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Michiganite

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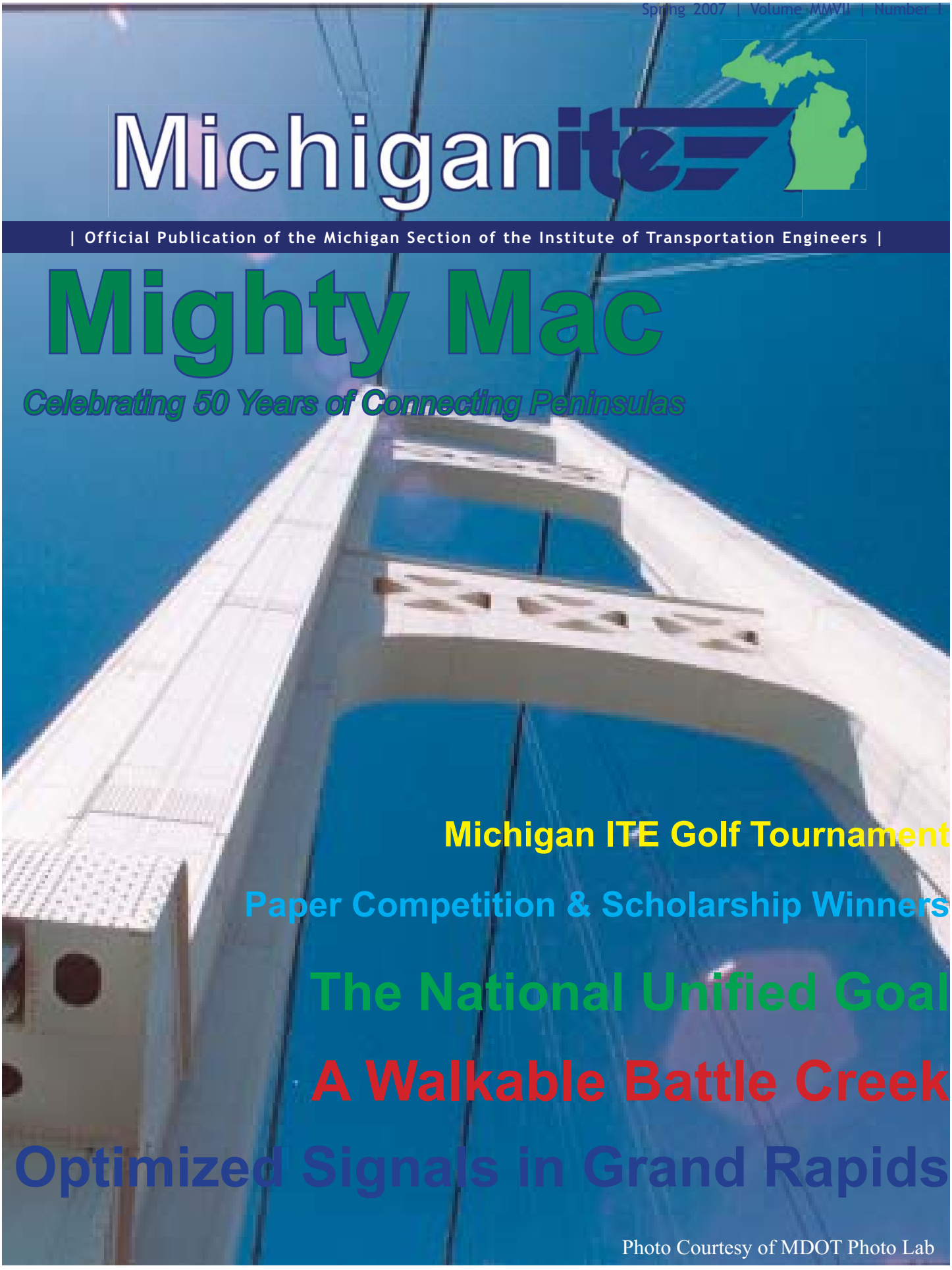

Mighty Mac

Celebrating 50 Years of Connecting Peninsulas

Michigan ITE Golf Tournament

Paper Competition & Scholarship Winners

The National Unified Goal

A Walkable Battle Creek

Optimized Signals in Grand Rapids

Photo Courtesy of MDOT Photo Lab

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Deadline for article submission for the next issue of MichiganITE is:
July 1, 2007

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ITS-Michigan
Intelligent Transportation Society

Visit www.michigan.gov/its for news and information related to Intelligent Transportation Systems (ITS) programs and projects.

Michigan Section 2007 ITE Meeting Schedule

Date	Location	Type	Host
May 31	Mystic Creek Golf Course Milford, MI	Educational Golf Outing	Aimee Giacherio 616.363.8181
July 12	East Lansing, MI	Technical Session	Francois Dion 517.353.8883 Ghassan Abu-Lebdeh 517.353.8883
August 5-8	Pittsburgh, PA	Annual International ITE Meeting	ITE National
September 13	Fall Golf Outing	Lowell, MI	Tim Haagsma 616.242.6923
October 11	Technical Session	Battle Creek, MI	Max Pharis 269.966.3338
December 6	Annual Meeting & Technical Session	Farmington Hills, MI	Kevin McCarthy 248.473.9590

JOB POSTINGS

There are no postings at this time.

Are you looking for a qualified candidate to fill a position at your organization? Advertise in the Michigan*ITE* and reach hundreds of Michigan Engineers!

For rate information, or to begin your search for highly qualified Michigan candidates, contact Kimberly McDaniel at (248) 844-5400 or kmcdaniel@spaldingdedecker.com

ITE Paper Competition Winners Announced

Mohammed Ghanim was selected as the first place winner, an award of $500. Umar Farooq was selected as the second place winner, an award of $300. Both winners are graduate students at Michigan State University. Below are the abstracts for both papers.

Artificial Neutral Network Predition Tool for Predicting Stop-Line Transit Arrival

Mohammad Ghanim
Department of Civil Engineering - Michigan State University - ghanimmo@egr. msu.edu

Many transit agencies are currently considering implementing priority systems providing transit vehicles with temporary green signal extensions and early green recalls. While many studies have demonstrated a potential for bus delay reduction and negative traffic impacts, very few have addressed the problems posed by variable dwell times at nearside bus stops. The high uncertainty of predicting bus stop line arrivals impacts the performance of transit signal priority systems and their performances. This paper presents an Artificial Neural Network (ANN) modeling to predict stop-line transit arrival times on approaches with nearside stops based on consideration of past observed traffic and signal conditions, transit headway and demand. A simulated network was developed using VISSIM microscopic simulation software to generate and collect the data. The collected data wad randomized and divided into three datasets to develop the ANN model. Evaluation results show that the ANN model predicts the projected stop-line transit arrivals with a high accuracy. The coefficient of determination (R2) varies between 0.958 – 0.974 for each of the datasets, and the root mean square error (RMSE) varies between 3.93 – 4.29 s.

Economic Impact Model for Intelligent Transportation Systems in Michigan

Umar Farooq
Department of Mechanical Engineering - Michigan State University - farooqu1@egr. msu.edu

Intelligent Transportation Systems (ITS) are widely regarded as a new and powerful contribution to the transportation industry, however, ITS effects on other industries has not been measured so far. The aim of this study is to understand the impact that ITS may have on the state of Michigan's economy. This is explored by measuring the ITS effect on every industry through a well-established approach called Leontif's Input-Output (I-O) model. We use a RIMS II model that aggregates all industries using 2-digit NAICS codes to compute a Michigan I-O model from the National I-O model. First, savings in reduced time delays and fuel costs are obtained and are used to compute the overall cost reduction factor. This factor is utilized to modify characteristics of the Michigan I-O model. The ITS impact on the intertwined industries in I-O model is achieved by maximizing effect on certain industries. The standard macroeconomic measures are then computed in terms of multipliers for all aggregated industries. Multipliers are generated for the cases before ITS implementation, conventional improvement methods, and after ITS implementation. The results suggest greater economic benefits may be achieved by statewide implementation of the ITS.

2007 Michigan Section ITE Golf Outing

Thursday, May 31, 2007

Mystic Creek Golf Club
Located inside Camp Dearborn
One Champions Circle
Milford, Michigan 48380
248-684-3333
www.mysticcreekgc.com

GOLF EVENT: This is our 15th annual 4-player scramble, and our fourth year at Mystic Creek! The fee is **$85** per person and includes entrance fee to Camp Dearborn, 18 holes of golf, cart, box lunch, dinner and prizes. Soft spikes only, please. No personal coolers. The *dinner only* fee is $30.00 per person. If you are making your own foursome, submit all four names on the entry form below. Please include the fees for all four players. As always, we will be happy to assign golfers to complete your foursome. You may fax or e-mail your form in advance of your payment.

Entering Camp Dearborn: Tell the guard you are participating in the ITE golf outing.
DO NOT PAY THE GATE FEE as it is included in your golf or dinner fee.
Registration: 8:30 – 9:45 a.m. at Mystic Creek
Shotgun Start: 10:00 a.m.
Dinner: 4:00 p.m.

SPONSORSHIP AND ADVERTISING: If your company desires to sponsor and advertise on a tee, the price is $250. The Lunch Sponsorships, each including a hole sponsorship, are also available for a fee of $350.00. Please complete the attached form. The golf committee will supply the appropriate advertising.
We must know by May 10, 2007 if you plan on sponsoring a hole.

RETURN THIS FORM TO:

Kristen Jayska
Carrier and Gable, Inc.
24110 Research Drive
Farmington Hills, MI 48335-2633
Phone: 248-477-8700; FAX: 248-473-0730
E-Mail: *krisjayska@carriergable.com*

VISA, MasterCard or checks accepted. Make checks payable to: **Michigan Section ITE Educational Fund**.

ITE 2007 GOLF OUTING ENTRY FORM

Name	Phone	Email	Please check appropriate box for each registrant: Golf + dinner ($85 per person)	Dinner only ($30 per person)

Visa___ MC___ number:_____ name on card:_____ exp__/__

PROPOSED

National Unified Goal
for Traffic Incident Management

Working Together for Improved Safety, Clearance and Communications

ntimc
National Traffic Incident Management Coalition

WHAT IS THE NATIONAL UNIFIED GOAL?

The Traffic Incident Management National Unified Goal is:

- Responder safety;
- Safe, quick clearance; and
- Prompt, reliable, interoperable communications.

COMMITMENT STATEMENT

The NTIMC is committed to working together to promote, develop, and sustain multidisciplinary, multijurisdictional Traffic Incident Management (TIM) programs to achieve enhanced responder safety; safe, quick traffic incident clearance; and more prompt, reliable, interoperable communications.

HOW WILL THE GOAL BE ACHIEVED?

NTIMC will achieve the three major objectives of the National Unified Goal through 18 strategies. Key strategies include recommended practices for multidisciplinary TIM operations and communications; multidisciplinary TIM training; goals for performance and progress; promotion of beneficial technologies; and partnerships to promote driver awareness.

CROSS-CUTTING STRATEGIES

- **Strategy 1. TIM Partnerships and Programs.** Traffic Incident Management partners at the national, state, regional and local levels should work together to promote, develop and sustain effective Traffic Incident Management Programs.

- **Strategy 2. Multidisciplinary NIMS and TIM Training.** Traffic Incident Management responders should receive multidisciplinary National Incident Management System (NIMS) and Traffic Incident Management (TIM) training.

- **Strategy 3. Goals for Performance and Progress.** Traffic Incident Management partners should work together to establish and implement performance goals at the state, regional and local levels for increasing the effectiveness of Traffic Incident Management, including methods for measuring and monitoring progress.

- **Strategy 4. TIM Technology.** Traffic Incident Management partners at the national, state, regional and local levels should work together for rapid and coordinated implementation of beneficial new technologies for Traffic Incident Management.

- **Strategy 5. Effective TIM Policies.** Traffic Incident Management partners at the national, state, regional and local levels should join together to raise awareness regarding proposed policies and legislation that affect achievement of the National Unified Goal objectives of Responder Safety; Safe, Quick Clearance; and Prompt, Reliable Traffic Incident Communications.

- **Strategy 6. Awareness and Education Partnerships.** Broad partnerships should be

developed to promote public awareness and education regarding the public's role in safe, efficient resolution of incidents on the roadways.

OBJECTIVE 1: RESPONDER SAFETY

- **Strategy 7. Recommended Practices for Responder Safety.** Recommended practices for responder safety and for traffic control at incident scenes should be developed, and widely published, distributed and adopted.

- **Strategy 8. Move Over/Slow Down Laws.** Drivers should be required to Move Over/Slow Down when approaching traffic incident response vehicles and traffic incident responders on the roadway.

- **Strategy 9. Driver Training and Awareness.** Driver training and awareness programs should teach drivers how to react to emergencies on the roadway in order to prevent secondary incidents, including traffic incident responder injuries and deaths.

OBJECTIVE 2: SAFE, QUICK CLEARANCE

- **Strategy 10. Multidisciplinary TIM Procedures.** Traffic Incident Management partners at the state, regional and local levels should develop and adopt multidisciplinary procedures for coordination of Traffic Incident Management operations, based on national recommended practices and procedures.

- **Strategy 11. Response and Clearance Time Goals.** Traffic Incident Management partners at the state, regional and local levels should commit to achievement of goals for traffic incident response and clearance times (as a component of broader goals for more effective Traffic Incident Management--see Strategy 3).

- **Strategy 12. 24/7 Availability.** Traffic Incident Management responders and resources should be available 24/7.

OBJECTIVE 3: PROMPT, RELIABLE INCIDENT COMMUNICATIONS

- **Strategy 13. Multidisciplinary Communications Practices and Procedures.** Traffic incident responders should develop and implement standardized multidisciplinary traffic incident communications practices and procedures.

- **Strategy 14. Prompt, Reliable Responder Notification.** All traffic incident responders should receive prompt, reliable notification of incidents to which they are expected to respond.

- **Strategy 15. Interoperable Voice and Data Networks.** State, regional and local Traffic Incident Management stakeholders should work together to develop interoperable voice and data networks.

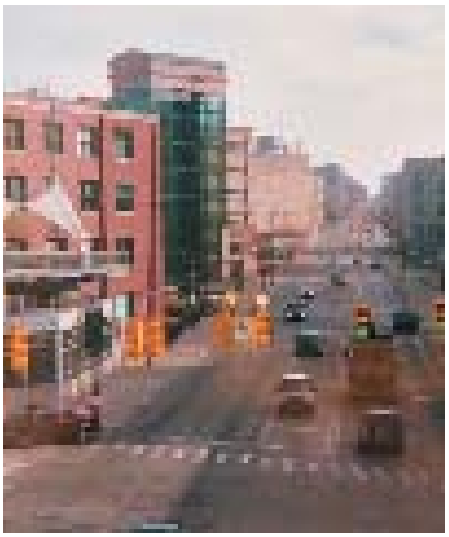
- **Strategy 16. Broadband Emergency Communications Systems.** National Traffic Incident Management stakeholders (working through the National Traffic Incident Management Coalition) should work together to reduce the barriers to integrated broadband emergency communications systems development and integration (both wired and wireless).

- **Strategy 17. Prompt, Reliable Traveler Information Systems.** Traffic Incident Management partners should encourage development of more prompt and reliable traveler information systems that will enable drivers to make travel decisions to reduce the impacts of emergency incidents on traffic flow.

- **Strategy 18. Partnerships with News Media and Information Providers.** Traffic Incident Management partners should actively partner with news media and information service providers to provide prompt, reliable incident information to the public.

An Optimized Grand Rapids

Lonnie Burkland, PE, PTOE - Michael S. Malone, PE, PTOE - Christpher Zull, PE



The City of Grand Rapids, Michigan Traffic Safety Department (GRTS) is currently conducting a traffic signal timing optimization project on several corridors throughout the city. The project includes signal timing upgrades, traffic safety and operations review, development of a custom database, and software training for City and other stakeholder staff. The GRTS Department has contracted with Iteris, Inc. to provide these services. Albeck Gerken, Inc. (AG) and Traffic Data Specialists (TDS) are supporting Iteris on the project.

The project includes development of AM and PM peak period traffic signal timing plans for 87 intersections along four major arterials including Fulton Street, 44th Street, Division Avenue, and Alpine Avenue. The Iteris team is working closely with a Project Steering Committee consisting of GRTS, Michigan DOT, Kent County Road Commission, City of Wyoming, and Grand Valley Metropolitan Council staff. The project was initiated in August 2006 and is expected to be completed in July 2007.

The City of Grand Rapids and its neighboring jurisdictions have been proactive in managing traffic on its streets. They have deployed an ACTRA centralized traffic signal control system at more than 200 intersections, many of which are included in this traffic signal timing project. Most of the local intersection controllers on the project are Eagle EPACs. The City also has installed a fiber optic communications network to interconnect the signals and a system of closed circuit television (CCTV) cameras, scattered throughout the downtown area. The ACTRA signal system and the City's current CCTV cameras are managed from their Traffic Operations Center located on Wealthy Street. Development and deployment of optimized signal timing plans is another useful tool that the GRTS staff can use to increase the efficiency of their transportation resources.

Iteris staff coordinated a significant data collection effort for this project including peak hour turning movement volumes, 24-hour coverage counts to determine timing plan implementation schedules, and daily approach counts to evaluate intersection flash schedules. The project team also completed an extensive field review and gathered data that is being included in the database developed as part of the project to manage traffic control resources and assist with timing plan implementation. "Before" and "after" travel time studies are also being completed along the corridors to document road user benefits of improved traffic signal timings to the motoring public.

For the safety review of each corridor, crash data was obtained from the Traffic Improvement Association (TIA). A summary of hotspot locations and measures for mitigation are being developed for several intersections to help the City plan for future improvements. The traffic analysis and signal timing development tasks are being conducted using Synchro and SimTraffic, Version 7.0. The Iteris team has conducted a 2-day training course on the use of Synchro and SimTraffic for stakeholders as part of the project. In addition, a 1-day course focusing on timing plan implementation and signal system management using Eagle EPAC controllers and the ACTRA signal system was also conducted. This session was facilitated by Carrier & Gable.

The data base development task is a unique element of the project that is being tailored specifically to the needs of the GRTS and other project stakeholders. The data base, which will include a web interface to allow any authorized user access to information, is being developed to facilitate timing plan implementation by GRTS staff and efficient data exchange with other City departments or interested stakeholder agencies. Information in the data base will be compatible with other City of Grand Rapids GIS applications to facilitate information exchange. Information planned to be part of the data base includes traffic counts, intersection geometrics, aerial photos, intersection traffic control device and communications inventory information, intersection photos, controller cabinet and equipment photos, updated signal timing plans, and Synchro files. Training on the data base will also be provided to GRTS and other agency staff at the conclusion of the project.

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2007 Annual Meeting & Exposition

"Proving the VII Concept...
This is the time. This is the place."

May 16 & 17, 2007

Rock Financial Showplace
Novi, Michigan

MDOT Michigan Department of Transportation

ITS-Michigan Intelligent Transportation Society

Exhibitors

3M
Alcatel-Lucent
Atlantic Scientific Corp.
AVI
Cambridge Systematics
Carmanah Technologies
Carrier & Gable
Continental Automotive Systems
Cornet Technology Inc.
Daktronics, Inc.
Data911 Mobile Computer Systems
Eberle Design, Inc.
EIS Inc.
Encom Wireless Data Solutions
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Microwave Data Systems
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Motor City Electrical Technology
Motorola
Persis Consulting Firm
Proxim Wireless
Quixote Transportation Technology
RuggedCom, Inc.
Sensys Networks
Siemens ITS
Technical Systems Marketing, Inc.
TechnoCom Wireless
Teleste Video Networks
Tevent Farradyne, Inc.
Traffic Control Corp.
Transdyn, Inc.
UMTRI
Union Metal Corporation
URS Corp.
Vaisala, Inc.

*For more information regarding attending or exhibiting at the 2007 Annual Meeting & Exposition, please visit **www.itsmichigan.org**.*

A Walkable Battle Creek

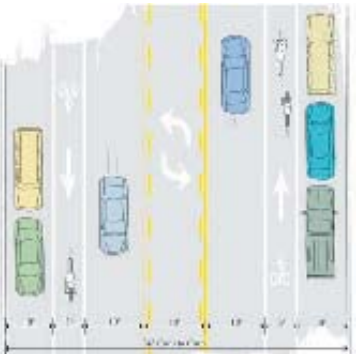
Max Phares - Martin Parker, PE

In 2005 the City of Battle Creek developed a Non-Motorized Transportation Master Plan to provide safe and reasonable human-powered travel between communities, schools, businesses, parks, natural resources and cultural and historic landmarks. The plan is important to Battle Creek's desire to portray a healthy lifestyle image.

Development of the plan involved context-sensitive solutions through stakeholder involvement. A 20-year framework was established for implementation with an ongoing program to integrate the plan into the City's resurfacing schedule whenever possible. The plan was developed by Wade Trim with extensive input from the Mayor and City Commissioners, Traffic Engineering, Parks and Recreation, and the public. The plan also relied on input from other governmental agencies like the Calhoun County Road Commission and the Michigan Department of Transportation. The County Road Commission had existing bike lanes marked on several arterials near the city limits. The stakeholders and those involved wanted all the non-motorized plans to fit together seamlessly.

The construction season was a perfect opportunity to begin the implementation of the plan. Several of the streets chosen for treatments were in the NMTMP. The plans were developed to include as much of the plan as possible. The Engineering Department worked closely with the local Metropolitan Planning Agency, the Battle Creek Area Transportation Study Committee to apply for CMAQ funds to mark some of the paved shoulders along the state highway system. The local Marshall Transportation Service Center staff cooperated and supported the project efforts.

There were some issued raised with different groups of residents when they realized the implementation of the plan meant they would, in some cases, loose on street parking on their street. However, the plan had listed every street in the plan with the possible issues which were involved on each street. Several additional meetings were held with different groups of residents to discuss issues such as on street parking and notification of the project.



56' Wide Curb to Curb
Alternative 1:
- Parking Both Sides
- (2) 10' Travel Lanes
- 10' Center Lane
- 5' Bike Lanes
- Speed Limit 35 mph or less
- Low truck volumes

56' Wide Curb to Curb
Alternative 2:
- Parking One Side
- (2) 11' Travel Lanes
- 12' Center Lane
- 6' Bike Lanes
- Speed Limit 35 mph or less

...Continued on Page 12

A Walkable Battle Creek

...Continued

During plan development two bike lane pilot projects were completed on City streets as pilot projects. Conceptual design plans were developed for three additional bike lane projects. Conceptual design plans were also included to facilitate implementation efforts. By the end of 2006, over 11 miles of on-street bike lanes were completed. The plan calls for an additional 93 miles of non-motorized facilities.

The further implementation of the plan and following support is a joint effort between the Parks and Recreation Department and the Engineering Division. The NMTMP will remain as a prominent goal for both of these groups. The Battle Creek Parks and Recreation Department keeps a copy of the entire plan on line at www.walkrunbikebc.com.

Bike Lane Implemented on Elm Street

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Manager of Traffic Engineering
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mparker@wadetrim.com

Michigan Tech Student Awarded ITE Scholarship

Jed Peters is a senior in civil engineering from the small town of Argonne, Wisconsin. He is the Treasurer of Michigan Tech ITE Student Chapter and has been active in several organizations and intramural sports on campus. He has also been an outstanding student and has received numerous academic awards and scholarships while at Tech and during the summers he has gained invaluable transportation experience with internships at Wisconsin DOT, the Village of Howard (WI), and the Forest County (WI) Highway Department. Jed will graduate in May 2007 and plans to join a consulting firm or government agency and work in the transportation engineering design area.

Michigan's *Mighty Mac*

A 50 Year History of the Mackinac Bridge

Text and Photos Courtesy of the Michigan Department of Transportation

1880-1920
A newspaper, the Lansing Republican, dated February 5, 1884, reprinted a story from the Grand Traverse Herald pointing out that the experiment to provide all-year service across the Straits by boat had failed, and that if a great east-west route were ever to be established through Michigan a bridge or tunnel would be required. The editor considered both as practicable; the only question in his mind was that of cost.

The dedication of the Brooklyn Bridge in 1883 gave Mackinac Bridge backers encouragement. A St. Ignace store owner in 1884 reprinted an artist's conception of the famous New York structure in his advertising and captioned it "Proposed bridge across the Straits of Mackinac."

On July 1, 1888, the board of directors of the famous Grand Hotel at Mackinac Island held their first meeting. The minutes show that Cornelius Vanderbilt II (grandson of shipping and railroad magnate Cornelius Vanderbilt) said: "We now have the largest, well-equipped hotel of its kind in the world for a short season business. Now what we need is a bridge across the Straits." The great Firth of Forth Bridge in Scotland was under construction then and completed in 1889.

1920s
During the ensuing years there were a few farfetched ideas about the connection of Michigan's two peninsulas. In 1920 the state highway commissioner suggested a floating tunnel. He invited other engineers to suggest ideas for crossing the Straits. Mr. C. E. Fowler of New York City came forward with an ambitious project to solve the problem with a series of bridges and causeways that would start at Cheboygan, some 17 miles southeast of Mackinaw City, traverse Bois Blanc and Round Islands, touch the southern tip of Mackinac Island, and leap across the deep channel at St. Ignace.

In 1923 the Legislature ordered the State Highway Department to establish a ferry service at the Straits. Within five years traffic on this facility became so heavy that the late Governor Fred Green ordered the same agency to make a study of bridge feasibility. The report was favorable and its cost was estimated at 30 million dollars. Some strides to get the project underway were taken but it was eventually dropped.

1930-1950
Writing in the Michigan Alumnus-Quarterly Review, spring 1937, the late James H. Cissel, Secretary of the Mackinac Straits Bridge Authority, said:

"Early in 1934 the matter was again revived and proposed as a suitable P.W.A. project. In the extra session of 1934 the Legislature created the Mackinac Straits Bridge Authority of Michigan and empowered it to investigate the feasibility of such construction and to finance the work by issuance of revenue bonds. The Authority began its studies in May 1934 and has been continuously active since that date. Although limited funds precluded full and complete preliminary

Michigan's Mighty Mac

...Continued

studies, the Authority was able to reach the conclusion that it was feasible to construct a bridge directly across the Straits at an estimated cost of not more than $32,400,000 for a combined two lane highway and one-track railway bridge. In its studies the Authority utilized soundings made by the War Department Engineers and was aided by the gratuitous counsel and advice of engineers and contractors experienced in work of this magnitude." The Authority made two attempts between 1934 and 1936 to obtain loans and grants from the Federal Emergency Administration of Public Works, but P.W.A. refused both applications despite endorsement by the U.S. Army Corps of Engineers and the report that the late President Roosevelt favored the bridge. Notwithstanding these setbacks, bridge backers resumed their efforts with their usual vigor. From 1936 to 1940 a new direct route was selected, borings were made, traffic, geologic, ice and water current studies of a very comprehensive nature were completed. A mole or causeway jutting 4,200 feet into the Straits from St. Ignace south was constructed. Preliminary plans for a double suspension span were drawn and the possibility of a bridge became very real. But the Armies of Europe began to march and bridge progress came to a halt. Finally, in 1947, the State Legislature abolished the Mackinac Straits Bridge Authority.

1951-1954

Again, the bridge backers swung into action and a citizens' committee was established to obtain legislation recreating a bridge authority. By 1950 the legislation was enacted, but it limited the newly created Authority to determine feasibility only. The law required the Authority to consult with three of the world's foremost long span bridge engineers and traffic consultants for advice on physical and financial feasibility.

In January of 1951 the Authority submitted a very favorable preliminary report, stating that a bridge could be built and financed with revenue bonds for $86,000,000 but because of the shortage of materials due to the Korean outbreak, legislation to finance and build the structure was delayed until early in 1952. Immediately, the Authority asked the Reconstruction Finance Corporation to purchase $85,000,000 worth of bonds.

While this agency was studying the request, a private investment banker became interested in the project, and offered to manage a group of investment companies which would underwrite the sale of the bonds. The Authority accepted the offer and was ready to offer its bonds for sale by March of 1953. There were not enough takers to guarantee successful underwriting. The money market had weakened.

In order to make the bonds more attractive, the Legislature passed an act during the Spring of 1953 whereby the operating and maintenance cost of the structure, up to $417,000 annually, would be paid for out of gasoline and license plate taxes. Another effort to finance with this added inducement in June of 1953 was likewise unsuccessful, but toward the end of the year the market recovered and $99,800,000 worth of Mackinac Bridge bonds were bought by investors all over the country. Contracts which had been awarded contingent upon this financing were immediately implemented.

1954: Construction begins

The five-mile bridge, including approaches, and the world's longest suspension bridge between cable anchorages, had been designed by the great engineer Dr. David B. Steinman. Merritt-Chapman & Scott Corporation's $25,735,600 agreement to build all the foundations led to the mobilization of the largest bridge construction fleet ever assembled. The American Bridge Division of United States Steel Corporation, awarded a $44,532,900 contract to build this superstructure, began its work of planning and assembly. In U.S. Steel's mills the various shapes, plates, bars, wire and cables of steel necessary for the superstructure and for the caissons and cofferdams of the foundation, were prepared. The bridge was officially begun amid proper ceremonies on May 7 & 8, 1954, at St. Ignace and Mackinaw City.

1957 to present

The bridge opened to traffic on November 1, 1957 according to schedule, despite the many hazards of marine construction over the turbulent Straits of Mackinac. The last of the Mackinac Bridge bonds were retired July 1, 1986. Fare revenues are now used to operate and maintain the Bridge and repay the State of Michigan for monies advanced to the Authority since the facility opened to traffic in 1957.

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Rochester Hills, MI 48307

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