

NAFLIC

National Association For Leisure Industry Certification

Standards & Related Documents Committee

TECHNICAL BULLETIN - MARCH 2002

221. Disneyland Leg Injury - Impacts and Shear Traps

At the end of 2000, at Disneyland in Anaheim, California, a 15-year old boy suffered a broken leg and foot after an accident on the park's Alice in Wonderland ride. Police say they suspect the boy did not keep his feet in the car, and that one foot ended up getting caught between his car and a guard rail.

The accident has prompted us to provide this reminder of the matter of motion envelope clearances and shear traps, which we have previously covered in Technical Bulletins 105 and 168.

Every amusement device where passenger units move relative to their surroundings should have a designed clearance between the unit and those surroundings. *n.b. subject to risk.* The principles for, and process of, risk assessment are well expressed in European Standard EN 1050. Risk reduction measures, such as removing the hazard by ensuring that contact cannot be made with nearby objects, are required by British law when there is an unacceptable risk and where it is reasonably practicable to take such steps.

The hazards that have to be accounted for when providing clearance include passengers or their limbs, etc., being trapped or struck by parts within the ride motion envelope including, where appropriate, the extent to which passengers can reach.

Arms and hands are the most obvious case, but a number of serious accidents have occurred over the years where persons have been able to place their heads / feet / legs outside the side walls of the moving passenger unit and have either struck other moving or fixed parts with a significant impact or have suffered fractures etc. from shear traps.

Design clearances need to be maintained. Alterations, or repairs to theming, supporting structure, falsework or even track re-alignment, sometimes reduce the original design clearance and it is important that those carrying out such work, and ride controllers, check that safety critical clearances are maintained.

One means of carrying out the check on some rides is to arrange for a template to be constructed (and kept) which is shaped to suit the ride's designed motion envelope. The template can then be mounted at the most suitable position on the passenger unit and travelled through any critical areas to be checked.

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