



NEWS

OCTOBER 19, 1994

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WISS, JANNEY SUBMITS RAIL TUNNEL DEFORMATION REPORT TO MTA

An investigation by an independent consulting firm retained by the MTA has confirmed earlier reports that the improper installation of wooden wedges and the failure to properly grout between the wedges were primary causes of the Metro Rail tunnel deformation that occurred beneath Hollywood Boulevard last August.

The study by Wiss, Janney, Elstner Assoc., Inc., which focused on tunnel deformation and not on street settlement, will be submitted to the Federal Transit Administration along with other documents, according to MTA Chief Executive Officer Franklin E. White. Wiss, Janney was hired as an independent forensic engineering firm to investigate the design and use of wooden wedges in the expansion gap system of the initial tunnel liner.

"We also will give the FTA our plans for reorganizing the rail construction program and for the resumption of tunneling," White said. "We want to get our current and future construction projects back on track as quickly as possible."

Describing a combination of the use of wooden wedges covered by "defective" and thin concrete grouting, the consultants' report said, "This construction practice was the primary cause of the severe wedge crushing observed in the zone of maximum subsidence..." near the intersection of Hollywood Boulevard and Wilcox Avenue.

"If non-shrink grout were installed as intended," the consultants wrote, "it would have had sufficient strength to prevent excessive deformation at the expansion gap."

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Specifications of the original tunnel construction contract required the use of metal struts to support the crown segment of the tunnel liner. Instead, the tunnel contractor, Shea/Kiewit/Kenny, as permitted by the contract requested permission from the construction management firm -- Parsons-Dillingham -- to substitute 6-inch-by-32-inch hardwood wedges for metal struts. Non-shrink drypack concrete was to be applied within 96 hours to complete the expansion gap. The request was reviewed by the tunnel design firm, Engineering Management Consultants, and the alternative procedure was approved.

Investigators, however, found that the actual expansion gap work did not meet the intent of the plan submitted by the contractor. Subsequent inspections of the expansion gaps indicated that the non-shrink grout was not properly installed and that wood shims were often used between the wedges. The non-shrink grouting was "defective" and later cracked in many locations. In some cases, wood was exposed.

The contractor's design of the expansion gap system overestimated the load-bearing strength of the wooden wedges used in the gaps between the precast concrete liner segments, the investigators said, and water leaking onto the wood further reduced the strength of the wedges. Still, the investigators said the wooden wedges could have performed satisfactorily had they been properly grouted.

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