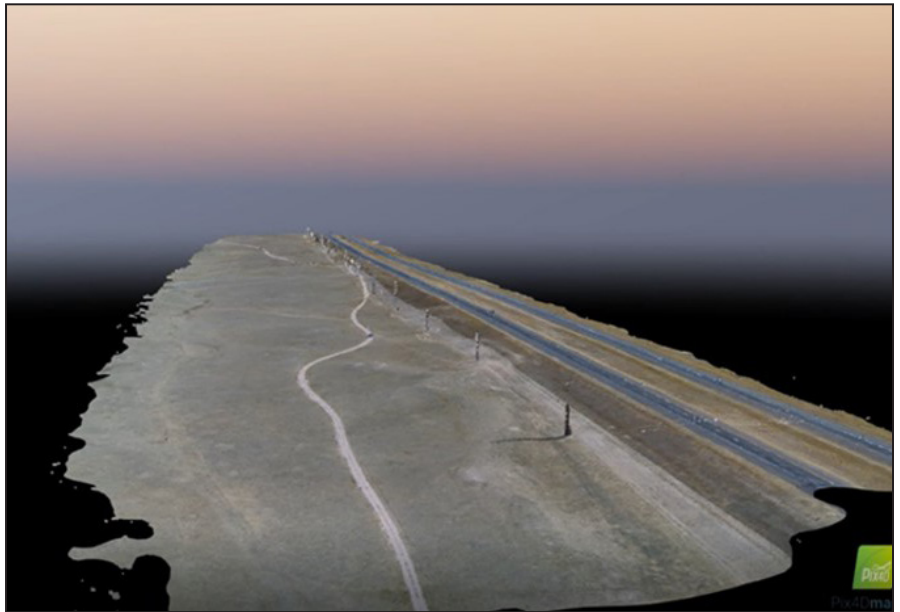


MOUNTAIN-PLAINS CONSORTIUM

RESEARCH BRIEF | MPC 24-538 (project 633) | August 2024

A Feasibility Study for Establishing a Regional Road Track Pavement Testing Facility in Wyoming



the **ISSUE**

Accelerated pavement testing (APT) hastens pavement failure using loading techniques like test tracks and traffic simulation devices, providing valuable data within a shorter timeframe. Major existing U.S. test tracks yield cost-effective developments, but climate-specific conditions require tailored approaches. Efforts to establish a regional pavement testing facility in Wyoming face challenges due to the lack of documented guidelines for planning and development, the absence of economic evaluation frameworks, and uncertainty about the benefit-cost impacts during the planning process to developers and the next generation of accelerated pavement tracks.

the **RESEARCH**

Researchers examined the development and operation of road test tracks, such as the Minnesota Road Research Project and the National Center for Asphalt Technology test track, and their use in various climatic zones across the United States. They propose the establishment of a new test track in Wyoming along the I-80 corridor, which will be the only test track of its kind in the dry-freeze region. The Wyoming Technology Transfer Center and the Wyoming Department of Transportation (WYDOT) conducted a feasibility study to evaluate the effectiveness of constructing a state-of-the-art APT facility in Wyoming. The study aimed to identify potential partnerships, effective frameworks for building and managing the proposed test track, suitable locations, research priorities, and feasibility in terms of benefits and costs.



A University Transportation Center sponsored by the U.S. Department of Transportation serving the Mountain-Plains Region. Consortium members:

Colorado State University
North Dakota State University
South Dakota State University

University of Colorado Denver
University of Denver
University of Utah

Utah State University
University of Wyoming



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Project Title

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the FINDINGS

To improve pavement performance in the dry-freeze region, WYDOT and the University of Wyoming propose a new test track along the I-80 corridor in Wyoming. This facility will address environmental conditions specific to the region and promote technology transfer. The study focuses on potential partnerships, frameworks for construction and management, suitable locations, research priorities, and a feasibility analysis.

Proposed locations face challenges like mountainous terrains, traffic safety concerns, and active oil wells. The benefit-cost ratio for the dry-freeze region's test track is 9.2, indicating financial feasibility. Research findings can significantly reduce agency costs through improved pavement design, construction, and maintenance. Partnerships in APT facilities are crucial for cost-effective research, enhancing benefits without significantly altering the benefit-cost ratio. WYDOT should secure stable funding and collaborate with other APT facilities, industry, and state DOTs for optimal operation and resource sharing.

Unmanned aerial system (UAS) demonstrations highlight innovative surveying technology's importance. Research findings suggest there will be significant agency cost savings from development of a test track through improved pavement design, construction, and maintenance. Although WYDOT will mainly sponsor test track construction, participating states and industries can build test sections. Construction costs are estimated at \$37,500 per 200-foot HMA section and \$40,500 per 225-foot PCC section. Cost estimates for the benefit-cost analysis are within the expected range, making the obtained B-C ratios relevant for decision-making.

the IMPACT

The proposed APT program test track is expected to cost-effectively improve pavement performance in the dry-freeze region and promote technology transfer. In a feasibility study, researchers found the benefit-cost ratio for the facility is 9.2, indicating financial feasibility. Once established, this unique facility will be the sole test track of its size in the dry-freeze region. APT facilities can effectively evaluate pavement marking materials, geotechnical experiments, electric road systems, connected and autonomous vehicle technology, truck platooning testing, drainage testing, and intelligent compaction technologies. Lessons learned related to site selection, partnership, test road design, staffing, contracting, instrumentation, implementation strategies, and funding help new facilities know where to begin the planning process after the conceptual stage.

For more information on this project, download the Main report at <https://www.ugpti.org/resources/reports/details.php?id=1197>

For more information or additional copies, visit the Web site at www.mountain-plains.org, call (701) 231-7767 or write to Mountain-Plains Consortium, Upper Great Plains Transportation Institute, North Dakota State University, Dept. 2880, PO Box 6050, Fargo, ND 58108-6050.



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