

Michigan Bridge Conference



**TRAC Program
March 11, 2009**

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TRAC, **TRA**nspiration and **C**ivil Engineering

- Uses teachers as facilitators and engineers as mentors to show high school students how math, physics, and social sciences relate to civil engineering projects
- Encourages problem solving
- Contains 8 education modules

Bridge Building

- Offers software to design and simulate stresses within balsa wood structures
- Students get a chance to test their skills as bridge designers



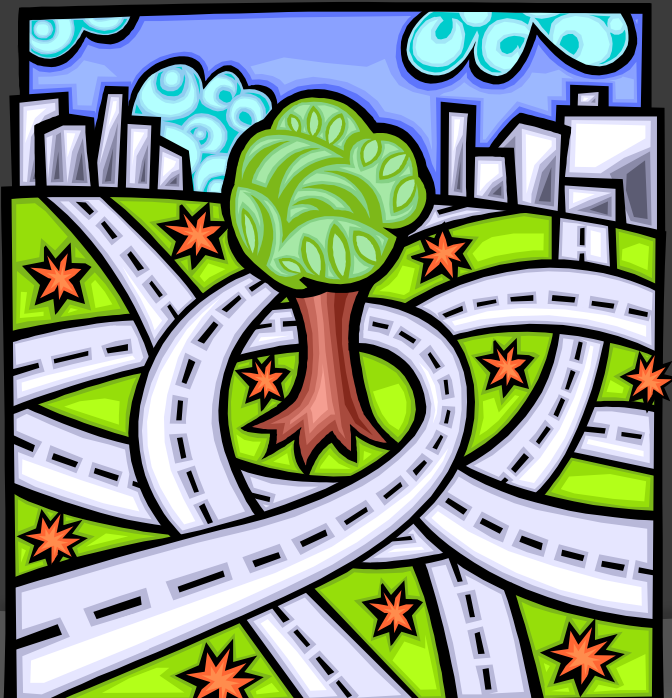
City Planning

- Students use SimCity 3000 to study zoning and transportation problems
- Teams must decide where to build roads and place utilities, while meeting the challenges of time, cost and potential natural disasters



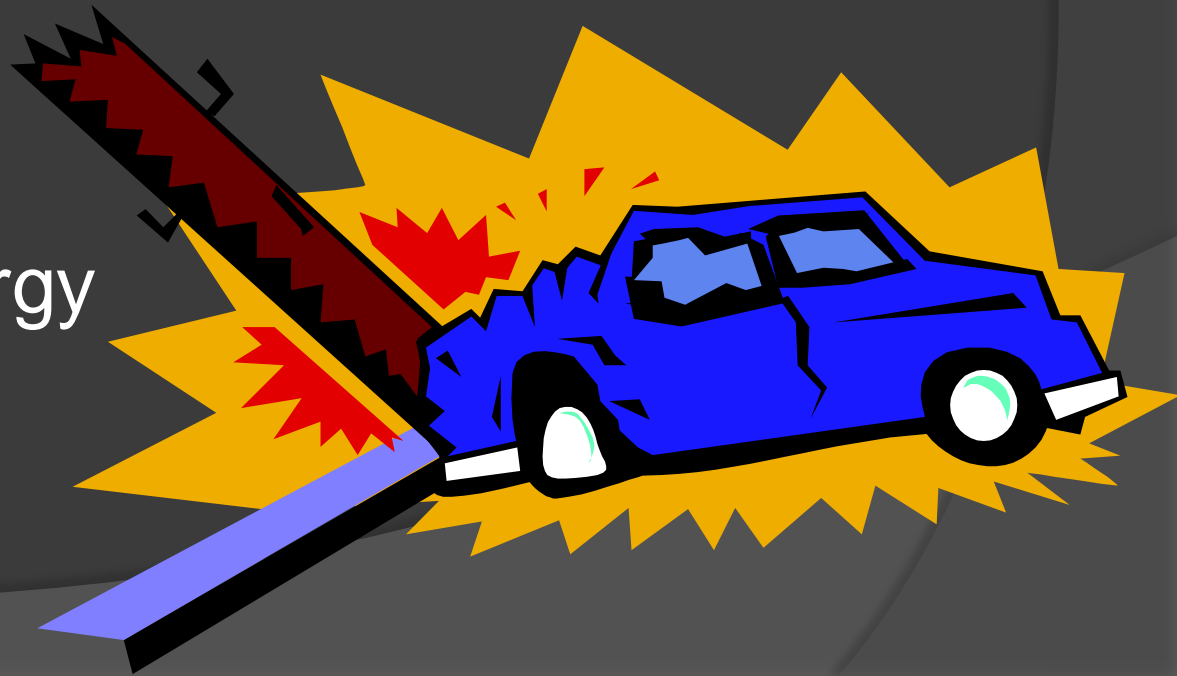
Green Highway Development

- Students examine the environmental issues involved in highway planning
- Erosion management and sedimentation rates of different materials are studied
- City and highway planning with air and water quality consideration
- Students can also filter muddy water with different materials

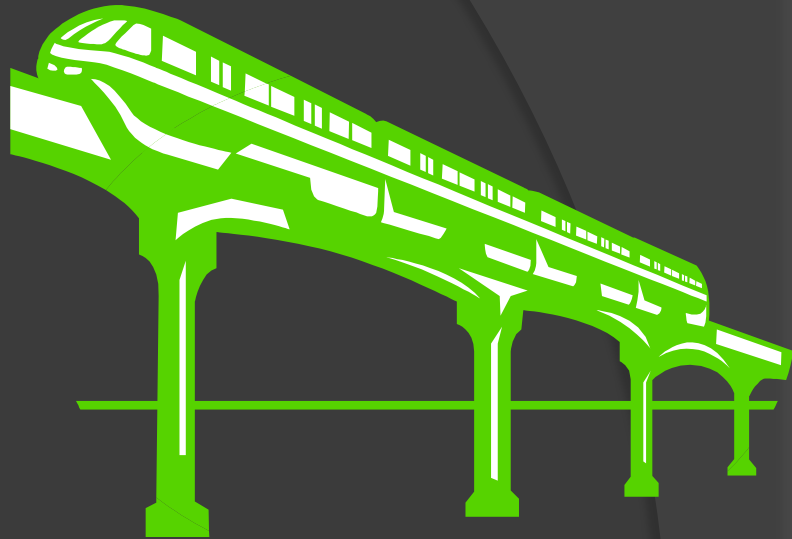


Highway Safety

- Using physics, students study traffic accidents and the effects of collisions
- Interactive Physics educational software is used to illustrate the results of accidents
- Size, mass, friction, speed, force, and energy absorption are explored



Magnetic Levitation



- Students learn the basics of graphing by measuring time and displacement of a MagLev car
- A design/build competition gives students a chance to put what they've learned to the test
- Students also learn to identify the human factors that can lead to measurements errors

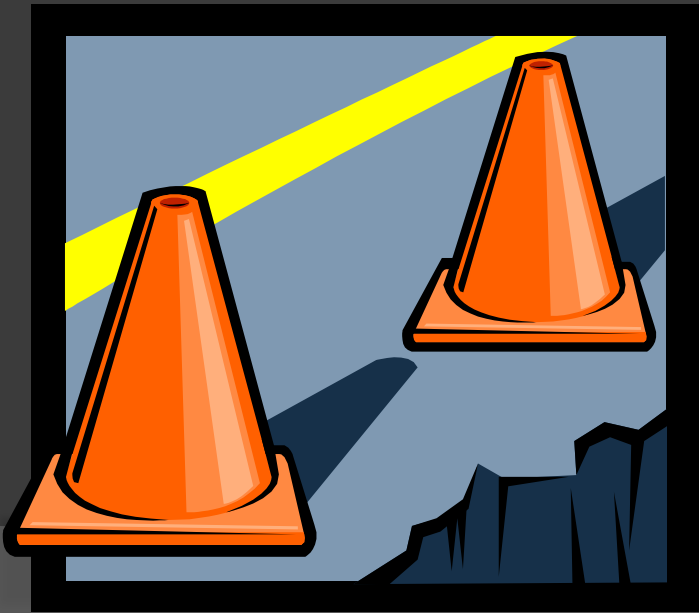
Motion and the Transportation Engineer

- Using a maglev track, students learn Newton's First and Second Laws of motion
- Acceleration, impulse, and momentum are real world applications of this pack



Roadway Design & Construction

- High Roads CAD software enables students to create a road and explore curves
- An introduction to Intelligent Transportation System (ITS) is given
- Spreadsheets and computer based modeling allow students to create estimates and budgets



Traffic Technology Module

- Reaction time and braking distance strengthen calculation skills
- With selected data, students calculate the timing sequence of a traffic light
- Students learn basic computer programming with the help of spreadsheet calculations



TRAC, **TRA**nspiration and **C**ivil Engineering

- ◎ MDOT offers internships to 11th and 12th grade students and college scholarships for graduating seniors
 - Eligible students must have participated in a TRAC program in one of their high school classes!
- ◎ **How can you be involved?**
 - Volunteer in the classroom as a engineer mentor
 - Encourage your child's school to participate in TRAC

MDOT TRAC Program

- MDOT TRAC webpage:
www.michigan.gov/mdot-trac
- For information on becoming a volunteer or to get your child's school involved, please contact:
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