

# TMRC

*The mission of the TMRC is to provide expertise and facilities to support MDOT's materials research program and to facilitate problem-solving, education, and technology transfer. The TMRC provides economic and performance benefits to MDOT by improvement of materials that are currently in use and development of new materials to be used in the future.*

## Transportation Materials Research Center

### Program

Transportation Materials  
Research Center (TMRC)

### Sponsor

Michigan Department of  
Transportation (MDOT)

### Staff

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The Transportation Materials Research Center (TMRC) is a Michigan Department of Transportation (MDOT) funded research center. The mission of the center is to provide expertise and facilities in support of MDOT's material research and investigations. With certified laboratories and a highly qualified technical staff, research focuses areas include the behavior, performance, and sustainability of portland cement-based materials, asphalt-based materials, unbound granular materials, and soils.

In addition to supporting technical staff, the center also relies on student research assistance. As future engineers, these students learn both the value and limitations of applied research, developing hands-on skills that will serve them in their future careers. They also develop a much greater understanding of the importance that transportation materials play in the sustainability of infrastructure, preparing them to make better choices when selecting and using these materials in future projects.

The TMRC will continue to provide the Michigan Department of Transportation with testing services and technical expertise, as needed.

## Research Facilities

The TMRC maintains AMRL accredited laboratories on hot mix asphalt, asphalt binder, aggregates and portland cement.. All required proficiency samples are tested in the facilities. In addition, the concrete facilities continue to hold certification through CCRL proficiency testing and are also accredited as an AMRL facility. TMRC personnel work closely with AMRL to ensure technical skills in these areas are accredited to better serve the needs of MDOT.

- Portland Cement/Concrete Based Materials
- Bituminous Materials
- Aggregate, Soil and Geotechnical Materials
- Material Characterization/Petrography

## MichiganTech

Houghton, Michigan



### University Facts (2009-2010)

Total Enrollment	7148
Civil Engineering	546
Graduate Enrollment	1206
Number of Faculty	464
Placement Rate	87.5%

Michigan Tech ranks in the top 25% of public research institutions by the National Science Foundation and has annual research expenditures exceeding \$57 million. More than 56% of Michigan Tech's student population is enrolled in science and engineering degree fields with a campus-wide graduation placement rate of 87%.

Michigan Tech houses a wide complement of transportation-related programs partnering in research, technology transfer, education, and workforce development. Under the umbrella of the Michigan Tech Transportation Institute, federally funded centers collaborate with state and internally funded centers and programs. Federally funded programs include the UTC-MISTI, Michigan's Local Technical Assistance Program, and the Region 2 Tribal Technical Assistance Program. State funded research centers and laboratories include the Michigan Department of Transportation funded Transportation Materials Research Center and the Center for Structural Durability. Internal programs include the Center for Technology and Training, and the Rail Transportation Program.

For more information, visit the University's website.  
[www.mtu.edu](http://www.mtu.edu)

## Facility Support

Staff partially funded by the TMRC, both through MDOT funds and Michigan Tech cost share funds, have carried out a number of activities required to simply maintain a functioning research facility and have it available on demand for required MDOT research. A small selection of example activities is summarized below.

- Calibration of Research Equipment: Dynamic Shear Rheometer, Pressure Aging Vessel, Bending Beam Rheometer, vacuum oven, Rolling Thin Film Oven, forced draft oven, electronic balances, pycnometers, Direct Tension Tester, and Rotational Viscometer.
- Research Equipment Maintenance: Gilso-Matic, Asphalt Pavement Analyzer, Dynamic Shear Rheometer, both Rolling Thin Film Ovens, Bending Beam Rheometer, Curing Room humidity/temperature system, UTM 100 hydraulic pump, Beam Fatigue Apparatus
- Basic Laboratory Administration: MDOT reports, accounting, shipping, data compilation, review test results
- Training: Abson Recovery, HMA extractions, coarse agg specific gravities, fine agg specific gravities, rice test, dynamic modulus, Linear Kneading Compactor, Beam Fatigue Apparatus, Flex Prep machine, diamond saw, Asphalt Pavement Analyzer, batching materials, mixing and compacting HMA, Dynamic Shear Rheometer, Pressure Aging Vessel, Bending Beam Rheometer, and Rotational Viscometer.

## Student Engagement & Education

- The TMRC engaged over 15 undergraduate, 13 graduate students and four visiting scholars in either externally sponsored research projects or internally funded projects.
- The TMRC provided training on equipment use for the 20 students involved in the Pavement Design, Construction and Materials Enterprise.
- TMRC staff provided training, support, and materials for the MTU Summer Youth Program reaching more than 100 high school students who were introduced to materials testing through the TMRC laboratories.
- Michigan Tech continued in the second year as a host site for Michigan's National Summer Transportation Institute (NSTI).

## Outreach

In partnership with the UTC-MISTI and MDOT, the TMRC organized and sponsored the **2010 Transportation Materials Summit** for 109 participants who engaged in 16 presentations from nationally known materials experts.

## For More Information

For additional information on the TMRC, please visit [www.tmrc.mtu.edu](http://www.tmrc.mtu.edu).

For additional information on other transportation related programs at Michigan Tech, please visit [www.mtti.mtu.edu](http://www.mtti.mtu.edu).