



*“Through dedicated partnering, the Center for Structural Durability at Michigan Tech will become the premier research and educational institute for the Michigan Department of Transportation in the area of durable structural highway systems”*

## Center for Structural Durability

The Center for Structural Durability (CSD) focuses on the built environment including bridges, geotechnical applications, and construction through promoting new technologies in research and education. The mission of the CSD is to promote new opportunities for research, education and technology in the area of durable structural highway systems that will directly assist MDOT in achieving its performance goals of safety, mobility and productivity of the Michigan Transportation System. The CSD is committed to assisting MDOT in research, training and technical expertise to provide transportation users with a high quality infrastructure system that is built to last.

### Program

Center for Structural Durability (CSD)

### Sponsor

Michigan Department of Transportation (MDOT)

### Staff

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## Program Highlights

### Applied Research

- Partnership with MDOT on USDOT/RITA (\$2.8) sponsored project *“Bridge Condition Assessment Using Remote Sensing”*. For project information, see [www.mtti.mtu.edu/bridgecondition](http://www.mtti.mtu.edu/bridgecondition)
- Ultra High Performance Concrete (UHPC) projects include equipment set up for creep and shrinkage testing under variable curing regimes, post-crack flexural behavior, and bond strength characterization for UHPC overlays. Studies have also included strength characterization, size effects, freeze-thaw durability and chloride ingress rates.
- Remote sensing technologies are being evaluated for the applicability of scour monitoring.

### Education

- A new course, *Bridge Design and Construction*, was introduced to prepare graduates for the bridge design and construction fields of the transportation industry.
- Undergraduate student groups study durable concrete systems through the *Transportation Enterprise*.
- The CSD participates in the National Summer Transportation Institute program which provides career orientation and educational experiences to motivate secondary school students towards professions in the field of transportation. AASHTO TRAC modules provide the basis for the curriculum.



## 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)

## Outreach

- Collaborative effort between the CSD and the Michigan ASCE results in ASCE National Historic Civil Engineering Landmark designation to the Mackinac Bridge.
- Dedication ceremony organized by CSD, ASCE, the Mackinac Bridge Authority and MDOT to celebrate the designation, August 2010.
- CSD highly visible at national organization events including TRB, PCI, ACI and ASTM as investigators published refereed journal articles, conference proceedings and gave technical presentations at state and national conferences.
- Assists with the annual Michigan Bridge Conference with speaker organization and presentation of implementable research results. Workforce education covers a broad range of stakeholders including local county and state agencies, inspectors, contractors and engineers.

## Future CSD Direction

The CSD will emphasize a program that supports durable and sustainable solutions to improving existing and new systems, including UHPC application and scour topics. The Center for Structural Durability is supported annually by MDOT for continued support of the MDOT mission through applied research, education and outreach.

## For More Information

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

