

ADVANCED STRUCTURAL BOGIE DESIGN

This report considers the basic structural design of bogies, reviewing and rationalising a number of configurations. The layout that emerges as the most practical to follow up is the 'three-piece' arrangement. Leaving conventional approaches aside a bogie design possessing sideframes composed of tapered leaf springs is pursued, with detailed work being confined to the springs.

A freight application was selected for this particular design, compatible with a Freightliner wagon carrying a static axle loading of 17.5 tonnes, laden. To satisfy stiffness and strength requirements, the profile, geometry and taper are varied, in order to arrive at a practical proposition. A fail-safe situation is provided by splitting the sideframe springs.

Estimates indicate that this particular type of bogie would not be competitive with existing freight bogies, based on initial costing, but maintenance costs on the inherently simple bogie could be less, in the long term.

Difficulties evident in the design, which should be overcome in future work, involve the incorporation of mountings (for bump stops, brake gear etc.) on and around the side frames.