

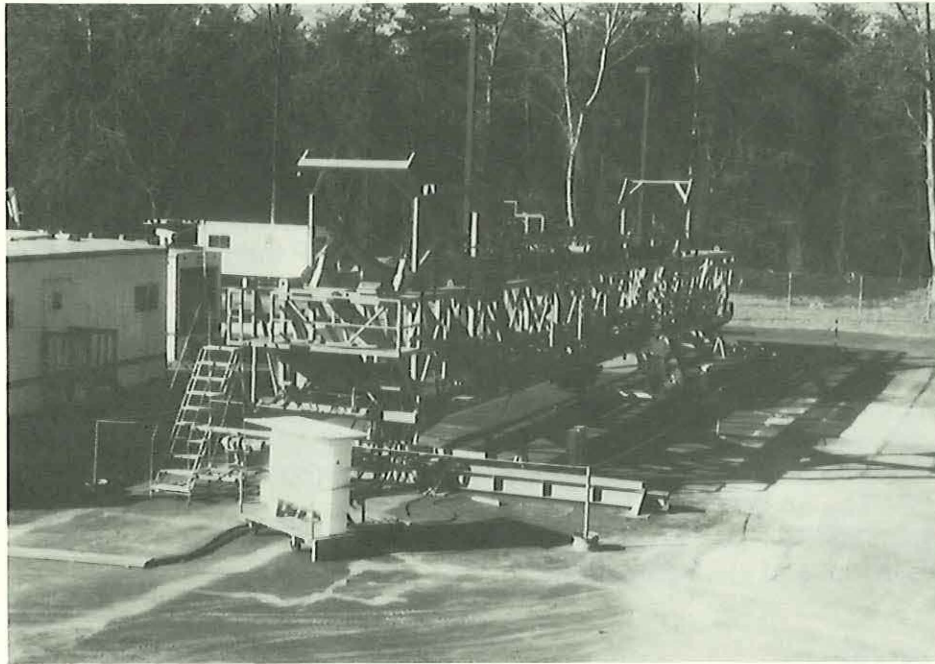


U.S. Department of Transportation
Federal Highway Administration

Research, Development,
and Technology

Turner-Fairbank Highway
Research Center
6300 Georgetown Pike
McLean, Virginia 22101
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PAVEMENT TESTING FACILITY



Accelerated Loading Facility Testing Machine

INTRODUCTION

The Pavement Testing Facility is an outdoor full-scale pavement testing laboratory located at the Federal Highway Administration's (FHWA's) Turner-Fairbank Highway Research Center in McLean, Virginia. The purpose of the facility is to quantify the performance of full-scale test pavements trafficked with an accelerated rate of heavy axle loadings. Formal operation of the facility began in October 1986.

FEATURES

The Pavement Testing Facility consists of the Accelerated Loading Facility (ALF) test machine, two 200-ft long instrumented bituminous concrete test lanes, and a computer controlled data acquisition system. Each lane of the facility is divided into four subsections for a total of eight pavement test sections.

The ALF test machine is used to

simulate traffic loading. This machine models one-half of a dual wheel single axle and can apply loads ranging from 9,400 lb to 22,500 lb. The ALF wheel assembly travels 12.5 mi/hr and trafficks in one direction a 40-ft section of pavement. The loads are normally distributed about a 48-in wheelpath. The machine is controlled by a microcomputer, permitting operation when the facility is unmanned.

The test sections represent typical highway pavements and were constructed using normal highway materials, equipment, and procedures. Lane 1 consists of a 2-in hot mix asphalt concrete wearing course and a 3-in hot mix asphalt concrete binder course over a 5-in crushed aggregate base course. Lane 2 consists of a 2-in wearing course and a 5-in binder course over a 12-in crushed aggregate base course. Both pavements were constructed on a uniform AASHTO classification A-4(0) subgrade.

The data acquisition system and pavement instrumentation permit routine monitoring of environmental, pavement performance, and pavement response data. The data acquisition system is controlled by an IBM PC-AT computer. Customized software was developed for acquiring, reducing, and storing the data.

CURRENT RESEARCH

The first phase of research at the Pavement Testing Facility began in October, 1986. It includes trafficking the eight pavement test sections under a range of loads and tire pressures. The first phase of research will

- Establish ALF load equivalency factors to relate the ALF loadings to real truck traffic.
- Assess the impact of increased tire pressure on pavement response and performance.
- Evaluate design procedures and compare theoretical and measured pavement responses.
- Develop a computer based Information Management System.

The Information Management System will support other FHWA studies and be a source of information for other researchers. The first phase of research is scheduled to be completed in December 1988.

FUTURE RESEARCH

Current plans for Phase II are to replace both test lanes with pavement sections of the same design, and to modify the ALF to permit testing with single tires. Research during this phase will be directed at assessing the impact of single tires: conventional, low profile, and wide base on pavement response and performance. Consideration is also being given to expansion of the accelerated testing program to include the ALF trafficking of in-service pavements.

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