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This is preliminary information, subject to change, and may contain errors. Any errors in this report will be corrected when the final report has been completed.

Collapse of the Fern Hollow Bridge

Pittsburgh, Pennsylvania
January 28, 2022

This report provides an update to the preliminary information released by the NTSB on February 7, 2022, concerning the January 28, 2022, collapse of the Fern Hollow Bridge in Pittsburgh, Pennsylvania. Additional activities completed by the National Transportation Safety Board (NTSB) include video analysis, the recovery, documentation, and forensic examination of bridge structural components, and preparation for testing of multiple steel samples.

Updated Information

Based on initial information, the preliminary report listed ten vehicle occupants as being injured during the bridge collapse. Through further investigation, the NTSB confirmed a total of nine occupants in six vehicles, including a transit bus operated by the Port Authority of Allegheny County. Two of the vehicle occupants sustained serious injuries, two sustained minor injuries, four were uninjured, and the injury status of one is unknown.

Recovery of Structural Components

NTSB investigators were on-scene during the demolition process and gained greater access to structural bridge components identified as having evidence critical to the investigation. Some of the components were initially examined underneath the collapsed structure. As these components were uncovered, investigators documented them in place, before removing them from the wreckage. The structural components were then removed from the wreckage and the NTSB examined them further, including using 3D laser scanning technology. Areas of each component were subsequently identified for additional analysis, and the bulk of the retained sections are being housed at the Federal Highway Administration's (FHWA's) Turner-

Fairbank Highway Research Center in McLean, Virginia for future testing. Other pieces will be analyzed at the NTSB's Materials Laboratory.

Tests Conducted by the Turner-Fairbank Highway Research Center

As a party to the NTSB investigation, the FHWA has provided resources and expertise to evaluate the materials used in constructing the bridge. NTSB and FHWA investigators plan to conduct both mechanical and chemical testing on material samples prepared from portions of each bridge leg, as well as several girder sections. Investigators also plan to examine plate dimensions and weld quality.

Video Review

On March 16, 2022, investigative party members convened at NTSB headquarters in Washington, DC, where they reviewed video footage from the time of collapse, captured by the transit bus's camera system. Footage from two cameras, one forward-facing and one rear-facing along the curbside of the bus, was determined to have investigative value, and the group members collaboratively selected the frames depicting events of interest. Two frames, captured by the cameras and shown as figures 1 and 2, provide some information on the sequence of the collapse. The first frame (figure 1) is from the forward-facing camera and shows the bridge deck separating at the east expansion joint (the red oval highlights the expansion joint). The second frame (figure 2) is from the curbside camera and shows that, at nearly the same time, the west end of the bridge has already fallen off the west abutment (the red arrow points to the abutment).[1]

[1] The frame rates for the two cameras are different, and specific frames could not be synchronized. Information from the video system suggests the two frames are less than 0.33 seconds apart.

Figure 1. Video frame from the forward-facing camera, showing the opening expansion joint.

Figure 2. Video frame from the rear-facing curbside camera, showing the west end of the bridge already fallen off the west abutment.

A factual report of the video examination will be completed by the group members and included in the docket for this investigation.

Thus far, the investigation has not found any evidence of widespread deficiencies with rigid K-frame superstructure types. All aspects of the collapse remain under investigation while the NTSB determines the probable cause, with the intent of issuing safety recommendations to prevent similar events.