

U.S. Theory Is That Flood Caused Thruway Bridge's Footing to Shift

By ROBERT O. BOORSTIN Special to The New York Times

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ALBANY, April 8 — The swirling floodwaters of the Schoharie Creek may have dislodged gravel and silt around the footings of the bridge on the Gov. Thomas E. Dewey Thruway, causing the center to collapse Sunday, Federal authorities said today.

Stressing that this was only a preliminary theory, the chief bridge engineer of the Federal Highway Administration said the raging waters might have created a phenomenon known as "scouring," which might have caused a hole to form next to a footing in the middle of the creek. In turn, he said, that footing might have shifted, causing one of the four pairs of columns supporting the 540-foot bridge to shift and the structure to collapse.

In a telephone interview from Washington, the engineer, Stanley Gordon, said observations that he and hydraulic engineers made Tuesday indicated that this could have happened.

State Engineer 'Not Speculating'

The chief engineer of the New York State Thruway Authority, Daniel S. Garvey, would not comment today on the preliminary conclusions by the Federal authorities. "Short of us finish-

ing this operation, I'm not speculating," he said.

At the site of the collapse, some 40 miles northwest of Albany in Montgomery County, no new vehicles or bodies were uncovered today as the state police continued to search for as many as seven motorists reported missing. The bodies of three and the mangled remains of two cars and the trailer of a truck were pulled from the creek on Monday.

The fast-moving waters of the creek continued to prevent divers from entering them. The state police, using grappling hooks, probing rods and metal detectors, continued to search from the shores and boats.

New Detours Sought

At the State Capitol, the chairman of the Disaster Preparedness Commission, Dr. David Axelrod, announced that the state has hired two forensic engineering concerns to determine independently the cause of the bridge collapse. They are Wiss, Janney, Elstner Associates of Chicago, specialists in structural engineering, and Mueser Rutledge of New York City, experts in foundation engineering and waterfront structures.

State transportation officials, meanwhile, continued to search for new detour routes for the 15,000 vehicles that are estimated to have traveled over the bridge every day.

Commenting on the bridge collapse, Mr. Gordon of the Federal Highway Administration said no final conclusions could be reached until after the creek levels had receded enough to allow a thorough examination of the bridge's four footings. Each is 82 feet long, 19 feet wide and about 5 feet thick.

Investigators are expected to focus on the two footings buried six feet into the center of the creek. Each footing

supports a base of reinforced concrete called the plinth, and each of these supports two concrete columns called pylons, which are connected to steel beams under the four-lane roadway.

The three center portions of the five-section bridge collapsed, and the two sections still standing are listing.

'Scouring' Phenomenon Described

Mr. Gordon said scouring occurs when rushing water disrupts the gravel and silt around the footings.

"As the rushing water hits the concrete surface, it sets up these eddy currents, this whirlpool type of action, that

works up the silt and gravel and transports it downstream," he explained.

A hole can be formed, "and if it becomes deep enough, it's possible to undermine a footing," Mr. Gordon said.

The bridge, built to withstand what engineers call a "once-in-a-hundred-year" flood, was given an acceptable rating of 5 on a scale of 7 when Thruway engineers last inspected it in April 1986. But Thruway authorities said high water prevented the engineers from examining underwater portions, including the footings.

Mr. Garvey, the Thruway Authority engineer, said the Thruway's chief

bridge engineer had informally inspected part of the foundations in the creekbed last May and June. But he added that no records of the visit were kept by the engineer, Keith Giles.

Authority spokesmen said Mr. Giles was not available for comment. Calls to his office were not returned.

Mr. Slocum said the 31-year-old bridge was insured for its original construction cost of \$8.8 million, with a \$2.5 million deductible. He said a new bridge, which officials have said would take between eight months and two years to construct, would cost in excess of \$10 million.

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