



# Memorandum

Subject: **ACTION:** Inspection of Non-Structural Tunnel  
Elements Located above Roadways

Date: November 6, 2020

From: Joseph L. Hartmann, Ph.D., P.E.  
Director, Office of Bridges and Structures

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In Reply  
Refer to: HIBS-30

To: Division Administrators  
Federal Lands Highway Division Directors

The purpose of this memo is to notify tunnel owners of the circumstances of the February 21, 2018 fatal crash in the Lehigh Tunnel and to emphasize the importance of inspecting, documenting, and promptly repairing significant corrosion in nonstructural tunnel elements located above roadways.

On February 21, 2018, a truck-tractor in combination with a semi-trailer, was traveling south on Interstate 476 (Pennsylvania Turnpike) in the right lane inside Tunnel No. 2 of the Lehigh Tunnel in East Penn Township, Pennsylvania. After traveling about 1,000 feet through the 4,379-foot-long tunnel, the truck-tractor struck a 10-foot-long section of electrical conduit whose support system had failed. The conduit impacted the vehicle's windshield and struck the truck driver. The truck driver died in the crash. No other injuries or damaged vehicles were reported.

Investigators from the National Transportation Safety Board (NTSB), along with experts from the Federal Highway Administration (FHWA) assisting the NTSB investigators, examined various portions of the electrical conduit and suspension system throughout tunnel No. 2 after the crash. Investigators found corroded, fractured, and missing transverse conduit supports at multiple locations.

The NTSB determined that the probable cause was the failure of the electrical conduit support system in Lehigh Tunnel No. 2 due to long-term corrosion, which resulted in displacement of the electrical conduit into the travel path of the truck-tractor. The NTSB made two recommendations:

1. Notify tunnel owners of the circumstances of this crash, emphasizing the importance of inspecting, documenting, and promptly repairing significant corrosion in nonstructural tunnel elements located above roadways.
2. Revise the Tunnel Operations, Maintenance, Inspection, and Evaluation Manual (TOMIE); Specifications for the National Tunnel Inventory (SNTI); and inspection training courses to classify significant corrosion in nonstructural tunnel elements as a critical finding that requires immediate action.

The NTSB issued a Highway Accident Brief on August 20, 2020. This can be accessed at <https://www.nts.gov/investigations/AccidentReports/Pages/HAB2004.aspx>

The Office of Bridges and Structures (HIBS) has worked with the National Highway Institute (NHI) since the incident to revise the NHI tunnel inspection courses so they emphasize the importance of corrosion in non-structural items and critical findings. In addition, the HIBS reviewed the TOMIE to verify it discusses the inspection of overhead non-structural elements and found that it does. Additionally, in the TOMIE's next revision cycle, the HIBS will add additional clarifying language that further reinforces the significance of corrosion to overhead non-structural tunnel elements.

The SNTI does not have an item to specifically track critical findings but has multiple items for tracking the condition of certain overhead non-structural items. These data items alone are not meant to be used as the only source of identifying critical findings. The National Tunnel Inspection Standards require States, Federal agencies, and tribal governments to have procedures to ensure critical findings are identified and addressed in a timely manner (23 Code of Federal Regulations 650.513(j)).

Lastly, the Office of Bridges and Structures launched a Critical Findings Database (CFD) early this year to serve as a repository of information on critical findings and to provide information that can be used to identify and target vulnerabilities and trends in bridge and tunnel performance. The guidance for the CFD will be updated in FY2021 to include the corrosion of attachments of overhead non-structural items as one of the defects which may be recorded into the database.

Please share this information with your State, Federal, and tribal partners and work with them to ensure tunnel inspection procedures include appropriate requirements for inspecting overhead elements.

Please direct questions to John Thiel at (202) 366-8795 or e-mail at [John.Thiel@dot.gov](mailto:John.Thiel@dot.gov) or to Shay Burrows at (202) 366-4675 or e-mail at [Shay.Burrows@dot.gov](mailto:Shay.Burrows@dot.gov).

cc: Directors of Field Services  
Director of Technical Services  
HIBS-30