

Mr. Howard, South End, Turakina: Experienced tunneller, but lacked keenness and did not understand the full requirements of the position.

Mr. Knight, North End, Turakina: A keen foreman with good experience. Was considered the best of the foremen.

Tunnellers: The placing of the concrete in the crown of the arch in portions of the tunnel indicates bad workmanship on the part of the workers, as considerable variation in the thickness of the lining is revealed by the borings. In some places the concrete has been put in to the required thickness, while in others, it is less than half this amount, indicating either that insufficient care was taken to see that the concrete was properly placed or mixed, or that the arch timbers were standing too low to allow this to be done. In the latter case it would be the party's obligation to pole back the timbers to give sufficient clearance. In this connection, however, the difficulties attaching to the class of timbering ordered to be adopted should not be overlooked.

There is also evidence of insufficient concrete filling or, in its absence, of adequate packing of the arch shoulders along some portions of the tunnels, but this must be deemed to have been condoned by the supervisors, as they raised no objection to the practice and the tunnellers must thereby escape serious blame, even though it is contrary to good tunnelling practice. There is, however, no evidence of deliberate slurring in the execution of the work; but the evidence indicates that the tunnellers merely carried out what was required of them, although in some instances this was against their experienced judgment. In the opinion of the Committee, this course was not justifiable.

(Sgd.) J. H. BOYES.

(Sgd.) H. VICKERMAN.

(Sgd.) W. BROOKE.

Wellington, 17th July, 1944.

#### LIST OF WITNESSES

W. L. Newnham	..	Present Engineer-in-Chief and Permanent Head, Public Works Department.
C. O. Turner	..	Designing Engineer, Head Office, Public Works Department.
J. Wood	..	Retired Engineer-in-Chief, Public Works Department.
H. H. Sharp	..	Retired Inspecting Engineer, Public Works Department.
E. D. Kalaugher	..	Engineer, Public Works Department, Fordell.
F. W. Lindup	..	District Engineer, Public Works Department, Nelson, previously at Stratford.
G. W. Sampson	..	Acting District Engineer, Public Works Department, Wanganui.
B. C. Amund	..	Engineer, Public Works Department, Trentham, previously at Fordell.
A. P. L. Thompson	..	Senior Foreman, Fordell Tunnel, acting as Overseer.
A. McDonald	..	Foreman, Fordell Tunnel, now retired.
S. A. Mitchell	..	Headman, Fordell Tunnel.
R. W. J. Day	..	Headman, Fordell Tunnel.
J. H. Ryan	..	Overseer, Turakina Tunnel.
R. L. Knight	..	Foreman, Turakina Tunnel.
H. N. Hansen	..	Headman, Turakina Tunnel.
W. Howard	..	Foreman, Turakina Tunnel.
J. Eade	..	Headman, Turakina Tunnel.
F. T. Wood	..	Headman, Turakina Tunnel.
E. Murch	..	Headman, Turakina Tunnel.
J. R. Ensoll	..	Engineer, Public Works Department, Wanganui.
A. J. Allison	..	Engineer's Assistant, Public Works Department, New Plymouth, previously Fordell.
J. H. Christie	..	Assistant Designing Engineer, Head Office, Public Works Department.

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