

Ohio and Michigan Safety Scanning Tour



Ohio and Michigan Safety Scanning Tour

August 25-29, 2008

John P. Miller, P.E.
Traffic Safety Engineer
Missouri Dept. of Transportation

Susan Barry, P.E.
Traffic Operations Engineer – D4
Missouri Dept. of Transportation

John Schaefer, P.E.
Senior Traffic Studies Specialist
Missouri Dept. of Transportation

Craig Compas, P.E.
District Traffic Engineer – D10
Missouri Dept. of Transportation

Jennifer Atkinson, P.E.
Traffic Operations Engineer – D9
Missouri Dept. of Transportation



EXECUTIVE SUMMARY

In recent years an emphasis has been placed on highway safety at the national and state levels. Goals have been set nationally and in the State of Missouri to focus efforts on decreasing the number of fatalities and serious injuries on our highways. In order to meet these goals, it is imperative for safety advocates in Missouri to look outside the state borders. Traffic Safety expertise exists across the country; among the leaders in safety engineering, enforcement and education are the states of Ohio and Michigan.

In August 2008, MoDOT's Traffic Division led a team to these states to learn and incorporate new ideas into Missouri's safety efforts. This scanning tour report provides a toolbox of best practices gathered from a scan of these two states' safety programs.

Scanning Team Composition

The five scan team members offered a range of expertise in traffic operations, safety engineering, data analysis, local issues, and the planning framework. The study benefited from the backgrounds of each team member on the scan. Team members included:

- John P. Miller, Missouri DOT, Central Office Traffic Division
- Craig Compas, Missouri DOT, Southeast District Traffic
- Susan Barry, Missouri DOT, Kansas City District Traffic
- Jennifer Atkinson, Missouri DOT, South Central District Traffic
- John Schaefer, Missouri DOT, Central Office Traffic Division

Key Findings

The purpose of this report is to bring ideas from other states back to Missouri safety professionals for discussion and implementation. Much of the information reported in this document was gained from face-to-face meetings, field visits and web sites. These innovative practices, if incorporated into Missouri's safety efforts, could greatly impact safety in the state.

1. Safety corridor programs combine engineering solutions, public information, and enforcement to improve safety on severe crash corridors – “long stretches of highways”
2. Road Safety Assessment programs
3. System-wide installation of centerline rumble stripes
4. Tools to promote safety data analysis at the local level
5. Roadway Design Innovation
 - a. Roundabouts & J-turns for high-speed expressways (intersection safety)
 - b. Elderly Mobility (Roadway Showcase in Detroit)
6. Safety assistance for locals – including use of High Risk Rural Road funding
7. Highway Safety Improvement Program administration
 - a. Process for funding safety projects

INTRODUCTION

In recent years an emphasis has been placed on highway safety at the national and state levels. The Federal Highway Administration (FHWA) and the American Association of State Highway and Transportation Officials (AASHTO) have adopted a goal to reduce fatalities on the nation's highways to 1.0 per 100 million vehicle miles traveled by the year 2008.

In Missouri, the Coalition for Roadway safety has established a goal of 1,000 or fewer highway fatalities in the State of Missouri by that same year. In order to meet the goal, the Coalition developed Missouri's Blueprint for Safer Roadways. The Blueprint is a focused document utilizing a partnership approach to outline explicit opportunities to reduce fatalities and serious injuries on our roadways. In 2007 Missouri had a total of 992 traffic fatalities and reached the goal of fewer than 1,000 traffic fatalities a year early.

To increase safety on Missouri's roads, it was deemed imperative to look outside the state borders. Traffic Safety expertise exists across the country. Previous safety scan tours have given Missouri safety professionals the opportunity to learn from peers in Minnesota, Iowa, Washington, Oregon, Maryland and Pennsylvania. Because of the success from these events and the knowledge gained, MoDOT was prompted to review Ohio and Michigan's safety efforts.

Scanning Team Composition

The five scan team members offered a range of expertise in traffic operations, safety engineering, data analysis, local issues, and the planning framework. The study benefited from the backgrounds of each team member on the scan. Team members included:

- John P. Miller, Missouri DOT, Central Office Traffic Division
- Craig Compas, Missouri DOT, Southeast District Traffic
- Susan Barry, Missouri DOT, Kansas City District Traffic
- Jennifer Atkinson, Missouri DOT, South Central District Traffic
- John Schaefer, Missouri DOT, Central Office Traffic Division

Key Areas

The purpose of this report is to bring ideas from other states back to Missouri safety professionals for discussion and implementation. Many of these innovative practices, if incorporated into Missouri's safety efforts, could greatly impact safety in the state.

- Innovative Safety Programs (Strategic Highway Safety Plans, HSIP – safety project selection and funding process, Corridor Safety Programs, Road Safety Assessments & System-wide Installation of Centerline Rumble Stripes)
- Safety Assistance for Locals
- Data Analysis Tools
- Engineering Innovations (Roundabouts, J-turns, Elderly Mobility design, Michigan Lefts)

INNOVATIVE SAFETY PROGRAMS

Ohio's Comprehensive Highway Safety Plan

The State of Ohio had a total of 1,257 fatalities in 2007, ironically the same number of fatalities as Missouri in 2005. However, Ohio has almost two times the number of total crashes when compared to Missouri. According to the Ohio Strategic Safety Plan, Ohio has the 9th largest highway network, the 5th highest traffic volume, and the nation's 4th largest interstate highway network. This document is available through the following web site:

<http://www.dot.state.oh.us/Divisions/Planning/ProgramMgt/CapitalPrograms/Documents/Safety/CHSP/chsp%20january%202008.PDF>.

The fatality reduction goal in Ohio is to have no more than 1,100 traffic fatalities by 2008 or no more than 1.0 fatality per 100 million vehicle miles of travel. In order to achieve this goal, they have created a "Road Map to Fewer Fatalities." This document was created through the collective effort of the Ohio Coalition for Roadway Safety. The members of the Coalition included safety partners from the Ohio Department of Transportation, the Ohio Department of Public Safety, the Ohio State Highway Patrol, the Ohio Rail Development Commission, the Public Utilities Commission of Ohio, the Federal Highway Administration, the Federal Motor Carrier Safety Administration, the Federal Railroad Administration, and the National Highway Traffic Safety Administration. Like Missouri, Ohio has identified key emphasis areas and targets within the "Roadmap" based on crash data. The following is the list of key emphasis areas and targets identified in the Ohio Roadmap:

Emphasis Area I – Data and Support Systems

- Targets
 - Timely Data
 - Reliable Data
 - Comprehensive Data
 - Integrated Data and Analysis Systems

Emphasis Area II – Serious Crash Types

- Targets
 - Fixed Object
 - Head-On, Cross Median
 - Intersection
 - Highway/Railroad Crossings

Emphasis Area III – High-Risk Behaviors/Drivers

- Targets
 - Impaired by Alcohol
 - Occupant Protection Devices – Nonuse and Misuse (Ohio does not have a primary safety belt law - usage rate is close to 82%)
 - Young Driver – 15 to 25
 - Distracted or Fatigued
 - Aggressive Driving
 - Older Driver – 65 and Older

Ohio and Michigan Safety Scanning Tour

Emphasis Area IV – Special Vehicles/Roadway Users

- Targets
 - Motor Carriers
 - Motorcycles
 - Pedestrians/Bicycles

Emphasis Area V – Incident and Congestion Related Crashes

- Targets
 - Rear End Crashes
 - Work Zone Crashes

Michigan’s Comprehensive Highway Safety Plan

The State of Michigan had a total of 1,084 fatalities in 2007. Like Missouri, Michigan completed their first SHSP in late 2004 and they are also developing a new SHSP that is in draft stage. However, in the 2004 SHSP, Michigan appears to have placed more focus on a fatality rate goal (1.0 fatalities per 100 million vehicle miles traveled by 2008). The Michigan Strategic Highway Safety Plan is available with the following link:

http://www.michigan.gov/documents/MI_CHSP_110103_7.pdf

In the draft SHSP Michigan seems to have more emphasis on an actual fatality reduction goal similar to Missouri. They have indicated that they are working towards a reduction in traffic fatalities from 1,084 in 2007 to 850 in 2012. They have also identified a serious injury reduction goal in this draft SHSP. In the report they have indicated they have one of the highest safety belt use rates among the states at 96.2 percent. An extensive list of “safety partners” is responsible for the development and implementation of the plan. Similar to Missouri, Michigan used traffic crash data to aid in problem identification and development of emphasis areas. The following is the list of key emphasis areas identified in the Michigan SHSP (each has an “action plan”):

- Alcohol/Drug Impaired Driving
- Commercial Vehicle Safety
- Drivers Age 24 and Younger
- Driver Behavior and Awareness
- Emergency Medical Services
- Intersection Safety
- Lane Departure
- Motorcycle Safety
- Occupant Protection
- Pedestrian and Bicycle Safety
- Senior Mobility and Safety
- Traffic Records and Information Systems

“Action Teams” were initiated to develop an action plan for each key emphasis area. Like Missouri, Michigan has provided EMS strategies in the action plans, which include Engineering, Education, Enforcement and EMS solutions.

Ohio and Michigan Safety Scanning Tour

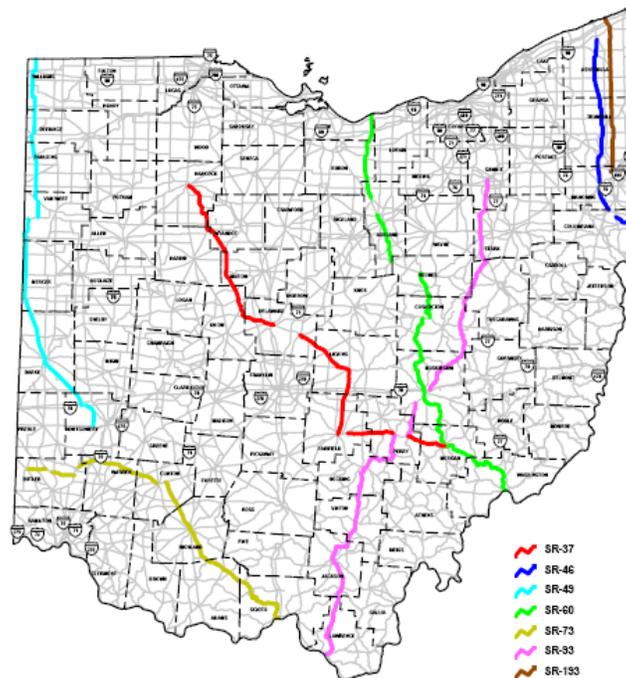
Ohio's Top Safety Corridors

In late 2004, the Ohio Governor initiated the establishment of the Governor's Task Force on Highway Safety. The charge of this task force was to take a "new look at long stretches of rural highways, two-lane highways, and dangerous intersections along these routes." The task force needs to "study the issue, make recommendations for improvement and aggressively implement those recommendations." The goals of the task force include the following:

- Create a crash-trend ranking system for long stretches of highways (corridors)
- Create a common definition of "dangerous" with regards to corridor highway safety
- Establish multidisciplinary teams to develop countermeasures to address safety concerns
- Work with residents, local governments, local law enforcement and safety stakeholders

"The Safety Corridor Program is designed around an annual cycle consistent with the Ohio DOT's current Safety Program cycle" (July 1 through June 30). The goal of the program is to select the corridors with higher crash rates and crash severity than what is expected. A fatal crash per mile density is used in the trend ranking system. A map of the "Top Safety Corridors" is shown below.

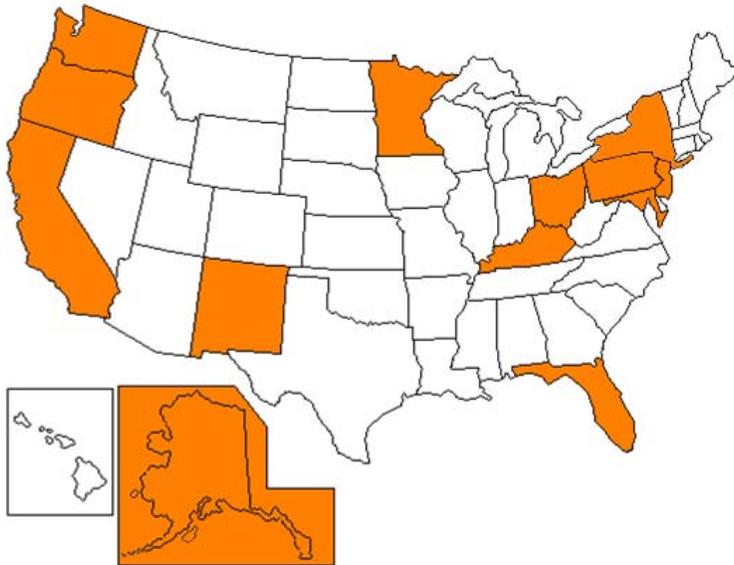
TOP SAFETY CORRIDORS



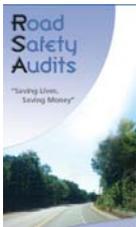
In addition to the Top Safety Corridors program, the ODOT has partnered with Public Safety, the State Highway Patrol, and law enforcement partners to place law enforcement officers along the busiest, high-crash highways during peak travel times. The officers are patrolling these corridors to enforce speed limits and target aggressive driving. They are also able to respond quickly to clear the scene when crashes occur.

States with Safety Corridors

(Source: FHWA)



Alaska
California
Florida
Kentucky
Minnesota
New Jersey
New York
Ohio
New Mexico
Oregon
Pennsylvania
Virginia
Washington



Ohio's Road Safety Assessment Program

Ohio has received very good local participation with Road Safety Assessment program. They often use information presented by the local emergency services on intersection problems that exist. The program is a local outreach and teaching tool that ODOT is able to use.

Michigan's Road Safety Assessment Program

Michigan is in the early stages of the RSA program similar to Missouri. They completed their first one in May and are still defining when and where to do these.

Ohio's HSIP - <http://www.dot.state.oh.us/Divisions/Planning/ProgramMgt/CapitalPrograms/Pages/Safety.aspx>

In Ohio, they have two safety application cycles per year. Applications are due April 30 and September 30 each application cycle. All applications (including locals) must be submitted from the ODOT districts and signed off by the respective District Safety Review Team. A safety engineering study should accompany the application (including cost/benefit) and the route must be a public road with a minimum of 10 crashes. Part of the analysis involves the "Rate of Return" to aid in the review process.

A six-member committee at the ODOT headquarters reviews all of the applications and supporting information. The committee can then approve a proposal, select a different safety strategy or request further study prior to funding a project.

The Ohio DOT spends about \$65 million annually on safety improvement projects, which is among the highest rate of spending in the nation. The ODOT District Offices and local government officials are eligible to apply for ODOT safety funding. The federal safety funding

Ohio and Michigan Safety Scanning Tour

is eligible for improvements on any public roadway and state funding is eligible for projects on the state highway system.

Michigan's HSIP - http://www.michigan.gov/mdot/0,1607,7-151-9615_11261---,00.html

“One of the most important issues regarding an agency’s safety program is its effectiveness in prioritizing the crash locations that seemingly warrant a safety project on the Basis of Cost Justification. One of The Goals of MDOT Safety Program is to utilize the limited budgetary resources to prioritize the number of crash location that demand countermeasures on the State Trunk line as well as some Local roads. With their focus on reducing fatalities and severe injures, each Safety project should have a correctable fatality or severe injury along with other type of crashes that pertain to the same fix. The focus is intersection safety, pedestrian and bike safety, and lane departure crash types.”

Like Ohio, Michigan also requires the districts to submit projects to the Central Office (they do a “call for projects”). Additionally, Michigan reserves some of the funding for local needs and they have identified specific projects (rumble strips, clearing ROW, protected LT movements for traffic signal locations, etc.). They feel this is necessary since approximately 60 percent of the fatalities occur on the local roads.

Michigan & Ohio High Risk Rural Road Programs

As defined by law, a High Risk Rural Road is a rural major collector, a rural minor collector, or a rural local road. The routes must have a crash rate for fatalities and incapacitating injuries that exceeds the statewide average for these same functional class routes. Both Ohio and Michigan have funded non-state routes for safety improvements and have placed emphasis on local roads.

System-wide Installation of Centerline Rumble Stripes

Because there is a heavy emphasis on lane departure crash types, Michigan has initiated a major program to counteract this problem. Over a three-year period, MDOT will install 5,700 miles of centerline rumble strips (and an additional 1,700 miles of shoulder rumble strips) on rural highways across Michigan. They hope to save an additional 15 lives annually when this program is complete.



SAFETY ASSISTANCE FOR LOCALS

Local Safety Initiative

MDOT is helping the local agencies identify safety issues and improve the safety on the local roads through its Local Safety Initiative (LSI). Local road authorities must volunteer to participate in the free service to become enrolled. Once enrolled, the following can be expected to occur (this service is provided by MDOT personnel):

- Complete crash analysis of their local road system (RoadSoft is main analysis tool)
- Compile list of intersections and roadway segments
- Engineering study or other type of analysis as needed
- Generate potential High Risk Rural Road (HRRR) locations
- Make suggestions for potential improvements (many low-cost solutions)
- Conduct before and after analysis

DATA ANALYSIS TOOLS

Traffic Records - Data

Michigan has included “Traffic Records and Information Systems” as a key emphasis area of their Comprehensive Highway Safety Plan. They monitor the reporting and accuracy of the data and make data available including a “cleansed” version of their crash report (everyone can gain access). Additionally, Ohio has put “Data and Support Systems” as an emphasis area of their Comprehensive Highway Safety Plan. Each state elevated the importance of Traffic Records.

ReACT System - TEC Engineering



The ReACTS (Remote Accident Capture & Alert System) is being used in Ohio to observe intersections. As indicated on their web site (www.teceng.com/reacts), “the system is an integration of video cameras, microphones, a digital video recorder, and network communication components. *ReACTS* responds to the sound of screeching tires or automobile collisions by digitally recording accidents and near-accidents from two separate cameras. The system is installed at signalized intersections and connects unobtrusively to the traffic signal equipment to provide information regarding the

signal indications at the time of a recorded incident. *ReACTS* provides accident reconstruction capabilities with unbiased video.”

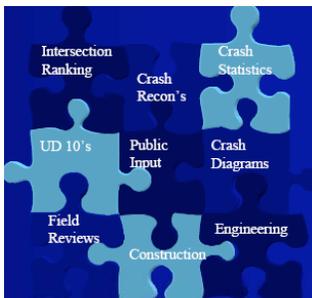
The information gathered from the video can help provide a better understanding of the cause of the crash. The link below provides video on a location where a crash did occur. Many “near-accidents” are also recorded and used to better understand the problem. When a potential accident is detected, the system sends an email message to specified users with a snapshot from the camera as an attachment to the message.



http://www.teceng.com/services/advancedtech/reacts/20050115_1352_AC.wmv

Some of the pros of audio based detection are immediate identification and the recorded information (both crashes and near-crashes). The cons relate to the “false positives” for crashes (noises that may trigger the system, but are not related such as truck noises).

Road Softs Safety Analysis Tool



RoadSoft is a roadway management system developed for Michigan's local agency engineers and managers to use in analyzing and reporting roadway inventory, safety, and condition data. It is available free of charge to all Michigan state and local agencies. The RoadSofts Safety Analysis Tool allows users to sort crash data a number of ways, rank locations, and select only the ones that are of most concern. The user can also use the crash diagram tool to provide a visual representation of the crashes at an intersection (for more detail there is a diagram summary page). Additionally, GIS tools are available for the user.

Trends can be identified such as right angle crashes as well as when the crashes are occurring prior to conducting a field investigation.

ENGINEERING INNOVATIONS

There were numerous engineering features that were discovered on field visits during the scan tour. Both Ohio and Michigan provided engineering innovations such as multi-lane roundabouts, J-turns, offset right turn lanes, Michigan Lefts, single point urban interchanges (SPUI), and designs for the elderly.

Roundabouts



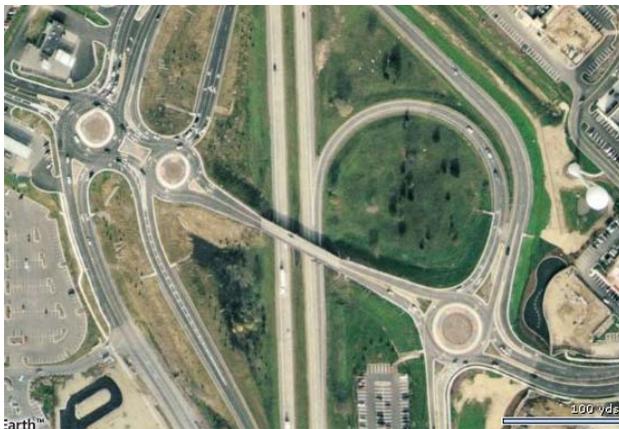
Roundabout in Saginaw County at I-75@M-81

The pictures of roundabouts are all from Michigan. A double roundabout at the I-75/M-81 interchange was completed in December 2006 (see picture at left).

A three-lane roundabout (below) was constructed on M-53 at 18 ½ Mile (Van Dyke) Road in Sterling Heights, Macomb County. This roundabout provides an efficient connection between major north/south arterials (opened June 2005). On our site visit, the roundabout was very efficient during peak hour.



Three-lane roundabout at M-53 and 18 ½ Mile Road in Sterling Heights



Double roundabout at ramp terminal (Lee Road and US23 near Brighton)

The roundabout at Lee Road and US23 near Brighton was very interesting and featured two roundabouts that were connected and served the ramp termini and the outer road.

Michigan Lefts



Where a Michigan Left is in place, left turns at the intersection are not allowed. In order to turn left, you must drive straight or turn right, then make a U-turn at a median crossover, guided by sign like the one at left. Michigan Lefts have been part of Michigan

roadways since at least the late 1960s and have proven to relieve congestion and increase safety. Crash reductions for rear-end, head-on, and right-angle types have ranged from 60 to 90 percent. The Michigan Lefts design also increases pedestrian safety, as the traffic signal can remain green longer.



Offset Turn Lanes



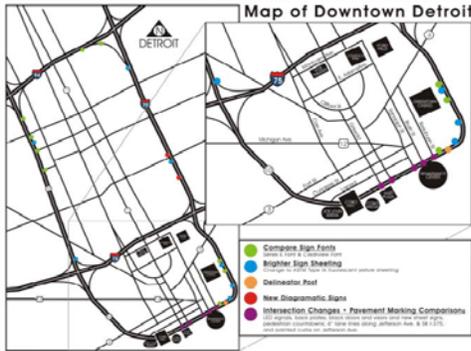
It is critical to have the stop bar in the optimal location. For this intersection, the offset right turn lane appears to be designed pretty well (see left picture). But with the field visit, you will

notice the actual placement of the stop bar is not located properly and a blind situation continues to exist (see picture on right). To improve the situation, either the stop bar will have to be moved forward, or more offset will be required.



Yes, you may have guessed it; the picture at left was taken in Missouri on US 65 just North of Sedalia. This picture is included because this is a very good example of how to design the offset left turn lanes. As you can see the drivers have a clear view of oncoming traffic. That's why we do these.

Elderly Mobility Initiatives



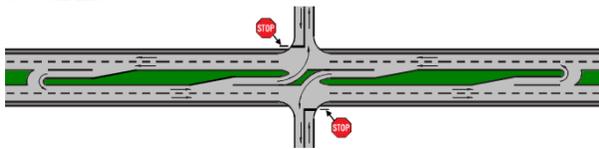
Older drivers as a group have reduced visual sharpness, inferior nighttime vision, and slower reaction times. MDOT is committed to supporting and funding programs that will keep their elderly mobile. This is evident in a “showcase roadway” along a 7.4-mile loop in downtown Detroit (see map).

MDOT developed the loop with the assistance from FHWA and AAA. Some of the devices installed on the showcase roadway are as follows:

- New color for warning signs – fluorescent yellow sheeting (now adopted by MDOT for all warning signs)
- Different font on guide and street name signs (see picture at right – sign at right uses the “Clearview” font (now adopted by MDOT))
- Back plates on traffic signals
- LED lenses in signals
- New pedestrian sign
- Pedestrian countdown signals
- Wider edge and lane lines and painting of some curbs to increase visibility
- LED lenses in some warning lights to improve visibility of curves
- Additional markers to provide direction to drivers where lanes merge



J-turns



The J-turns that we observed were located on rural four-lane high-speed expressways. The side roads were not allowed to make a left-hand turn at the main intersection, but instead were

forced to make a right, travel to the next J-turn, and then turn around to head left. This design virtually eliminates right angle crashes (the most severe at this type of intersection). Generally, acceleration lanes were also provided in order to allow for ample time to enter the flow of traffic.

Single Point Urban Interchanges

Single point urban interchanges are good alternatives to the traditional diamond interchange, but must be properly warranted. The advantages to a SPUI are less signal phases and a single point for vehicles to make through movements, a left onto the interstate, or a left off of the interstate. All other movements (namely right turns) do not pass through the traffic signal. The location to the right is I-96 at Beck Road in Novi, Oakland County (Michigan).



Ohio and Michigan Safety Scanning Tour

Welcome to Michigan



Chelsea, Michigan – home of Jiffy



Differential Speed Limits

Ohio and Michigan Safety Scanning Tour

Detroit, Michigan



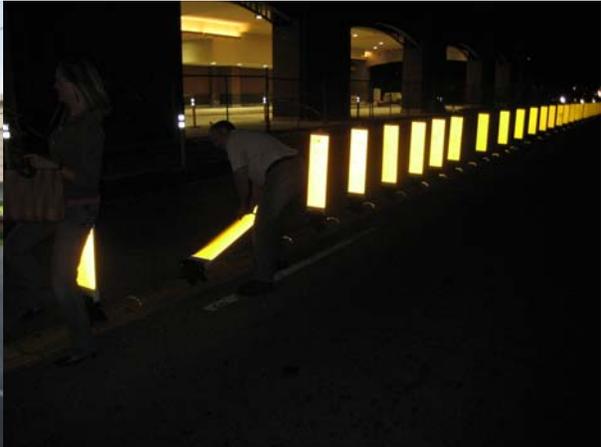
Monument to Joe Lewis (fist of a champion)



Workzone awareness



U-turns prior to intersection



Qwick Kurb lane separator



The People Mover



Illuminated Sign

Ohio and Michigan Safety Scanning Tour



Illuminated signs in Detroit



Shower facilities in Downtown Detroit

Ohio and Michigan Safety Scanning Tour

Welcome to Ohio



Signing in Ohio

Ohio and Michigan Safety Scanning Tour

Toledo, Ohio



World Famous Tony Packo's



Reflective backplates



Cable Stay bridge with LED pylon lighting (\$300 Million)



Cable Stay bridge



Barrier wall install for access mgmt.

Ohio and Michigan Safety Scanning Tour



Reflective backplates



Diagrammatic overhead signs



Dual warning signs for approaching Ohio expressway intersection (with post delineators)

Ohio and Missouri Safety Program Innovations Agenda

August 26, 2008

- 8 a.m. Introduction**
Safety Program Organizational Structure
- Missouri
 - Ohio – Integrating safety into all decisions
- 8:15 a.m. Ohio Data Analysis Improvements**
- Advances in timeliness and accuracy
(Traffic Records Coordinating Committee, Address Ranges, Location-Based Referencing System, Web-based mapping)
- 8:40 a.m. Comprehensive Highway Safety Plan (10 minutes each state)**
- Goals, emphasis areas and crash reductions
 - Committee structure, tracking and updating process for plan
 - Unique elements or new initiatives
- 9:00 a.m. Break**
- 9:15 a.m. State Annual Safety Work Plans (15 minutes each state)**
- How locations are identified, prioritized and tracked (CAM Tool)
 - Planning process – how locations are studied and funded
 - Safety Application Process
- 9:45 a.m. Other Initiatives**
- Missouri**
- 1) ***Conducting Road Safety Assessments*** (20 minutes) – discuss recent experience in Boone County and plans for statewide implementation
 - 2) ***Safety and the Clear Zone*** (5 minutes) – protecting our DMS equipment on our Interstates
- Ohio**
- 1) ***MPO safety work plans & County safety program*** (10 minutes) – extending crash analysis and safety prioritization to local roads
 - 2) ***Arterial Roadway Improvement Program*** (5 minutes) – new program to analyze and fund low-cost signal improvements on prioritized arterials
 - 3) ***REACT Demonstration*** (10 minutes) – software that records crashes using sound recognition
- 10:45 a.m. Innovative Safety Projects and Intersection Designs**
- Interchange and multi-lane roundabouts (including MOT)
 - Diverging Diamond Interchange
 - J-Turns on Expressways
- 11:30 a.m. Lunch**

Ohio and Michigan Safety Scanning Tour

12:30 p.m. Discussion of System-wide Safety Improvements

- MoDOT presentation (20 minutes)
- ODOT presentation (20 minutes)

1:30 p.m. Final Questions/Discussions?

- High Risk Rural Roads
- Work zone crash monitoring/Safe Commute

2:00 p.m. Field Visits

Ohio Field Visit Locations

ASHLAND COUNTY US 30 and SR 603

Issue: Far side angle crashes. Observations showed that traffic from SR 603 was attempting to cross all four lanes without stopping in the median area first. This is the intersection of a 4-lane divided expressway type facility that is severely skewed. Also, this intersection experiences a great deal of turning traffic (left and right turns).

Improvement: Created a channelization scheme with pavement markings and islands to guide traffic into proper turn staging positions and stop locations. Painted centerline in median area and placed yield signs in median to encourage crossing of EB and WB US 30 in two separate steps.

ASHLAND COUNTY SR 511 and CR 30A

Issue: Serious and fatal angle crashes due to running the stop sign violations

Improvement: Converted Two Way stop to Four Way Stop condition using LED stop signs. The two-way stop condition at this intersection was unusual in that the state route stopped for the county road. CR 30A was once US 30, carrying a high volume of traffic, particularly commercial traffic. The two-way stop condition was a carryover from a time when CR 30A was US 30 prior to the relocation of US 30 on its present alignment. The intersection did not meet the volume warrant criteria contained in the MUTCD, but the volume of traffic on all approaches to the intersection was nearly equal. The unusual stop condition, the equal traffic volumes, the crash history and our success with similar types of situation using four way stop as the mitigation measure prompted this application.

ASHLAND COUNTY US 42 and SR 89

Issue: Serious and fatal angle crashes due to stop sign violations (both running the stop and failure to yield); primary problem was SR 89 southbound traffic approaching the stop condition at US 42.

Improvement: Rumble strips on southbound approach, LED Stop Ahead Warning Sign and LED Stop sign at stop location.

HURON COUNTY US 250 Section from SR 162 (Fitchville) to US 20 (Norwalk)

Issue: Serious and fatal roadway departure crashes and head-on collisions. This is a two-lane roadway that carries a high percentage of semi truck traffic (nearly 30% of ADT).

Response: Installed centerline and edgeline rumble strips.

Ohio and Michigan Safety Scanning Tour

Toledo Area

WOOD - NB IR-75 @ Exit 192

Issue: Driver confusion at the interchange, high number of sideswipe crashes from vehicle merging over.

Improvement: Installed diagrammatic overhead signs to eliminate driver confusion. Installed new high intensity fluorescent yellow inside lane merge signs.

LUCAS - IR-280 over the Maumee River

Issue: Drawbridge existed on IR-280. When commercial freightliners needed to cross though the drawbridge on the Maumee River it would create severe backups, delays and rear end crashes on the interstate.

Improvement: Installed a new \$300 Million dollar plus cable stay bridge with LED pylon lighting. New bridge replaced the drawbridge, which still exists below and south of the new bridge. This is/was the largest dollar project in Ohio History.

LUCAS - SR-2 @ Albon Rd.

Issue: SR-2 is a high-speed 4-lane E/W highway with signals throughout the corridor. This intersection was experiencing a high number of ran red crashes possibly due to excessive speed, signal visibility issues, sun glare ect. There was a lack of left turn phases at the intersection on all the left turn movements.

Improvement: Installed left turn lanes on Albon Rd., reconstructed the traffic signal with mast arms, rigid mounted signal heads; reflective backplates, protected permissive left turn phasing, Wavetronix digital wave radar for dilemma zone detection, modified the clearance intervals and signal timing.

LUCAS - SR-2 Holloway Rd. to IR-475 Interchange.

Issue: High traffic volumes, ADT 48,000, rear end crashes, congestion, angle crashes, commercial development.

Improvement: Major reconstruction project widened from 4 lanes to 6 lanes, installed barrier wall in the median, installed dual left turns, upgraded all the traffic signals, signal timing and coordination, access management.

Michigan and Missouri Safety Program Innovations Agenda

August 28, 2008

- 10:00 a.m. Introductions**
Safety Program Organizational Structure
- Missouri
 - Michigan
- 10:15 a.m. Data Analysis Improvements (15 minutes each state)**
- Advances in timeliness and accuracy
 - Using data to make decisions
- 10:45 a.m. Comprehensive Highway Safety Plan (15 minutes each state)**
- Goals, emphasis areas and crash reductions
 - Unique elements or new initiatives
- 11:15 a.m. Discussion of System-wide Safety Improvements (20 minutes each state)**
- MDOT presentation
 - MoDOT presentation
- 12:00 p.m. Break for Lunch**
- 1:00 p.m. Highway Safety Improvement Program (15 minutes each state)**
- How locations are identified, prioritized and tracked
 - Planning process – how locations are studied and funded
 - High Risk Rural Roads Program
- 1:30 p.m. Other Initiatives**
- Missouri**
- 1) **Conducting Road Safety Assessments** (20 minutes) – discuss recent experience in Boone County and plans for statewide implementation
 - 2) **Safety and the Clear Zone** (10 minutes) – protecting our DMS equipment on our Interstates
- Michigan**
- 1) **Hot topics** (30 minutes) – initiatives at work like centerline rumble stripes
- 2:30 p.m. Break**
- 2:45 p.m. Innovative Safety Projects and Intersection Designs (15 minutes each state)**
- Interchange and multi-lane roundabouts
 - J-Turns on Expressways
 - Diverging Diamond Interchange?
- 3:15 p.m. Final Questions/Discussions?**

Michigan Field Visit Locations

Roundabouts:

1. I-75 at M-81 (Saginaw)- ramp terminal roundabouts, heavy truck usage
2. Lee Road at US-23 (Brighton) - double roundabout at ramp terminal
3. M-53 at 181/2 Mile Road (Sterling Heights) – multi lane roundabout

Rumble strips:

1. US-23, approx mm 25? (South of Ann Arbor) - Double painted line, one line in rumbles
2. Centerline rumbles, cut on existing surface
3. Centerline rumbles, cut on existing chip seal surface
4. Chip seal surface on existing centerline rumbles
5. Micro-surface over existing rumbles

Pavement markings:

1. All trunkline roads - 6” MDOT edge line, 4” centerline
2. Major trunklines - durable markings placed in recessed slot, for lane lines and edge lines.
Common durable marking: polyurea with large beads
3. Majority of Detroit freeways – 3M wet-night tape as lane line
4. I-75, 12-Mile to Giddings (Oakland City) – 3M wet-night tape on narrow lanes plus RPMs
5. Major trunklines - 12” dashed markings in advance of freeway lane split

Unusual interchanges:

1. Beck Road at I-96 (Oakland County) - Single Point Interchange

Delineation:

1. M-14 at Barton Road - Luciol System ribbon delineation at tight curve on exit ramp;
Color or delineation changes as ramp curvature tightens
2. Lafayette St. near Greektown Casino (Downtown Detroit) - Qwick Kurb lane separator

Intersections:

1. M-52 at Werkner Road (Chelsea) – offset right turn lane solved big problem with locals
2. Urban areas – indirect left turn crossovers

Other lane departure:

1. I-94 @ Gratiot Rd, exit #231 (Macomb City) - Tyregrip pavement surface on freeway ramp

Older Driver Signing:

1. MDOT Detroit Senior Showcase (7.3 mile Detroit loop) – Clearview font, Type IX sheeting for white legend on green guide sign, fluorescent yellow sheeting, new diagrammatic signing, plus more

Signing General:

1. Clearview font
2. Type IV standard signing material
3. Type IX legend/Type IV background for guide signs
4. Type IX fluorescent yellow warning signs

CONTACT INFORMATION

2008 Safety Scan Tour Team

John P. Miller, P.E.

Traffic Safety Engineer

Missouri Department of Transportation

John.P.Miller@modot.mo.gov

573-526-1759

John leads the Missouri DOT's safety engineering and crash data analysis efforts.

Craig Compas, P.E.

Traffic Engineer

Missouri Department of Transportation –Southeast District

Craig.Compas@modot.mo.gov

573-472-5310

Craig leads traffic engineering efforts and plays a major part in the regional Coalition for Roadway Safety in Southeast Missouri.

Jennifer Atkinson, P.E.

Traffic Operations Engineer

Missouri Department of Transportation –South Central District

Jennifer.Atkinson@modot.mo.gov

417-469-6268

Jennifer leads traffic engineering efforts and leads the regional Coalition for Roadway Safety in South Central Missouri.

John Schaefer, P.E.

Senior Traffic Studies Specialist

Missouri Department of Transportation

John.SchaeferJr@modot.mo.gov

573-751-2845

John assists with the Missouri DOT's safety engineering and crash data analysis efforts and leads the RSA program in addition to other local programs and law enforcement efforts.

Susan Barry, P.E.

Traffic Operations Engineer

Missouri Department of Transportation –Kansas City District

Susan.Barry@modot.mo.gov

816-622-0425

Susan leads traffic engineering efforts and plays a major part in the regional Coalition for Roadway Safety in Kansas City, Missouri.

Ohio and Michigan Safety Scanning Tour

Ohio Department of Transportation Contacts List

Jennifer Townley
Administrator
Systems Planning and Program Management
614-466-7493
jennifer.townley@dot.state.oh.us

Don Fisher
Transportation Engineer
Systems Planning and Program Management
614-387-2614
don.fisher@dot.state.oh.us

Jonathan Hughes
Transportation Engineer
Systems Planning and Program Management
614-466-4019
jonathan.hughes@dot.state.oh.us

Michelle May
Highway Safety Program Manager
Systems Planning and Program Management
614-644-8309
michelle.may@dot.state.oh.us

Dave Holstein
Administrator
Office of Traffic
614-644-8137
dave.holstein@dot.state.oh.us

Howard Wood
Deputy Director
Division of Planning
614-466-2255
howard.wood@dot.state.oh.us

Mandy Kisling
Transportation Engineer
District 6
614-387-1126
mandy.kisling@dot.state.oh.us

Paul Staley
Policy Coordinator
Director's Office
614-728-5078
paul.staley@dot.state.oh.us

Jay Hamilton
Transportation Engineer
District 8
513-933-6584
jay.hamilton@dot.state.oh.us

Eric Pfenning
Transportation Engineer
District 1
419-999-6854
eric.pfenning@dot.state.oh.us

James Young
Studies Engineer
Office of Roadway Engineering Services
614-387-1622
james.young@dot.state.oh.us

Joseph Glinski, Jr.
Safety Programs Engineer
Federal Highway Administration
614-280-6844
Joseph.Glinski@FHWA.dot.gov

Ohio and Michigan Safety Scanning Tour

Michigan Department of Transportation Contacts List

Mark Bott
Traffic Operations Section Manager
425 W. Ottawa Street
P.O. Box 30050
Lansing, MI 48909
517-335-2625
bottm@michigan.gov

Jill Morena
Pavement Marking Engineer
425 W. Ottawa Street
P.O. Box 30050
Lansing, MI 48909
517-373-3340
morenaj@michigan.gov

Kim Lariviere
Strategic Highway Safety Engineer and
Elderly Mobility Specialist
425 W. Ottawa Street
P.O. Box 30050
Lansing, MI 48909
517-373-3889
larivierek@michigan.gov

Tracie Leix
Safety Programs Manager
425 W. Ottawa Street
P.O. Box 30050
Lansing, MI 48909
517-373-8950
leixt@michigan.gov

Bob Rios
Roadside Safety Program Specialist
425 W. Ottawa Street
P.O. Box 30050
Lansing, MI 48909
517-335-1187
riosb@michigan.gov

Matt Smith
Metro Region Traffic and Safety Engineer
Metro Region
18101 W. Nine Mile Rd.
Southfield, MI 48075
248-483-5120
smithmatt@michigan.gov

Wendy Cloutier
Bay Region Traffic and Safety Engineer
Bay Region
55 E. Morley Dr.
Saginaw, MI 48601
989 - 754-0878 Extension: 255
CloutierW@michigan.gov

Jack D. Benac
Department of Information Technology
425 W. Ottawa Street
P.O. Box 30050
Lansing, MI 48909
517-335-2975
BENACJ@michigan.gov

Dave Morena
Federal Highway Safety Engineer
315 West Allegan Street
Room 201
Lansing, MI 48933
517-702-1836
david.morena@fhwa.dot.gov