NTSB Press Release

National Transportation Safety Board Office of Public Affairs

Fifth Update: Investigation into Collapse of I-35 Bridge

3/17/2008

The following is an update of the National Transportation Safety Board's investigation into the August 1, 2007 collapse of the I-35W bridge in Minneapolis, Minnesota.

NTSB Chairman Mark V. Rosenker today announced that "significant progress continues to be made in the investigation," and as a result he believes a final NTSB report on the cause of the bridge's collapse and additional safety recommendations should be able to be completed and presented before the end of the year. "I applaud the team for its expeditious, thorough and tireless investigation thus far."

"We have gotten and continue to receive excellent cooperation from the Federal Highway Administration and the Minnesota Department of Transportation and have collected a large body of evidence to this point."

As one result of that progress, Rosenker announced that the Board's public docket on this investigation, which comprises investigative reports of the NTSB group chairmen, photos and information submitted by parties, has been made available to the public on the Board's website beginning today.

Details of the investigation's progress follow:

Load Capacity Calculations for Steel Truss Bridges

On January 15, 2008, the NTSB issued a recommendation to the Federal Highway Administration (FHWA) calling on that agency to require bridge owners (primarily States) to conduct load capacity calculations to verify the stress levels in all bridge structural elements (for non-load-path redundant steel truss bridges), including gusset plates, remain within applicable requirements whenever planned modifications or operational changes may significantly increase stresses. This was the result of the Board's investigation finding that some of the gusset plates on the I-35W bridge were under-sized because of an error in the original design process.

Immediately following issuance of this recommendation, the FHWA released a technical advisory to State Departments of Transportation that supplements the American Association of State Highway and Transportation Officials' (AASHTO) procedures for load rating steel truss bridges. The FHWA is continuing to develop guidance for load rating evaluations of gusset plates in truss bridges, and will work with the State DOTs to refine and finalize this guidance. Also following the Safety Board's recommendation and FHWA's technical advisory, States have initiated courses of action to address the concerns raised. These actions generally include identifying bridges that have undergone changes during their lifetime, then analyzing and recalculating the load carrying capacity of the gusset plates utilizing the evolving FHWA guidance.

The Federal Highway Administration has provided the NTSB with full access to the National Bridge Inventory database and worked with Safety Board investigators to define the population of highway bridges affected by the NTSB recommendation.

Design Issues

The Bridge Design Group continues to investigate design issues, including the review and approval process.

Sverdrup & Parcel was the original design consultant for the I-35 bridge and had been acquired by The Jacobs Engineering Group in 1999. Jacobs has provided archival information to help investigators better understand what type of system of checks and balances would have been in place when the bridge was designed back in the 1960s.

Personnel from the Minnesota Department of Transportation (MnDOT) have been interviewed regarding the Department's role in quality control for the design review process. These interviews have focused on what types and level of review would have been conducted in the 1960s as well as how the process works today. Interviews were

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also conducted of FHWA personnel in the St. Paul District Office regarding that agency's role in quality control. These interviews have allowed investigators to better understand how the oversight and design review process of the FHWA has evolved from the 1960s to the system currently in place.

Additional private design consultants and State departments of transportation are being identified as candidates for further NTSB interviews regarding issues of quality control and the design review process.

Computer Analysis

The Structures Modeling Group is continuing a complex set of finite element computer analyses of the bridge, with technical support from party members. This effort has also involved contracted engineering support from the State University of New York in Stony Brook and from Simulia, a Rhode Island subsidiary of Dassault Systemes that develops the Abaqus product suite for Finite Element Analysis.

Computer modeling of the bridge in its pre-collapse state is well underway to help explore the potential causes for its collapse.

In addition, the Board's Office of Research and Engineering contracted with the University of Minnesota's Department of Civil Engineering to construct a 1/200th scale model of the I-35W bridge to provide investigators with a 3- dimensional representation of the bridge's supporting structure.

Digital Images

The Video and Photogrammetry Group is working to identify and catalog approximately 20,000 digital images taken by all parties throughout the on-scene investigation, some of which are in the docket. Additionally, the group is completing a study of the data captured by the surveillance video camera located at the south lock on the west side of the bridge, which recorded a portion of the bridge during its collapse sequence. This report is currently undergoing an internal technical review.

Wreckage Examination

In support of the Structural Investigation Group, the NTSB Materials Laboratory is examining specific aspects of the bridge, including nodes U10 East and West and the corrosion areas on the gusset plates from nodes L11 East and West. The Materials Lab is in the process of completing several reports related to these examinations. These sections of the bridge's superstructure have been removed from the storage site in Minneapolis and transported to the NTSB facilities for preservation, testing and further evaluation.

Public Docket and Future Schedule

The NTSB maintains public dockets for its investigations. These contain factual information gathered by the various Safety Board investigative groups that will be used by the Board in analyzing the accident and formulating its final report and safety recommendations.

The following technical investigative group factual reports are undergoing peer and managerial reviews, or have been completed:

* Structural Investigation Group
* Witness Group
* Highway Construction Factors Group
* Survival Factors Group
* Bridge Design Factors Group

These factual reports are being placed in the public docket as soon as they are completed. The docket currently contains nearly 300 pages and includes the Structural Investigation Group Report noted above. As of today, the docket is available on the Board's website, at http://www.ntsb.gov/dockets/Highway/HWY07MH024/default.htm.

Additional reports will be placed on the website as they are entered into the docket in the coming months.

Several additional investigative activities remain to be conducted. These include the Structures Modeling Group's efforts, which will continue for several more months as new computer models are developed to examine specific failure scenarios to help identify the cause of the collapse. Also, the Structural Investigation Group is beginning a sequencing study that will incorporate the physical evidence of the wreckage, the surveillance video, and the findings of the Structures Modeling Group, to determine, to the greatest extent possible, the sequence of events that describe the initial moments of the collapse. No determination has been made as to the specific cause of the bridge's failure.

Because of the amount of factual information collected during the investigation and the significant progress being made, the Board has agreed with the investigative team not to hold an interim investigative hearing. The team

believes that, barring unexpected developments, it is likely that a final report will be ready for the Board to consider at a public meeting in Washington, D.C. by the end of the year.

The final report will include the probable cause of the collapse and will likely include additional safety recommendations. That meeting will be open to the public and press and available free of charge via webcast.

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The National Transportation Safety Board (NTSB) is an independent federal agency charged with determining the probable cause of transportation accidents, promoting transportation safety, and assisting victims of transportation accidents and their families.