required test, pressure was relieved from the apparatus and the pipe was placed in shear with a hydraulically-induced load of 150 lbsf/inch pipe diameter, or a load of 600+ lbsf, per the requirements of ASTM C 923 and ASTM C 1478 (see Fig. 5). The assembly was then slowly re-pressurized to 13 psi and this pressure was maintained for 10 minutes. Again, no leaks were observed at any point of the CAST-A-SEAL 402 F Connector, or its interface with the pipe or concrete.

Respectfully submitted,

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Sworn to before me and subscribed in my presence, this 25th day of October, 2004.

Lori Lowie Notary Public
Ms. Lori Lowie