



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

GUARDRAIL COMMITTEE

MICHAEL F. EASLEY
GOVERNOR

April 17, 2002

SECRETARY
ROADWAY DESIGN UNIT
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MEMORANDUM TO: J. VICTOR BARBOUR, PE
STATE DESIGN SERVICES ENGINEER

FROM: C. L. JONES, P. E.
STATE MATERIALS ENGINEER

SUBJECT: Wood Guardrail Posts & Offset Blocks

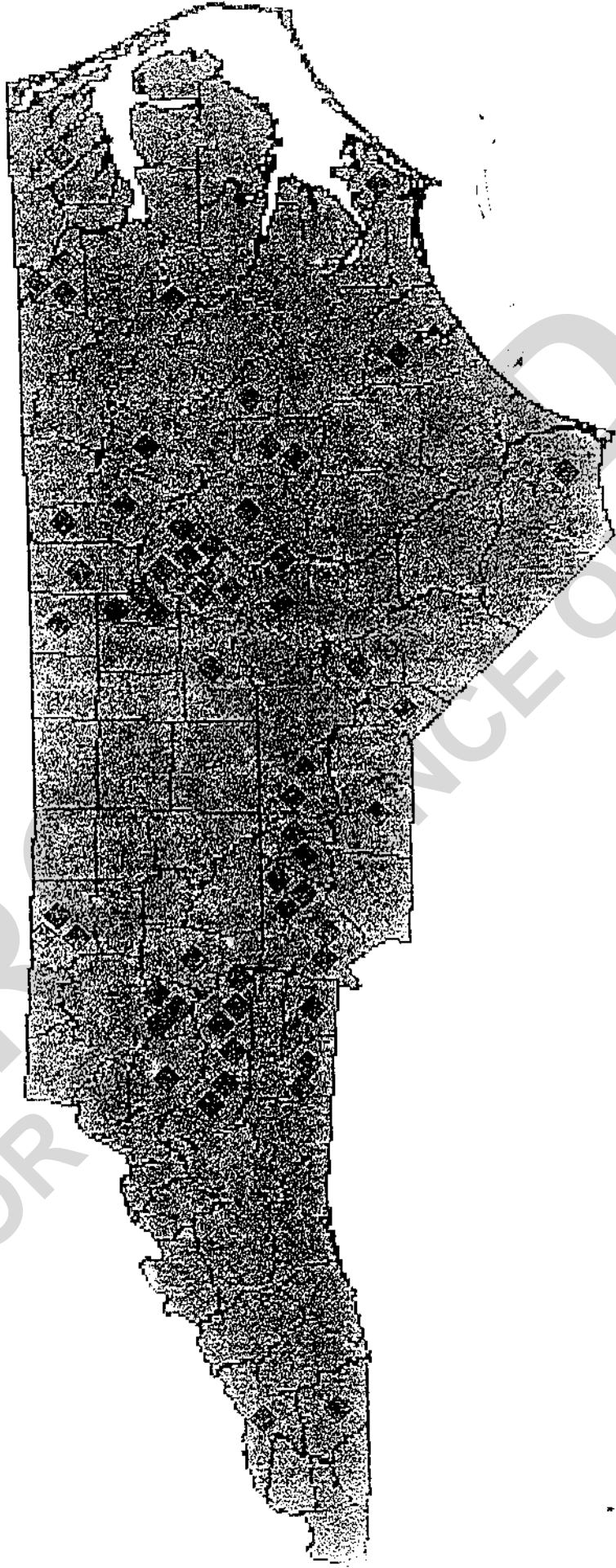
The National Transportation Safety Board (NTSB) discovered extensive termite damage in wood guardrail posts while investigating an accident involving a motorcoach in Louisiana. While the guardrail in this accident was not designed to redirect a 35,000 pound motorcoach, the NTSB found that the termite damage could have compromised the safety of smaller passenger vehicles that it was designed to stop.

The NTSB reiterated five (5) safety recommendations and issued 13 new safety recommendations as a result of this accident. One of the new safety recommendations was specifically addressed to AASHTO. The recommendation was to "Inform your members about the weakened guardrail conditions due to termite infestation found in this accident and urge them to perform periodic structure inspections of wood or guardrail posts."

Based upon this information, the Materials and Tests Unit evaluated 110 different guardrail locations in 61 counties throughout the state. We were surprised to find that 65 of these locations (59%) exhibited major distress. Severe insect damage was observed at 35 locations (32% of the total). The other damaged locations were either severely cracked or checked, rotten or broken. Twenty-one of the locations exhibiting severe damage were less than 20 years old.

We are continuing to gather information, but based upon the investigation so far, we recommend that the use of wood guardrail posts and offset blocks be discontinued. I have a presentation showing the extent of the damage that could be shown at the next guardrail committee meeting if desired.

LOCATIONS WITH SEVERE DAMAGE





National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: SEP 10 2001

In reply refer to: H-01-28

Mr. John Horsley
Executive Director
American Association of State Highway and Transportation Officials
444 North Capitol Street, N.W.
Suite 249
Washington, D.C. 20001

The National Transportation Safety Board is an independent Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge your organization to take action on the safety recommendation in this letter. The Safety Board is vitally interested in this recommendation because it is designed to prevent accidents and save lives.

This recommendation addresses structural evaluations of wooden guardrails. The recommendation is derived from the Safety Board's investigation of the Custom Bus Charters, Incorporated (Custom), motorcoach accident that occurred in New Orleans, Louisiana, on May 9, 1999,¹ and is consistent with the evidence we found and the analysis we performed. As a result of this investigation, the Safety Board has reiterated 5 safety recommendations and issued 13 new safety recommendations, 1 of which is addressed to the American Association of State Highway and Transportation Officials. Information supporting this recommendation is discussed below. The Safety Board would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendation.

During the accident sequence, the motorcoach struck the terminal end of a guardrail and fractured 11 wooden guardrail posts. The 27-inch-high guardrail at the accident scene was not designed to redirect vehicles as tall (center of gravity 39 inches above the ground) and heavy as a 35,250-pound motorcoach. Given an estimated speed of 60 mph and the approach angle of the motorcoach, it struck the guardrail with a force that was 62 times more than the guardrail was designed to absorb.

Although the presence of the guardrail system had little effect on the severity of the accident, Safety Board investigators were concerned that the extensive termite damage found in some of the guardrail posts could have compromised the safety of the smaller private passenger

¹ For more information, read: National Transportation Safety Board, *Motorcoach Run-Off-the-Road Accident, New Orleans, Louisiana, May 9, 1999*, Highway Accident Report NTSB/HAR-01/01 (Washington, DC: NTSB, 2000).

In summary, based upon our investigation of guardrail installations with wood posts, we recommend that the standard be modified to specify steel guardrail posts with recycled plastic offset blocks. Marie Sutton advises that numerous manufacturers of recycled plastic offset blocks are approved who should be able to meet the demand. The Chief Engineer's Office and the Division Engineers have reviewed this information and are in full support of this recommendation.

Please contact me if you have questions about this.

cc: J. D. Goins, PE
Roberto Canales, PE
Steve Varndoe, PE
Lacy Love, PE ✓

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