

Department of Civil Engineering and Engineering Mechanics
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The Cause of the I-35 West Bridge Collapse

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Time: 2:30 pm - 3:30 pm
Location: 253 Engineering Terrace

The I-35 West Bridge in Minneapolis Minnesota collapsed on August 1st, 2007 at 6:04 pm killing 13 people and injuring many more. A nearby security camera captured a video of the collapse. The National Transportation Safety Board investigated the bridge after the collapse and quickly focused on ruptured gusset plates. Our investigation was performed in parallel with the NTSB investigation. Unlike the NTSB we were not allowed to look at the wreckage of the bridge until the NTSB released their own findings, a year after the collapse occurred. We developed a rigorous approach for collecting forensic information a structure and studying its behavior over time holistically. In order to determine the cause of the collapse we investigated the actual condition of the bridge from drawings, measurements and forty years of inspections. In addition, we studied the loading history and the loading on the day of the collapse. The resulting collapse model captures the actual demands upon the actual capacity of the bridge prior to collapse and identifies how this loading was unique. Our analysis confirms that the theory presented by the NTSB does not tell the whole story. In addition, we have generalized the Forensic Information Model approach that we used to investigate the collapse and applied it to a wide array of forensic investigations and failures. Both the cause of the collapse and the Forensic Information Model approach will be presented.

Biography

Elisabeth Malsch, Ph.D., P.E., a senior associate in the firm's New York office, has been with Thornton Tomasetti for eight years. Malsch created the forensic information model at Thornton Tomasetti, a computer graphic program that organizes and analyzes data related to forensic investigation projects. Dr. Malsch is adjunct assistant professor in the Columbia University Civil Engineering and Engineering Mechanics department.

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