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RESEARCH UPDATE

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INSITUFORM PIPE LINING PROCESS

**REFERENCES:**

Report WP 91-R-9, U96-1, U96-26. U97-11, U98-7

**INTRODUCTION:**

In the fall of 1992, three culverts underwent an in-place rehabilitation. Rather than replace the culverts a pipe lining process was used. The liners were installed by the manufacturer, Insituform of New England, on the following structures:

- Interstate 89, MM 73.57, Town of Richmond - 1830 mm x 116 m corrugated metal pipe
- VT Route 22A, MM 4.65, Town of Bridport - 1830 mm x 51 m corrugated metal pipe
- VT Route 22A, MM 0.23, Town of Addison - 1830 mm x 40 m corrugated metal pipe

**PRODUCT DESCRIPTION:**

Insituform is a system used to repair deteriorating pipelines without the need of excavation. The system uses a fiber felt liner which is impregnated with resins. The liner is fed into the pipe and sealed at the ends. The liner is then filled with water, pressing it onto the existing pipe. The water is heated, setting the adhesive, then cooled. The water is then drained, leaving a durable resurfaced interior. The advantage of this system is that roadways can remain open to traffic during installation.

**INSPECTION:**

The culverts have been inspected yearly since installation of the product. The most recent inspection on June 30, 1999 showed no apparent signs of change since the last inspection.

When the liner was installed in Bridport, the culvert was collapsing, evidenced by a pronounced elliptical shape. Measurements made at the axes of the ellipse have been identical each year, indicating that the liner has strengthened the pipe and prevented further collapse. The structural integrity of the pipes in Richmond and Addison also has been maintained.

The installation of the liners has provided these pipes with a low friction interior surface. All the pipes were clean and had good flow and there were no apparent signs of wear along the flow line. Blistering is evident in the top of the pipes. This tends to occur further inside the pipes where air circulation is minimal; hence, allowing condensation to collect on the upper surface of the pipe. This is not affecting the performance of the pipes and overall, the pipes seem stable and intact.

**FOLLOW UP:**

The culverts will be inspected again next year and an updated report will follow.