



Transportation Education Workshop Series  
**Urban Transportation: The Challenge of Designing Intersections**  
**Workshop #2: Traffic Operations & Safety ~ April 18, 2015**

**Michigan Tech**

The **Transportation Workshop Series** will provide teachers with a curriculum connection for teaching about transportation topics via core subject areas (math, science, social studies, technology) and introduce students to careers in transportation. Teachers will be able to design and implement effective classroom lessons that are linked to the Michigan Common Core and Next Generation Science Standards.

**Presenter:** Dr. Joe Hummer, Chair, Dept. of Civil Engineering, Wayne State University

Tel: 313-577-3790 Email: [joseph.hummer@wayne.edu](mailto:joseph.hummer@wayne.edu)

See Dr. Hummer's varied interest & expertise in transportation: <http://engineering.wayne.edu/profile/joseph.hummer/>

**Workshop Coordinator:** Joan Chadde, Michigan Technological University Tel: 906-487-3341 Email: [jchadde@mtu.edu](mailto:jchadde@mtu.edu)

**Credit:** Michigan Tech graduate credit (for attending all 3 workshops); SECHs for workshops on April 18 & May 2. \$100/approved lesson.

**Location:** PACE Learning Center, Room 2507 Engineering Building, **Wayne State University**, 5050 Anthony Wayne Drive, Detroit, MI 48202. Parking available in nearby parking structure.

**Field Trip Transportation:** 1 Bus for 50 people via Safeway Transportation. Pick up at PACE Learning Center at 12:30 pm.

**Workshop Overview:** At intersections, many traffic streams conflict, which causes crashes and delay. Good intersection designs exist, but there is no universal solution, so engineers and planners must match a design to the needs in a particular place. This means that intersection design is an interesting exercise with multiple considerations, no obvious answer, and math that is not complex, so it works well for school groups. During this session we will discuss the fundamentals of intersection design, head out to the field to observe some examples, and practice the calculations so that you can construct your own exercises appropriate for science, math and social studies classes.

**Participants should bring:** laptops to do the math and to look at aerial photos on Google or Bing (will create a set of slides to copy for each participant). Have on hand: markers, a big flip chart, and an easel.

#### AGENDA

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| <b>9:00 am</b>  | <b>Workshop Overview &amp; Introductions</b>  |
| <b>9:15 am</b>  | <b>Traffic problems:</b> Discuss typical traffic issues at intersections.   |
| <b>9:30 am</b>  | <b>Design objectives:</b> Turn those problems into a set of design objectives like engineers would define during an actual project.   |
| <b>9:45 am</b>  | <b>Potential solutions:</b> Talk about the list of design options available to engineers, from stop signs, to traffic signals, to alternative designs like Michigan left turns, roundabouts and "superstreets." |
| <b>10:45 am</b> | <b>Analysis method:</b> Learn the data and math needed to analyze the potential solutions and see which one best fits a particular place.   |
| <b>11:30 am</b> | <b>LUNCH</b> (Mudgie's Deli)  |
| <b>12:15 pm</b> | <b>Field Trip:</b> A short bus tour will take us out to a couple of nearby intersections that could be improved. We will talk about potential solutions and how to collect data in the field.                   |
| <b>2:00 pm</b>  | <b>Exercise:</b> Using data for an sample location, practice the analysis and recommend an good design.   |
| <b>2:30 pm</b>  | <b>Brainstorm Transportation Lessons &amp; Group Sharing</b>  |
| <b>3:00 pm</b>  | <b>Question and Answer Session</b>  |
| <b>3:20 pm</b>  | <b>Evaluations &amp; Closing</b>  |