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An educational document from the American Concrete Pipe Association for users and specifiers

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On June 27, 2006, upstate New York received record breaking rainfall for the most rain received in a 24-hour period as measured at the Binghamton airport. The total rainfall of 4.05 inches broke the previous one-day record of 3.57 inches. There were some reports that the area had received over 7 inches of rain in a two day period. The flood waters were responsible for closing stretches of major highways in the region. The storms flooded homes, closed roads, cut power and forced hundreds of people in the upstate area of New York to evacuate.

At approximately 6:20 a.m. on June 28, it was discovered, and reported to police that a 30-foot diameter metal culvert on Carrs Creek had failed, causing a 150 foot length of I-88 to be washed out. The collapsed highway claimed the lives of two truck drivers, one east bound and one west bound, when their trucks plunged into the 50 foot deep hole that had been created across all four lanes of I-88.

There has not been any formal report released on the cause of the metal culvert collapse. Speculation has focused on culvert corrosion and erosion, while some have speculated that the rain may have just produced a flood too great for the culvert to handle.

The New York DOT requires that culverts greater than 20-foot in diameter shall be inspected every two years and there are a total of 1,809 culverts subject to such inspection.

In August 2004 the DOT conducted an inspection of the subject metal culvert and generated a bridge inspection report. The inspection report rated the metal culvert as a 5, on a scale from 1 to 7, which corresponds to the culvert being in generally good condition. On the bridge inspection rating scale a rating of 3 or below would indicate that the culvert would need some type of work to bring it up to standards. The inspection notes indicated that there was "a noticeable dip in the driving lanes over the culvert" and that there was "full width transverse cracking" of the pavement slabs approaching and over the culvert. The inspectors also noted that there was "severe erosion beneath the left end concrete slope paving, exposing the outside of the pipe from below the concrete for the full slope length." Culvert corrosion was also noted: "the galvanizing has failed along the lower portion of the pipe" and the "pipe culvert invert is moderately corroded along its entire length." The inspection noted that there were a "significant" number of missing and broken bolts in the metal culvert.

Claims for wrongful death of two people and for property loss have been brought against the State of New York alleging that the State was negligent as a result of its "failure to properly evaluate and appreciate the danger posed by the hazard and risks noted in the 2004 report." For judicial efficiency and with consent from the parties, the court ordered that the claims be joined for the purposes of discovery and trial due to the claims containing the same basic set of facts. The lawsuit states that "corrosion and abrasion of corrugated steel culverts is well known" and it is "also known that once the galvanized zinc coating is worn away, corrosion can be rapid." The lawsuit alleges that the further deterioration of the culvert, and soils surrounding the culvert, was foreseeable by the State, but none of the problems were cited for further examination or repairs. The lawsuit also alleges that the culvert should have been originally designed to withstand more serious flooding. The lawsuit points out that the State failed to perform any emergency inspections of road sections that were known to have "structural issues" despite the forecast for heavy rain and flooding in the area and the State did not divert traffic away from "vulnerable sections of roadway."

The Court has recognized that the structure is technically a culvert from one engineering standpoint, but the culvert is recognized as a bridge pursuant to New York Highway Law § 230, hence the following reference to Carrs Creek Bridge.

Additionally it has been found that the Carrs Creek Bridge was constructed in 1974 and it required emergency stream channel erosion repairs in 1996. In May 2008 the Court refused a motion by the defendant to disqualify the plaintiffs' expert due to his previous employment with New York State's DOT as Director of Region 9, which encompasses the location of the I-88 culvert collapse. The Court ruled that there was no conflict of interest for the former DOT Director to act as an expert witness for the plaintiffs in light of the fact that there was no evidence indicating that the former director had obtained any confidential knowledge regarding the culvert through his employment at the DOT. Further, the former director stated that he did not approve or design the culvert, nor did he have any design input in the culvert's installation.

The Court stated that in consideration of New York's Public Officers Law § 73, the former Regional Director can:

“provide expert testimony based on [his] engineering knowledge, training and experience on industry standards for bridges...[He] may testify about [his] knowledge of DOT design and construction procedures that were current in and before the Carrs Creek Bridge was built, which is prior to [his] tenure as Regional Director. [He] may not provide any testimony about the Carrs Creek Bridge within the period that [he was] the Regional Director, which will include the erosion repairs to the Carrs Creek Bridge. [He] may provide expert engineering testimony pertaining to the inspection and failure of the structure for the period 1998 until the collapse in 2006.”

Sadly, due to the ever decreasing DOT budgets resulting from escalating material costs and reduced funding, the existing infrastructure will continue to be pushed to the limit. As more and more is expected from materials that can't produce the durability that is required for today's highway system it seems that resulting litigation over damages from the failure of such materials will continue to grow. The ACPA will continue to provide updates on this case until it has a final resolution.