WIS 50 Reconstruction Project in Kenosha

By Jason Dahlgren, WisDOT

Project Overview:
WIS 50 is a principal arterial with great local and regional importance located in Southeastern Wisconsin, Kenosha County. This project is located off I-94 in the City of Kenosha and Village of Pleasant Prairie, WIS 50 serves a wide variety of travelers, in addition to local traffic. WIS 50 is also an oversized, overweight (OSOW) truck route from the western project limits to WIS 31, and then continuing north on WIS 31. The purpose of the project is to develop a plan to reconstruct WIS 50 with capacity expansion provides additional traffic capacity, improve traffic flow and safety for the traveling public, while implementing access management measures to help preserve the traffic carrying capacity along WIS 50. The project limits are from I-94 to 43rd Ave. After construction is completed, the City of Kenosha will take jurisdiction of this facility from 60th Ave. to WIS 32.

Project Need:
The need for the proposed improvements is based on a combination of factors that included system linkage and route importance, safety, access management, and pavement and bridge deficiencies. WIS 50 was recently resurfaced in 2012; the pavement had reached the end of its useful life and required a rehabilitation. This is the final rehabilitation, the next improvement requires a full reconstruction of this facility. The 2012 resurfacing is expected to last approximately 12-15 years.

WIS 50 is a heavily populated and traveled urban corridor serving multiple residents and businesses. The majority of crashes involved rear-end collisions and angle collisions; this is typically indicative of congestion and conflicts between through-traffic and turning-traffic. From 2008 to 2012, nearly 72% of the corridor had crash rates or crash severities greater than the statewide average for this type of facility.
There are six bridge structures within the limits of this project; these structures carry WIS 50 traffic over the Canadian Pacific RR, Union Pacific RR, and 77th Ave. These structures are narrow by today’s requirements and have substandard vertical clearances over the railroads. The bridges have undergone numerous rehabilitations and are deteriorating to the point where further repair is not economically feasible. Therefore, bridge replacements are required.

Average Annual Daily Traffic (AADT) volumes throughout the corridor currently vary between 30,100 and 36,700 and are expected to grow about to 37,600 to 46,800 by 2034. This is about a 1.4 percent average growth per year on WIS 50. Due to the high traffic volumes, seven intersections along the corridor already operate with movements at LOS E or F. Most notably, the intersection at WIS 31 has extremely heavy turning volumes that operate at LOS E and F today. In the future, 15 intersections along the corridor are expected to operate with movements at LOS E or F.

**Project Concept:**
WIS 50 is currently a four lane facility; the project starts just east of I-94 at 118th Ave. and continues east to 43rd Ave. Proposed improvements for this project include:

- Widen the existing 4-lane highway west of 57th Avenue to a 6-lane facility. The remainder of the corridor, east of 57th Avenue, will be reconstructed using the existing 4-lane highway (no additional driving lanes).
- Reconstruct the corridor to an urban roadway to reflect ongoing/planned development in the WIS 50 corridor including: curb and gutter on outside shoulders, a raised grass median, and paved outside shoulders that can be used by transit vehicles and disabled vehicles during emergencies.
• Implement access management techniques (restrict median openings, close driveways and use existing local roads/future local service roads where possible to provide property access) to improve operations on WIS 50 and enhance safety.
• Accommodations for bicycles and pedestrians will be constructed on both sides throughout the corridor. There will be a 5 to 8 foot sidewalk on either side of WIS 50 and shoulders will be wide enough to accommodate bicycles.
• Provide more capacity at all intersections, including a jug-handle design at the WIS 50/WIS 31 intersection to accommodate the heavy through and turning traffic. The recommended corridor design will improve traffic progression significantly along the corridor, enhance safety for all users and provide safe pedestrian accommodations, while maintaining the visibility and access to local businesses.

Intersection Design Challenges:
Due to the high traffic volumes, seven intersections along the corridor already operate at unacceptable levels of service. Given the high traffic volumes and safety concerns, many alternatives were analyzed at the major intersections, specifically the intersection of WIS 50 and WIS 31. The WIS 31 intersection has extremely heavy turning volumes that currently operate at LOS E and F. The project team analyzed four designs at the WIS 50/WIS 31 intersection during this design phase of the project. They included:

- Center turn over pass interchange
- Echelon interchange
- Expanded traditional intersection
- Jug handle intersection

The jug handle was compared to the other alternatives in consideration of operations, safety, construction costs, and real estate impacts and cost. WisDOT found that the jug handle was suitable in operations, safety, and had the lowest overall construction cost. The center turn overpass and echelon interchanges were the most expensive in terms of construction costs. In addition to the high costs, these two alternatives greatly reduce access and visibility to the businesses at this intersection.

The traditional intersections analyzed had the highest potential for business relocations, significant parking impacts, substandard pedestrian accommodations, and operational impacts to the corridor when pedestrians are accommodated at the signalized intersection.

The jug handle alternative was selected as the preferred alternative for the following reasons:
- Better traffic operations and higher level of service than a traditional signalized intersection.
- Reduction in delay when traveling through the WIS 50/WIS 31 intersection.
- Lower impact on local businesses with regards to right-of-way acquisition and relocations.
- Construction costs are less than the other alternatives.
• Reduces the number of “left turn” conflict points at intersection.
• Utilizes existing jughandle roadway in southwest quadrant of WIS 50/WIS 31.

What is a “Jughandle” type intersection and how does it operate?

A jughandle is a type of intersection design that uses at-grade loop roads to create indirect turning movements. Similar to left-turn only lanes, indirect turns reduce crashes, improve congestion, and add capacity. Jughandles are appropriate for high-traffic intersections that have limited space to expand turn lanes. The jughandle intersection represents an innovative and cost savings design solution to a unique intersection. The WIS 50 project has been recommended for enumeration into the Wisconsin Majors Program. The construction timeline is based on available funding and has yet to be finalized. The re-evaluation of the Environmental Assessment was completed in the fall of 2014 and the design plans are currently at 60% with a final design plan date of 5/1/2018.
The President’s Message
By Dawn Krahn

The first few months of the year have gone by quickly! I hope that you’ve been able to take advantage of the activities going on within the Section and will include future ITE events in your summer plans.

We had a good turnout at the March 4th Section meeting at Marquette University in Milwaukee. It was great to see so many students representing UW-Milwaukee and Marquette University for our annual “Student Night” dinner. We also enjoyed hearing about the Student Chapter’s activities over the last year. Congratulations to Susan Paulus of Lakeside Engineers and Xin Li of UW Milwaukee for being this year’s recipients of the Martin Bruening Award. Thanks also to Dr. Drakopoulos for his interesting presentation on Stop-and-go traffic: A truck in my rear view mirror.

The Traffic Engineering Workshop on April 22nd was a huge success again this year with over 200 participants in attendance! A special thank you to John Bieberitz and the Traffic Engineering Workshop Committee for organizing another fabulous conference. I have heard many great comments about the nice variety of presentations, including a captivating presentation on Engineering Ethics from Jeff Russell.

The new ITE Wisconsin Section website (itewisconsin.org) was launched in early March. I hope that many of you have been able to use the website to find out information and to register online for the for the upcoming ITE events. Affiliate members can also use the website to update your contact information or to renew your membership. We are asking the International members to continue to update and pay dues to ITE international. A big thanks goes out to Brian Porter and John Bruggeman for managing the details of this new site. I would also like to thank the Board Members for their oversight and contributions to this site. We will continue to make changes throughout the upcoming months, so please let any of the Board Members know if you have any comments.

Please mark your calendars and check the website for details on the following upcoming ITE events:

- Fox Valley Section Dinner Meeting – May 13 in Green Bay
- 2015 Midwestern District Conference -- June 29-July 1 in Branson, Missouri
- Madison Mallards Social Event – June 4 in Madison
- ITS/ITE Section Lunch Meeting – July 15 in Milwaukee
- ITE Annual Conference – August 2-5 in Hollywood, Florida
- Lakefront Brewery Tour Social Event – August 13 in Milwaukee

Thanks again for your support of the Wisconsin Section and we look forward to seeing you this spring and summer! If you have any questions or comments, please feel free to contact me or any of the Board Members.

Are you interested in advertising in our quarterly newsletter or the ITE Wisconsin Section website? Advertising is a great way to sponsor the Wisconsin Section and promote your firm/agency to hundreds of fellow Wisconsin Section members! Contact Ashley Vesperman, Affiliate Director, at (608) 836-9800 or Ashley.vesperman@aecom.com for more details.
Recent Meetings and Events

Marquette University/UW Milwaukee Student Appreciation Night & Martin Bruening Award – March 4, 2015
By Allan Pacada

On March 4th, 2015, the student chapters from Marquette University hosted this year’s Marquette / UWM student appreciation night at the University’s Lunda Room inside the Alumni Memorial Union. This event of about 40 attendees included current / former students from both chapters, as well as faculty and other working professionals.

The evening began with some networking among students and professionals and a delicious BBQ dinner. Following dinner, the meeting began with the presentation of the Martin Bruening Award, in honor of Martin Bruening, who was a traffic engineer for the City of Milwaukee from 1924 to 1972, and an advocate / supporter of the three "E's" of traffic safety: Engineering, Education and Enforcement. The ITE Wisconsin Section Martin Bruening Award is given annually to papers about a study or design project in the field of transportation or traffic engineering in which the author(s) served as a principal participant. There are two $400 cash awards available: one for a professional paper and one for a student paper. Papers for consideration for the 2016 Martin Bruening Award will be due next January. There were two award recipients this year, which was presented by award chairman, Marcus Januario of Mead & Hunt. The student award recipient was Xin Li of UWM for his paper on “Operation of Signalized Diamond Interchanges with Frontage Roads Using Dynamic Reversible Lane Control.” The professional award recipient was Susan Paulus of Lakeside Engineers for her paper on “Development of Best Practices for Portable Changeable Message Sign Use in Work Zones for Design and Construction Engineers.” Congratulations to Xin Li and Susan!

We enjoyed hearing from Dr. Xiao Qin, associate professor from UW-Milwaukee, about the student chapter activities, which included an update about the engineering department moving to new location on campus and the group’s trip to the 2015 TRB Conference in Washington DC back in mid-January. The Marquette University Student Chapter Vice President (Samantha Roti) and Secretary (Kelsey Welch) provided an update on the activities that they have completed so far this school year, such as their annual Breakfast with Professional event and recent field trips to General Mitchell Airport and the State Traffic Operations Center.
Dr. Alex Drakopoulos, associate professor from Marquette University, was the evening’s featured guest speaker. His presentation entitled, “Stop & Go: A Truck in My Rear View Mirror”, was a collaborative research project with Professor Yue Liu of UW Milwaukee on simulation models that analyzed headway and spacing on freeways using 4-5 different vehicles. Thank you Dr. Drakopoulos for sharing your research!

Martin E. Bruening
(1903 – 1994)

Martin Bruening’s career in traffic engineering spanned 48 years, all with the city of Milwaukee. He began in 1924 as a junior draftsman, was promoted to Milwaukee’s first traffic engineer, and retired in 1972 as Superintendent of the Bureau of Traffic Engineering and Electrical services. He took a two year drafting course at the Boys Technical High School and went to work with Allis-Chalmers Manufacturing as a

The following biography is reprinted from the December 2012 edition of the “ITE Journal”, and was part of the “Pioneers of Transportation” section in that issue.
draftsman in the hydraulic turbine department. He then enrolled in night courses at the University of Wisconsin, obtaining his credits in engineering and becoming registered as a Professional Engineer.

He constantly emphasized the three E’s of traffic safety (Engineering, Education, and Enforcement) and the necessity of coordination of geometric design and traffic control. He particularly noted the concept of complete intersection design, integrating channelization, signalization, signs, and markings. In his words, a successful intersection design “makes the right thing to do the easy and efficient way for both drivers and pedestrians”.

Bruening was an early advocate of progressive signal timing and employed many innovations in Milwaukee’s traffic signal program. He would often use unusual graphic charts, hand drawn by staff under close direction, showing green bands of progressive flow to explain the impacts of unwanted traffic signals with poor spacing on a given signal system. The city’s first origin and destination survey in 1946, conducted under Bruening’s direction, formed the basis of the Milwaukee’s early freeway system. He preached and practiced the concept of a balanced, multimodal transportation system long before it was mandated by legislation. In 1969, he was invited to testify before Congress to support such a change, including the use of the gas tax to fund mass transit.

Martin Bruening joined ITE in 1937. He was an active member of the Midwest Section before Wisconsin had enough members for a section of its own. He often led a group of staff to Chicago for the local section meetings. In 1966, he was a charter member of the newly created Wisconsin Section.

Bruening was active in the International Municipal Signal Association and the National Joint Committee on Uniform Traffic Control devices and was very interested in providing traffic control devices to aid pedestrians. As a result of his work, Milwaukee equipped all of its traffic signals with early “WALK” lights in the 1960s. He was one of the early experts in traffic signal control, drafting many of the “Manual on Uniform Traffic Control Devices” provisions that were adopted in the 1960s. Bruening is an honorary member of the Institute.
Traffic Engineering Workshop & Transportation Planning Forum – April 22, 2015
By Allan Pacada

The annual Traffic Engineering Workshop & Transportation Planning Forum was held on Wednesday, April 22, 2015 with approximately 220 registrants. This year’s event included over 20 speakers on 14 topics on traffic engineering and transportation planning, with various dual-track sessions as well as a new poster session of research topics from our own ITE student chapter members.

Our opening session speakers were Andrea Bill of the Wisconsin TOPS Lab, Rebecca Szymkowski and Dawn Krahn of WisDOT and Todd Polum of SRF. Andrea and Rebecca both spoke on “Operational Analysis and Safety Evaluations”. Dawn and Todd presented on the “Predicting Recurring and Non-Recurring Delay for a Benefit-Cost Analysis Tool.”

An ITE Wisconsin Section meeting was held during lunch. Our featured topic following lunch was on Engineering Ethics, presented by Jeff Russell of UW Madison.

If you would like to go through the presentations again or didn’t get a chance to attend the workshop, the presentations are available on the ITE Wisconsin Section web page: http://itewisconsin.org/content.php?page=Traffic_Engineering_Workshop.
A special thanks goes out to the TEW-TPF Committee consisting of: Joanna Bush, Cheryl Cieslewicz, John Campbell, Doug Dembowski, Alicia Dougherty, Tristan Hickman, Dan McCormick, Stephanie Olsson, Laura Schroeder and John Bieberitz (Chair).

This event has consistently brought together the transportation engineering and planning industry together to discuss changes in the industry, case studies, new technologies and proven approaches to current problems.

The planning already under way for the 2016 Traffic Engineering Workshop and Transportation Planning Forum at the Country Springs Hotel in Pewaukee.
In Memory of Harvey Shebesta
By Allan Pacada

On Sunday morning of April 19, 2015, the ITE community lost one of its cherished members as Harvey Shebesta passed away at the age of 88 after his five-year battle with Parkinson’s disease. Harvey is survived by his family: Collette, Renee, Denise and Lane, 8 grandchildren, 12 grandchildren and his nephew Michael Duecker.

Harvey Shebesta had a long and illustrious career of over forty years with the Wisconsin Department of Transportation, where he served his final 22 years as District Director for the Southeast District. He held a BSCE from the University of Wisconsin, a certificate from the Yale Bureau of Highway Traffic and a certificate in Highway Management from Mississippi State University.

Harvey joined ITE in 1954 and was instrumental in forming the Wisconsin Section, serving as its Charter President. He also served as Director of District IV (1970-1972), International Vice President (1979) and International President (1980). In 1994, Harvey was named the 47th Honorary Member of ITE, the highest honor the Institute bestows upon a professional in recognition of notable and outstanding service to transportation and traffic engineering.

His memorial service was held at the PEACE United Methodist Church in Brookfield on April 26, 2015. Several members of the ITE Wisconsin Section were in attendance to pay their respects and an array of flowers was dedicated in his honor.
Upcoming Social Activities

Please join us for TWO social activities this summer! June 4 in Madison and August 13 in Milwaukee

**Madison Mallards vs. Green Bay Bullfrogs at Warner Park**

**Date/Time:** Thursday, June 4th, 2015 at 6:35pm

**Location:** Warner Park a.k.a. The Duck Pond
(2920 N. Sherman Avenue, Madison)

**Price:** $20 per person (Guests are welcome)

The price of $20 per person includes a game ticket and ballpark food, soda, water and beer (food service begins when the gates open and ends at the completion of the 7th inning).

The Wisconsin Section has purchased tickets in Section 104 with access to the TRICOR/West Bend Club party deck located behind home plate.

Please sign up by May 20th or contact Tyler Tkachuk (Tyler.tkachuk@aecom.com) or Stacey Pierce (stacey.pierce@dot.wi.gov) for more information.

**Lakefront Brewery Tour**

**Date/Time:** Thursday, August 13, 2015 at 5:00pm
(Tour starts promptly at 5:30pm)

**Location:** Lakefront Brewery
(1872 N. Commerce Street, Milwaukee)

**Price:** $15 per person (guests are welcome)

**Deadline:** Please sign up by July 29, 2015 at http://itewisconsin.org/

**Details:** Join us for one of Milwaukee’s greatest traditions; The Lakefront Brewery Tour!

Everyone receives a souvenir pint glass and four 6oz pours of beer during the tour. Pours can be used prior to the tour as well. The Wisconsin Section has reserved tables and food will be provided after the tour. The cost includes the tour, food, soda, water, and beer.

Please sign up by July 29th or contact Stacey Pierce (stacey.pierce@dot.wi.gov) with any questions.
Midwestern District Update

2015 Midwestern District Annual Meeting
June 29-July 1, 2015 – Branson, Missouri

Branson, MO, is truly a one-of-a-kind family vacation destination — and an incredible value — with dozens of live performance theaters, three pristine lakes, championship golf courses, an international award-winning theme park, dozens of attractions and museums, an Historic Downtown district, shopping galore, a full range of dining options, and a host of hotels, motels, resorts, RV parks, campgrounds and meeting and conference facilities.

Practically at the center of the United States, Branson is less than a day's drive for one-third of Americans, and with low-cost flights to the Branson Airport, as well as Springfield-Branson National Airport, it's never been easier for your family or group to get to Branson.

Branson, Missouri, nestled in the lakeside beauty of the Ozark Mountains, is America’s affordable, wholesome family entertainment capital that emphasizes fun, comfort and the feeling of being right at home. Featuring an array of live theaters and attraction venues and active recreational pursuits, the community embodies essential American values such as patriotism, faith, courage and generosity of spirit in a warm inviting atmosphere that is truly genuine and heartfelt.

Conference website:
http://www.branson2015mwite.com/

Draft Technical Session Schedule is available at:

2015 ITE Midwestern District Conference – STUDENT ACTIVITIES

Are you a student who plans on attending this year's conference in Branson? Would you and your fellow students be interested in participating in the Traffic Bowl Competition, student design competition and/or student poster competition? For more information on student activities being offered at this year’s 2015 ITE Midwestern District Conference, please refer to the fliers at the end of this newsletter.
Candidates for 2015 ITE International Vice President

Shawn J. Leight, P.E., PTOE, PTP, FITE
Vice President, CBB Transportation Engineers + Planners, St. Louis, MO USA
Adjunct Professor, Washington University, St. Louis, MO USA
sleight@cbbtraffic.com | www.shawn4ite.org | @TranspoShawn | Facebook | LinkedIn

I am passionate about ITE and our transportation profession. My vision for ITE is an **Inclusive Global Organization of Diverse Transportation Professionals** that is “Out Front” in the industry. I want to work with you to make ITE stronger through a focus on information, collaboration, and advocacy.

**Information**: *ITE should be the industry’s “go-to” place for information*. We have made significant progress with improvements to *ITE Journal*, the website, and webinars, but we are not there yet. We need to be agile in a fast-changing marketplace and can do more through better marketing of resources, electronic publications, and increasing visibility on popular sites like Wikipedia and Google.

**Collaboration**: Great ideas travel fast and ITE has always been in the thick of great ideas. *It is at the core of who we are.* We have improved communication through *ITE Journal*, the Community, and great meetings across ITE. We can do more by expanding collaboration with transportation organizations around the globe.

**Advocacy**: It is crucial that our leaders advocate for ITE and for the transportation profession. ITE recently launched a new Advocacy Committee that is empowering members to be effective advocates for a safe, efficient, and sustainable transportation policy. **Together we can be a powerful voice for our profession.**

**Proven Leadership**: *I am passionate about effective leadership* and have served in ITE leadership at all levels. I am a past president of the St. Louis Chapter and Missouri Valley Section and I am the faculty advisor for the University of Missouri-St. Louis/Washington University Student Chapter. In my final year as Midwest Director on the International Board, I serve on ITE’s Budget/Finance, Professional Development, and Strategic Planning Committees. I received my B.S. from the United States Military Academy at West Point and my M.S. from the University of Wisconsin-Madison.

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Jimmy H. Lin, P.E., FITE and Life Member
President & CEO, KOA Corporation, Monterey Park, CA USA
jlin@koacorp.com | www.jimmylinforitevp.org

My motivation to run for vice president of ITE is very straightforward. I have been a member for over 40 years, and I see our organization needing a major makeover to be in line with the thinking of mainstream, younger generation members. As a business owner of one of the largest transportation and traffic engineering firms in southern California, and as an experienced public policymaker (currently a City Council member of Diamond Bar, CA), I have the business acumen, leadership, and management skill to lead that effort. Furthermore, we need to keep pace and engage with the latest movements in our field as we have in the past, such as green transportation and active transportation. These are the reasons I have decided to run. I can make a difference for the better.

My Vision and Outlook for ITE include the following:

**Manage** our finances responsibly without sacrificing our core services to the members. Our funding is tight and we need to streamline our expenditures.

**Increase** our younger generation membership by providing affordable dues and enticing programs. Aside from affordability, we should make younger members proud to be a vital part of ITE.
Promote agency, institutional, and industry membership to increase the organization’s size and create a solid revenue stream. In addition, we should extend the incentives offered to public agencies to other sectors of the economy. Maintain the core values of ITE and continue to advocate the needs, goals, and capabilities of our members. Constantly listening to the membership and adjusting our course to accommodate the needs of the membership is our fundamental duty.

Sustain our position as the forefront organization for transportation professionals in technical development, networking, and knowledge exchange.

Together, we can make it better
Upcoming Events

May 13  Fox Valley Dinner Meeting at St. Brendan’s Inn
        Green Bay, WI

June 4  ITE Wisconsin Social: Madison Mallards vs. Green Bay Bullfrogs at Warner Park
        Madison, WI

June 29-July 1  Midwestern District Annual Meeting
                Branson, Missouri

July 15  Joint Meeting with ITS Wisconsin
         Milwaukee, WI

August 2-5  ITE 2015 Annual Meeting and Exhibit
           Hollywood, FL

August 13  ITE Wisconsin Social: Lakefront Brewery Tour
           Milwaukee, WI

September 9  WTS/ITE Joint Breakfast Meeting
             Milwaukee, WI

Do you have some information or great ideas to share? The ITE Newsletter is an excellent medium for reaching section members. If you would like something published in the upcoming newsletter, please contact the 2015 Wisconsin Section Member Director, Allan Pacada at (414) 347-1607 or apacada@emcsinc.com.