

# FACT SHEET



## RESEARCH PROJECT TITLE

Update LADOTD Policy on Pile Driving Vibration Management

## PRINCIPAL INVESTIGATOR

Mingjiang Tao, Ph.D., P.E.  
Worcester Polytechnic Institute

## LTRC CONTACT

Tyson Rupnow, Ph.D., P.E.  
225-767-9124

## STUDY TIMELINE

June 2009 - May 2011

## TYPE OF REPORT

LTRC Project No. 09-1GT  
Final Report 483

## FUNDING SOURCE

State: TT-Reg

## MORE INFORMATION

[www.ltrc.lsu.edu](http://www.ltrc.lsu.edu)

## Louisiana Transportation

Research Center

4101 Gourrier Ave  
Baton Rouge, LA 70808-4443

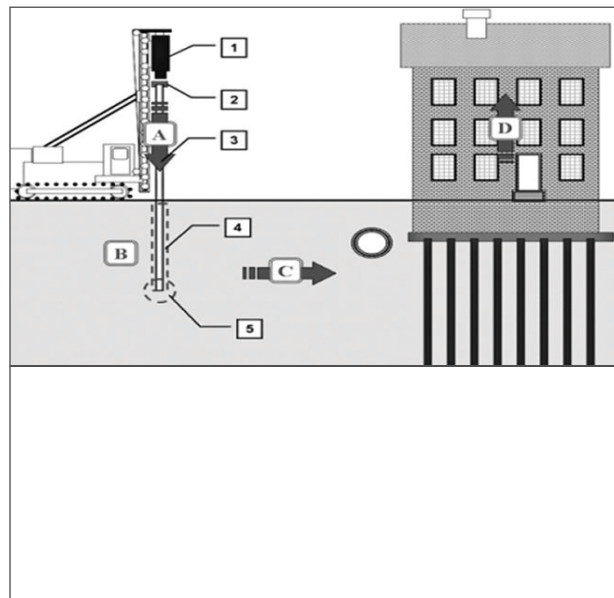
Since its creation by the legislature in 1986, LTRC has grown to national prominence through its efforts to improve transportation systems in Louisiana. The center conducts short-term and long-term research and provides technology assistance, engineering training and continuing education, technology transfer, and problem-solving services to DOTD and others in the transportation community. The center is largely supported by funding authorized by the Federal Highway Administration.

# Update LADOTD Policy on Pile Driving Vibration Management

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## WHAT WAS THE PROBLEM?

The Louisiana Department of Transportation and Development (LADOTD) annually spends millions of dollars on pile foundations. Despite the advantages of driven piles, their installation can cause the surrounding ground to vibrate. The main objective of this project was to update the current LADOTD policy on pile driving vibration risk management, with a focus on how to determine an appropriate vibration monitoring area.



## WHAT WAS DONE?

The magnitude of ground vibration is often quantified in terms of peak particle velocity (PPV). There is no consensus on allowable or permissible PPV values to prevent vibration-induced damage to nearby buildings or structures. The current best practice of managing the risk of pile driving from federal and state highway agency activity was identified by conducting a comprehensive literature review and a questionnaire survey of state DOTs, pile driving contractors, and consultants. Threshold PPV limits were determined from specifications and criteria suggested by the surveyed agencies. A rational procedure for determining appropriate construction site survey and vibration monitoring distances (VMD) was developed for local conditions in Louisiana.

## WHY SHOULD YOU DO IT?

A risk management plan for addressing pile driving induced vibrations must be executed prior to any pile driving activity. The results from this research study indicate that the current Louisiana requirement (PPV limit of 0.2 in/s and VMD of 500 ft.) for addressing the risk of pile driving is generally too conservative and should be updated. In general, a threshold PPV limit of 0.5 in/s and VMD of 200 ft. is recommended. In areas with nearby historic sites or sensitive sites, a threshold PPV limit of 0.1 in/s and VMD of 500 ft. is recommended. Preconstruction survey distance is recommended to be the same as the VMD for a particular site.

## WHAT ARE POTENTIAL FISCAL IMPACTS?

The impetus for this work was the Huey P. Long bridge widening project, wherein the construction site survey was expanded from 500 ft. to 750 ft. solely based on concerns from local residents, more than doubling the area required to be surveyed. Costs for preconstruction surveys should be significantly reduced when this study recommendation is implemented, as the area required to be surveyed is reduced by more than 80% when 200 ft. is used in lieu of 500 ft. Costs for preconstruction surveys of these reduced areas are conservatively expected to be no more than 50% of the survey costs prior to this study.