

论文

高速公路新型波形梁护栏端头实车碰撞性能研究

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摘要:

车辆碰撞现有的波形梁护栏端头易发生波形梁板插入车体和翻车的恶性事故, 采用有限元仿真和实车足尺碰撞试验相结合的方法, 开发出一种满足使用要求的新型波形梁护栏端头. 通过有限元分析研究端头各构件的工作性能和原理, 确定实车足尺碰撞试验条件, 并进行结构优化; 实车足尺碰撞试验验证开发的新型波形梁护栏端头能够有效避免波形梁插入车体和翻车事故的发生, 保护乘员安全, 同时能够为标准段护栏提供足够约束力, 保证标准段护栏的正常防护能力, 满足相关评价标准的要求.

关键词: 交通安全 护栏端头 有限元方法 实车碰撞试验 波形梁护栏 碰撞条件

Impact property research on a new type of guardrail terminal for freeway

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Abstract:

Serious accident will happen if car impacts on traditional W-beam guardrail terminal. A new type of W-beam guardrail terminal was invented by conducting FEA(finite element analyse) computer simulation and full-scale impact tests. The performance and mechanics of terminal were analyzed through FEA computer simulation, and the full-scale impact conditions such as impact point and approach angle were also defined by this means. Full-scale impact tests were conducted for the safety evaluation of the new type of W-beam guardrail terminal. The passenger safety was guaranteed by rolling w-beam to absorb accident car's kinetic energy, which can avoid piercing of W-beam into a car or turning over of the accident car. The containment level of standard section of barrier was guaranteed by enough constrain force at guardrail terminal. Full-scale impact test proved that the performance of new type guardrail terminal meets the acceptance criteria.

Keywords: traffic safety guardrail terminal FEM(finite element method) full-scale impact test W-beam guardrail impact condition

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