



# **Transportation Research Center**

## **Annual Report: Calendar Year 1999**

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January 2000



## **Background**

The University of Nevada, Las Vegas Transportation Research Center (TRC) was established in 1988 initially as the Nuclear Waste Transportation Research Center. In 1991, its name was changed to the Transportation Research Center. Housed in the Howard Hughes College of Engineering, since its inception, TRC's activities have included participation by a number of faculty from the Departments of Biological Sciences, Civil and Environmental Engineering, Electrical and Computer Engineering, Geo-sciences, Mechanical Engineering, and Public Administration. To date, the TRC has involved over seventy five undergraduate and graduate students in over seventy sponsored projects conducted at the center. These projects have supported a wide range of sponsors including several federal, state and local government agencies and a few from the private sector. The center also has benefitted from three generous grants from the TRW Foundation. In addition, the center has hosted several workshops, training sessions, and conferences.

The following are the mission, goals, and focus of the TRC.

## **Mission**

Promote and Conduct Transportation Research and Educational Activities.

## **Goals**

- Develop and Maintain a Nevada-based Center For Multi-modal Transportation Research and Policy Analysis.
- Educate And Prepare Students For Careers In Transportation.

## **Focus**

Education and Applied Research to Support Transportation Systems Life Cycle. The typical life cycle includes Policy Making, Planning, Design, Operations, Construction, and Maintenance & Rehabilitation Activities.

## **Location**

The TRC is physically located in the Thomas Beam Engineering complex with a laboratory-cum-office suite in Room 363 of the "B" building. Additionally, faculty, staff and students associated with the TRC have other offices in the "A" and "B" buildings of the Howard R. Hughes College of Engineering.

## **Personnel**

The following individuals worked at or participated in activities of the TRC during a part or all of 1999. The faculty members hold tenure track positions with academic departments at UNLV.

### **Faculty:**

Barbara Luke, Ph.D.  
Mohamed Kaseko, Ph.D.  
Shashi Nambisan, Ph.D., P.E., Director  
Ed Neumann, Ph.D., P.E.  
Walter C. Vodrazka, Ph.D., P.E.

### **Professional Staff:**

Erin Breen, B.A., Director, Safe Communities Partnership  
Srinivas Pulugurtha, Ph.D., Assistant Research Professor  
Robert Puterski, M.A., Transportation Systems Analyst (until September 1999))  
Walter C. Vodrazka, Jr., M.S.C.E, Transportation Systems Analyst

### **Consultants:**

Les Dunn  
Jeff Jensen, M.S.E.

### **Students:**

#### ***Undergraduate Students:***

Michael Bradford (BSE - Civil Engineering)  
Don Durgin (BSE - Civil Engineering)  
Cody Geisendorfer (BSE - Civil Engineering) (from October 1999)  
Vincent Palrose (BSE - Mechanical Engineering and BS Math) (until September 1999)  
Stacie Paul (BS - Marketing) (from November 1999)  
Hans Rawhouser (BSE - Civil Engineering) (Spring 1999)

#### ***Graduate Students:***

Zhenzhong Cui (MSE- Civil Engineering)  
Ranjit Menon (MSE- Civil Engineering)  
Tom Miller (MSE- Civil Engineering)  
Chang Hwan Park (MSE- Civil Engineering)  
Monte Park (MSE - Civil Engineering) (until August 1999)  
Jyothi Tallapragada (MSE- Civil Engineering)  
Kaizad Yazdani (MSE- Civil Engineering)

#### ***High School Students:***

Andrew Amend (June and July, 1999)

Mani Mani (from June 1999)

## **SUMMARY OF ACTIVITIES IN 1999**

Faculty, staff and students at the TRC work on a wide range of topics and projects. These include efforts that are akin to those undertaken by traditional academic programs as well as non-traditional efforts and projects. The Safe Communities Partnership project undertaken by the TRC is a non-traditional project. Its mission is to further the pursuit of improved safety on the transportation network. The focus of its products is on continued outreach and technology transfer to stakeholders, and not so much in peer reviewed publications, conference presentations and technical reports. This program is discussed next. It is followed by a summary of activities of the TRC for the calendar year 1999. This summary includes the following categories: publications, presentations and conference activities, sponsored research projects and grants, professional society activities, supervision of graduate student thesis/dissertation, honors and awards, and conference and workshop attendance. (NOTE: this reflects outcomes and products of the efforts of individuals associated with the TRC. Many of these activities benefitted from financial support from sources outside the TRC related funds. The faculty members were also associated with academic departments. Thus, items with their involvement would also be reflected in reports submitted by their respective departments).

## ***SAFE COMMUNITIES PARTNERSHIP***

The Safe Community Partnership is made up of representatives from thirty nine local agencies and programs in the urbanized Clark County area. The goal of the Partnership is to enhance transportation safety by lessening the burden of traffic crashes on residents and visitors in Clark County. The program is funded through the Nevada Office of Traffic Safety with Federal 402 Highway Safety money that each state receives. Most programs funded with Federal 402 money are only for three years. The Partnership finished the final year of its initial funding on September 30, 1999. However, because of the success of the program it was funded fully for another year and a half - i.e., until March, 2001.

All of the objectives established for the partnership were exceeded in 1999. These objectives are discussed next with highlights of the year's activities. Even though the goals of the program may not fit into

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- < Insurance Industry
- < Judiciary

**1999 UNLV's Safe Community Partnership Member List**

AAA Insurance	KVBC Channel 3
American Society of Safety Engineers	Las Vegas Area Computerized Traffic System
Arrive Alive**	Las Vegas Metropolitan Police Department - Community Policing **
CAT Paratransit	Las Vegas Metropolitan Police Department - Traffic Division
Citizens from the community at large	Las Vegas Traffic School
City of Las Vegas Engineering	Nevada Highway Patrol
Clark County Coroners Office	North Las Vegas Fire Department
Clark County Court Education Program**	North Las Vegas Police Department
Clark County Family and Youth Services	North Las Vegas Traffic Engineering
Clark County Health District	Progressive Insurance**
Clark County Risk Management	Regional Transportation Commission
Clark County Safe Kids Coalition	Safety Consultants, Inc.**
Clark County Traffic Management	Sierra Health Services
Department of Motor Vehicles	Smiths Food and Drug Centers**
District Attorney's DUI Task Force **	Sprint Telephone
Golden Nugget**	State of Nevada Office of Juvenile Justice**
Henderson Fire Department	Sunrise Hospital
Henderson Police Department	UMC Trauma Services
Henderson Public Works	University Medical Center
Kirvin Communications	UNLV Police Department

\*\* Partners added in 1999

**Objective Two:** *To schedule Partnership meetings; to prepare and post agendas; and to provide staff support to coalition members.*

Partnership meetings were held on the second Thursday of every month at Sierra Health Services. A sample agenda from the August, 1999 meeting is shown in the figure below.

<b>August 12, 1999</b>	
<b>Safe Community Partnership Meeting</b>	
<b>Southwest Medical Services</b>	
1.	Welcome and Introductions
2.	Coordinator's Report
	a. Legislative issues and MADD
	b. Award
	c. Grant update
	d. Safety seat monies and possibilities for 800 number
3.	Old Business
	a. Walk-a-thon
	b. Walk Our Children to School Day
	c. Back to School Fair
4.	New Business
	a. Think Before You Drink Program
	b. Annual Luncheon
5.	Committee Breakouts

**Objective Three:** *To provide the coalition members with a community profile to aid identifying the top four traffic safety priorities in Clark County and to develop and implement countermeasure programs to reduce the rate and severity of injuries in these areas.*

Data analysis conducted at the TRC aided the Partnership in developing the program's priority areas for 1999. The established priorities were:

- Aggressive Drivers
- Pedestrian Safety
- Teen Drivers
- Alcohol Issues, and
- Occupant Protection.

A committee was established for each priority. Some of the events and actions that the committees completed are discussed next.

As part of this objective the TRC prepared a report titled "Analysis of Crashes in Clark County, Nevada 1996-1998." This report was prepared for the Nevada Office of Traffic Safety in December, 1999 and will be useful to the partnership in establishing goals for 2000.

### ***Aggressive Drivers***

The aggressive driving committee continued with the "*Drive Friendly*" message. During this year a billboard was secured for production costs only through Donrey Outdoor Advertising. The 25 foot board travels around the community, because it was made of a new kind of plastic the Partnership only had to pay for it once, yet gets a board a month for a year for the investment. A brochure was produced for the community asking "*Are We Looking For You?*" which tries to make the average person see how everyone is responsible for being too aggressive behind the wheel at some times.

In April the campaign partnered with the Taxicab Authority and Sierra Health Services for "Drive Safely At Work Week" where 3,500 taxi drivers were given information on aggressive driving, speed, alcohol, and general safety under the banner of "*Drive Friendly, Courtesy is Contagious*". This campaign also had a series of stories featured with Channel 8 TV news throughout the week.

At the end of September 1999 the *Drive Friendly* message was seen throughout the Valley on 800 bright yellow 18-inch signs, 18,000 reflective bumper stickers and one billboard. Many presentations to service groups were also made on behalf of the *Drive Friendly* campaign, due primarily to the partnership with the Las Vegas Chamber of Commerce on this program.

The Partnership was also represented at the legislature for the bill introduced by Assemblyman David Parks to combat aggressive driving. Data compiled at the TRC were distributed to the Assembly when Erin Breen testified in support of the bill. This was at the request of Assemblyman Parks. The bill was passed and went into effect July 1, 1999.

### ***Pedestrian Safety***

The pedestrian safety committee acts as an advocacy group throughout the community. Presentations are made on almost a weekly basis for pedestrian safety. The Partnership also works with all of the engineering departments of the incorporated cities in Clark County and Clark County trying to get improvements made or pilot programs developed. This committee has been working with the County on standards for a pedestrian mid-block crossing that was commissioned by NV Office of Traffic Safety. Because of the TRC's relationship with both of these entities, approval came for last year's request that the university be chosen as the pilot site for a mid-block refuge island and embedded lights in a crosswalk. These features should eventually become a reality at Maryland Parkway and Del Mar Street. When UNLV's student leaders from CSUN went to County Commissioner Herrera to request assistance at this intersection, they



did not realize that the Partnership had been working on pedestrian improvements for Maryland Parkway for more than a year.

The pedestrian safety issue is a problem all over Clark County. A brochure explaining how to use signalized crosswalks safely was developed in the last year to assist with speaking engagements on this issue. This is a topic that the Partnership spends a great deal of time on in the schools. Both elementary and middle schools are targets for pedestrian and bike safety. This is also a topic that receives much media attention. During the year an article pertaining to pedestrian safety featured the TRC on the front page of the Local News section. The TRC was also mentioned on numerous television newscasts and in two other newspaper articles.

The biggest and most visible event that was held during 1999 was “*Walk Our Children to School Day*,” which was held on September 22<sup>nd</sup> throughout Clark County. The focus of the day was on four “high risk” elementary schools located in different geographic sections of the county. At each of these schools there were partnership volunteers passing out breakfast and incentive items on the morning of the event. The parents were notified of the schedule through a letter sent home along with a “walkability checklist.” A flyer was distributed through the school district that announced the event and gave tips for safe travel to school. Three of the schools had speakers for their event. At two of the schools police officers spoke and at a third school the principal spoke to the parents about the importance of safe walking skills. The main school for the event was Halle Hewetson Elementary School, where members of the media covering the event were directed to go. The event was headed by Las Vegas’ Mayor Oscar Goodman and Kathy Miller from Governor Guinn’s office. All of the major local media organizations were present. There were a total of 31 hits (spots / stories) on the news plus the Spanish station, and pictures in each of the newspapers. Two of the TV stations had live broadcasts from the event all morning, beginning at 5:30 a.m.

There were many participants this year. In addition to the four focus schools and the flyers to all elementary schools, the message was on milk cartons from the local dairy for three weeks and flyers were distributed at area Smith’s Food and Drug Stores. The event was announced at local Smith’s stores on their continuous loop of announcements which plugged the event once every fifteen minutes, 24-hours a day in the week prior. Informational flyers and walkability checklists were also distributed at the annual “*Back to School Fair*” at the Boulevard Mall. This was a very visible event for the Partnership.

### ***Teen Drivers***

The teen driving committee spent a lot of time during 1999 with the state legislature trying to pass the Graduated Licensing Bill, AB552. Media coverage for this issue included numerous television newscasts, another front page story on the local section of the paper, radio call-in shows and many speaking engagements. The partnership testified two different times on this issue and got together others to testify as well. Data compiled by the TRC was used to help get the message about the importance of this bill across. Both the Assembly and the Senate passed the bill toward the end of the session. The Governor would not sign the bill and sent it back to be reworked. The bill went through the assembly a second time but was stopped at the Senate the second time and time ran out before it could get passed.

The teen driver committee has also worked in area high schools to bring programs about the importance of not drinking and driving into the schools. A grant was submitted to the State Office of Juvenile Justice to fund a half-time student position to carry out this program. This came through the end of 1999.

The teen group also continued to work with the Clark County Family Court Services on a teen offender program. This program, developed by the Partnership in 1997, allows judges to sentence juvenile drivers convicted of serious traffic offences to complete this program. The funding for this program ran out September 30, 1999, and while there was hope that the county would pick up the costs to continue this program, they did not.

### ***Alcohol Issues***

The drinking and driving committee was formed late in 1999 and didn't have much time to get things running. This is an issue that will be focused on during 2000. There will be several things done on campus with the drinking and driving issue.

### ***Occupant Protection***

Occupant protection focuses on seat belts and child safety seats. Early in 1999 the partnership completed an observational survey of child safety seat compliance. The results of this non-scientific survey led to OTS funding a statewide child safety seat usage survey conducted by the TRC. The Partnership has been partners with the Clark County Safe Kids Coalition on this issue for the past three years. During 1999 there were a weeks worth of events for national Child Passenger Safety Week in February with extensive media coverage.

During an event co-sponsored by the Henderson Police Department 52 day care centers were visited in Henderson. During these visits the "Child Passenger Safety" brochure and information concerning the difference in safety seat requirements for different children were handed out to the public.

The Partnership works with many service groups to raise funds for safety seats and awareness about the importance of proper installation. In December Senator Richard Bryan talking about safety seats at an event planned on campus. This is an issue that got a great deal of exposure and the Partnership will continue to stay involved in the campaign to get all children under age five into properly installed seats.

The effort to enact a primary seat belt law was continued this year. However, when it came time the bill was not even formally introduced on the floor of the Senate before it was thrown out for the year. The reason given was that Nevada's usage rate was higher without the primary usage law than most states that enforce one. The effort to get this bill introduced and passed will continue next session.

**Objective Four:** *To participate, in cooperation with OTS and other community partners, in at least two events which attract media attention and gain media in print and television.*

Some of the events that the Partnership organized are discussed in the following sections.

### ***Walk Our Children to School Day***

The biggest and most visible event that was held during 1999 was “Walk Our Children to School Day,” this event was held on September 22<sup>nd</sup> throughout Clark County. This has been discussed in detail under the “Pedestrian Safety” section in Objective 3.

### ***Buckle Up America Week***

The Partnership scheduled two main events during “Buckle Up America Week” held in May, 1999. The first event was at Clark High School. At this event the Las Vegas Metropolitan Police Department demonstrated the “Convincer” which is a vehicle cab mounted on tracks that demonstrates the possible effects of a car crash on unbelted passengers. There was also a crashed vehicle on display and the Crash Test Dummies were on hand. This event generated over 45 minutes of coverage on the local television stations and garnered attention in the newspapers and radio stations as well. The second event was live radio broadcasts from five different stations at five Terrible Herbst locations throughout the Vegas Valley. The Crash Test Dummies were again on hand to help with the “*Buckle Up Pledge Drive*.” The Crash Test Dummies also threw out the first pitch at a Las Vegas Stars baseball game at Cashman Field during this week.

### ***Child Passenger Safety Week***

During 1999 a week’s worth of events was held for national Child Passenger Safety Week in February, again gaining extensive media coverage. This event featured a survey conducted before and after the week at the Variety Day Home. During the week the Child Passenger Safety brochure was passed out to drivers in the area. This survey conducted at the beginning of the event was covered live by two television stations during their morning news program.

### ***Drive Safely at Work Week***

In April the campaign partnered with the Taxicab Authority and Sierra Health Services for “*Drive Safely At Work Week*” where 3,500 taxi drivers were given information on aggressive driving, speed, alcohol, and general safety under the banner of “*Drive Friendly, Courtesy is Contagious*”. This campaign also had a series of stories featured on Channel 8 TV News throughout the week.

The total media coverage received in 1999 by the Partnership is estimated to be in excess of three hours of air time during news programs, five hours on local cable access programs, and over five hours of radio air time. In addition, activities of the Partnership were the subject of two “feature” stories and five other stories in the *Las Vegas Review Journal*, the local newspaper. Erin Breen hosted “Safety First,” a local cable access program airing on KTVY on Tuesday 7:00-7:30 p.m., four times and appeared 10 other times. Ms. Breen is considered to be the emergency guest for the show.

**Objective Five:** *To conduct an annual safe communities event to assemble individuals interested in traffic safety in a forum that includes an awards ceremony and features at least one prominent civic leader speaking about the problems related to traffic safety.*

The Partnership Awards Luncheon was held in October at the Golden Nugget. Over 80 people attended the luncheon which featured talks from State Assemblywoman Barbara Cegavske and Chief District Attorney Gary Booker. Channel 8 TV News covered the event where awards donated by Sierra Health Services were given to the recipients chosen by Partnership members. The Allstate Safety Leadership Award for the Western United States was also presented to the Partnership at this Luncheon.

**Objective Six:** *To continue with community based traffic safety education programs featuring the OTS mascot, SALLY, at a minimum of six public events; and to develop and distribute at least two printed educational pieces and two radio public service announcements; and two television airings.*

Several events featured the OTS mascot SALLY (Save A Life Like Yours). These events included but were not limited to the following:

1. Walk Our Children to School Day
2. Buckle Up America Week
3. Child Passenger Safety Week
4. Seat belt check points throughout the year (example: Pat Clark Pontiac in February)
5. Kindergarten Round-up held in August at the School District Ed Shed
6. Transportation Information Fair sponsored by the Regional Transportation Commission at the Boulevard Mall in March
7. Back to School Fair at the Boulevard Mall in August
8. Elementary School Bike Rodeos held throughout the year

The Partnership developed four brochures during 1999. The brochures were distributed throughout the year but mainly at the events for which they were created. The brochures were:

1. "Are We Looking For You?" Aggressive Driver brochure
2. "Pedestrian Safety" Developed to assist with speaking engagements on the topic
3. "Child Passenger Safety" Occupant Safety brochure
4. "Child Safety Seat" brochure containing information on safety seats

During the year two different public service announcements (PSAs) were aired on TV Channels 3, 5, and 8 numerous times. There were also PSAs made on almost all of the local radio stations.

**Objective Seven:** *To provide resources for community partners who wish to set up exhibits and displays related to traffic safety.*

In addition to the four brochures developed during the year, the Partnership received and distributed information from the Nevada Office of Traffic Safety, the National Highway Traffic Safety Administration, and the National Safety Council. The total amount of pamphlets, key chains, bumper stickers, coloring books, rulers, stickers, temporary tatoos, and etc. was well over 350,000 items.

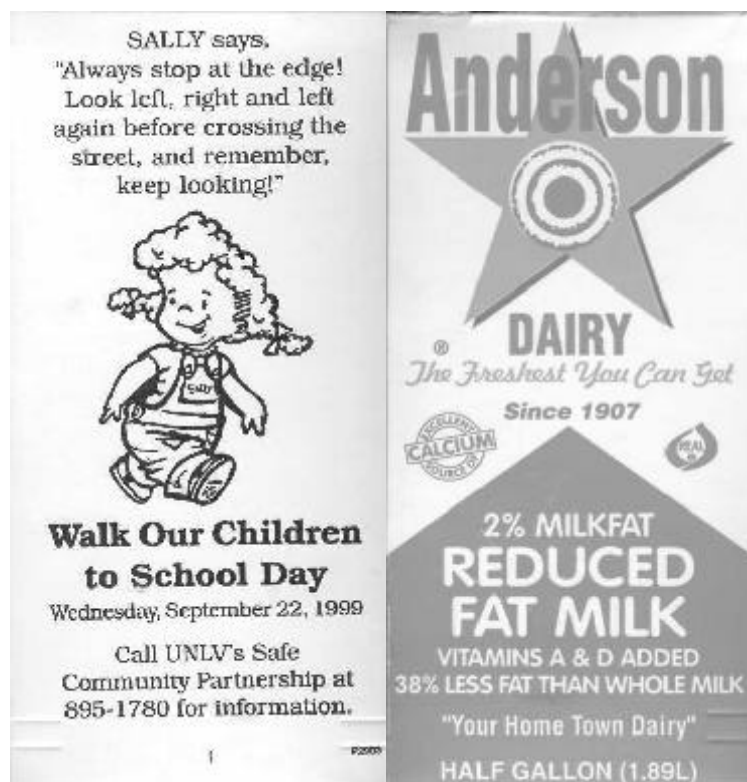
**Objective Eight:** *To use any revenues generated to expand the activities of the coalition beyond those funded with this project and to track and report all fund and in-kind donations.*

The Partnership received two grants and a Regent Award during 1999. The Regent Award was for the establishment of a Traffic Safety Specialist at the TRC. This individual would attend events in the

community and participate in Partnership meetings. One of the grants awarded to the Partnership was to establish a part-time student coordinator for the “*Stand Tall, Don’t Fall: United Against Underage Drinking*” project in Clark County. This grant was provided by the State of Nevada, Department of Human Resources, Division of Child and Family Services, Juvenile Justice Programs Office. One of the main responsibilities of this person will be the logistical planning for the Summer 2000 Stand Tall conference to be held in Las Vegas. The other grant is approved and is pending funding to establish a full-time coordinator for the Youth DUI project in Clark County.

Other In-Kind donations include but are not limited to the following:

1. “Drive Friendly” billboard time (12 months at different locations) donated by Donrey Outdoor Advertising.
2. Anderson Dairy Milk Carton Ads (picture shown below) ran for three weeks in September.



3. Clark County Public Works, Traffic Division (use of variable message board on Desert Inn Arterial throughout 1999)
4. Golden Nugget (donated \$1,200 for the Awards Luncheon)
5. Sierra Health Services (donated awards presented at Luncheon)



**SUMMARY OF OTHER ACTIVITIES AND OUTCOMES** (listed in reverse chronological order)**1. Publications****Peer Reviewed Publications**

- Kaseko, Mohamed, Mohamed Trabia, and Murali Ande, "A Two-stage Fuzzy Controller for Traffic Signals," Accepted for publication in the Transportation Research Journal: Part C, 2000.
- Pulugurtha, Srinivas S., Shashi S. Nambisan and Nanda Srinivasan, "Evaluating Accessibility and Optimizing Locations of Transit Service Facilities Using GIS", Journal of Public Transportation, Vol. 2, No. 4, December 1999, pp. 75-94.
- Nambisan, Shashi S., Srinivas S. Pulugurtha, Jeffery J. Jensen, Robert Puterski, Tom Miller and Chang Hwan Park, *Prototype Internet Applications for Transportation System Management*. Transportation Research Record # 1660, Journal of the Transportation Research Board, National Research Council, National Academy Press. Washington, D.C. 1999. pp 122-131.
- Neumann, Edward S. "Las Vegas - A Showcase for Automated People Mover Technology". *ITE Journal*. March 1999: 69(3), pp. 36-41.
- Neumann, Edward S. "A Transportation Engineering Perspective on Lower Limb Prosthetics" *O&P Business News*, March 1, 1999, pp. 44-56 with continuations.
- Neumann, Edward S. "The Past, Present and Future of Urban Cable-Propelled People Movers". *Journal of Advanced Transportation*. 1999:31(1), pp. 51-82.

**Conference Publications** (based on peer reviewed abstracts or extended abstracts)

- Nambisan, Shashi S. and Kaizad Yazdani. *GIS-Based Information Management System for Pavement Marking and Marker Materials*. Compendium of Technical Papers of the 69th Annual International Meeting of the Institute of Transportation Engineers, Las Vegas, Nevada. August 1-4, 1999. CD-ROM.
- Ackeret, Ken, Shashi S. Nambisan and Ranjit Menon. *Evaluation of Side Swipe Crashes at Triple And Dual Left Turn Lanes in Las Vegas, Nevada*. Compendium of Technical Papers of the 69th Annual International Meeting of the Institute of Transportation Engineers, Las Vegas, Nevada. August 1-4, 1999. CD-ROM.
- Pulugurtha, Srinivas S. and Shashi S. Nambisan, "Estimating Time Dependent Trip Tables for ITS Applications", Compendium of Technical Papers (CD-ROM), the 69<sup>th</sup> Annual ITE and District 6 ITE Conference, Las Vegas, August 1-4, 1999.
- Miller, Thomas D., Srinivas S. Pulugurtha, Shashi S. Nambisan, Jeffery J. Jensen and Chang-Hwan Park, "An Internet Based Transportation Projects Management System", Compendium of Technical Papers of the 69th Annual International Meeting of the Institute of Transportation Engineers, Las Vegas, Nevada. August 1-4, 1999. CD-ROM.
- Neumann, Edward S. "Cable Propelled Systems in Urban Environments" *Proceedings of the NSAA/OITAF International Trade Show and Congress*. May 23-27, 1999, San Francisco.



Neumann, Edward S. "Urban Cable Propelled People Movers - 22 Years of Progress" *Proceedings of the 7<sup>th</sup> International Conference on Automated People Movers*, Society of Danish Engineers and ASCE. May 5-8, 1999, Copenhagen, pp. 407-412.

**Technical Reports**

- Pulugurtha, Srinivas S, Shashi S. Nambisan and Erin Breen. *Analysis of Crashes in Clark County, Nevada: 1996-1998*. Prepared for the Nevada Office of Traffic Safety, Carson City, Transportation Research Center, Howard R. Hughes College of Engineering, University of Nevada, Las Vegas, UNLV/TRC/RR-99/06, December 1999.
- Nambisan, Shashi S. and Walter C. Vodrazka, Jr. *Child Safety Seat Use Survey: 1999*. Prepared for the Nevada Office of Traffic Safety, Carson City, Transportation Research Center, Howard R. Hughes College of Engineering, University of Nevada, Las Vegas, UNLV/TRC/RR-99/05, December 1999.
- Puterski, Robert, Edward S. Neumann, Zhenzhong Cui, and Walter C. Vodrazka, Jr. *Evaluation of Mid-Block Pedestrian Crash Patterns Within Las Vegas*, Prepared for the State of Nevada Department of Transportation. Transportation Research Center, Howard R. Hughes College of Engineering, University of Nevada, Las Vegas, UNLV/TRC/RR-99/04, June 30, 1999.
- Yazdani, Kaizad and Shashi S. Nambisan. *GIS-Based Infrastructure Management System for Pavement Markers and Markings*. Prepared for the Clark County Department of Public Works, Las Vegas, NV. Transportation Research Center, Howard R. Hughes College of Engineering, University of Nevada, Las Vegas, UNLV/TRC/RR-99/02, June 1999.
- Vodrazka, Walter C. Jr., Ranjit Menon, Shashi S. Nambisan, Edward Neumann, and Les Dunn. *Cost of Maintenance for Roads in Nevada under County and Incorporated City Jurisdiction, Summary Report, Task D: Maintenance Management System Development*. Prepared for the State of Nevada, Legislative Counsel Bureau. Transportation Research Center, Howard R. Hughes College of Engineering, University of Nevada, Las Vegas, February 1999.
- Nambisan, Shashi S., Edward S. Neumann, Walter C. Vodrazka, Jr., and Les Dunn, UNLV and Peter Sebaaly and Adam Hand, UNR. *Cost of Maintenance for Roads in Nevada under County and Incorporated City Jurisdiction, Final Report, Task C: Information and Data Gathering on the Cost of Maintaining Highways, Roads, and Streets*. Prepared for the State of Nevada, Legislative Counsel Bureau. Transportation Research Center, Howard R. Hughes College of Engineering, University of Nevada, Las Vegas, February 1999.
- Vodrazka, Walter C. Jr., Shashi S. Nambisan, Edward Neumann, and Les Dunn, UNLV and Peter Sebaaly and Adam Hand, UNR. *Cost of Maintenance for Roads in Nevada under County and Incorporated City Jurisdiction, Final Report, Task B: Information and Data Gathering on the Policies, Practices, and Procedures used in the Maintenance of Roadways in the State of Nevada*. Prepared for the State of Nevada, Legislative Counsel Bureau. Transportation Research Center, Howard R. Hughes College of Engineering, University of Nevada, Las Vegas, February 1999.
- Pulugurtha, Srinivas and Shashi S. Nambisan. *Development of Internet Applications for Transportation Management Systems*. Periodic Progress Reports. Prepared for the Clark County Department of Public Works, Las Vegas, NV. Transportation Research Center, Howard R. Hughes College of Engineering, University of Nevada, Las Vegas.
- Kaseko, Mohamed S., Walter C. Vodrazka Jr., and Shashi S. Nambisan. *Evaluation of Pavement Marking Materials Performance and Specifications for Clark County Roads*. Quarterly

Progress Reports. Prepared for the Regional Transportation Commission of Clark County, Las Vegas, NV. Transportation Research Center, Howard R. Hughes College of Engineering, University of Nevada, Las Vegas.

### ***Media Highlights***

*Las Vegas Review Journal*, Local Section. Featured in two front page articles concerning Safe Communities Partnership and one concerning the Clark County and RTC projects. Las Vegas. Local Television News Programs. Several appearances on the morning news programs plus numerous items during afternoon and evening news shows. Topics included the Safe Communities Partnership Activities, the TRC involvement in the Partnership, the Pavement Marking Evaluation project, the Internet Mapping project, and other TRC activities. Channels 3, 5, 8, and 13.

## **2. Presentations and Conference Activities**

### ***Conferences and Workshops Hosted***

1999 Fall Transportation Conference. In its seventh year, this conference is jointly sponsored by TRC and the local chapters of the ASCE, ITE, and ITS Nevada. Cashman Center, Las Vegas, NV. Over one hundred individuals from Nevada, and several western states, and from other parts of the U.S.A. participated in this conference. Cashman Center, Las Vegas, NV. Sept 14-16, 1999.

Highway Capacity Analysis Workshop. This workshop was jointly sponsored by the TRC, the ITE Student Chapter, and the McTrans Center at the University of Florida. UNLV Howard R. Hughes College of Engineering. Over 30 individuals attended the workshop. Las Vegas, NV. July 28-30, 1999.

***Presentations, Session Moderations, and Posters*** (Listed in reverse chronological order; if all the authors did not make the presentation, the presenter's name is underlined)

Robert Puterski, Edward Neumann, and Zhenzhong Cui, 1999 Fall Transportation Conference, sponsored by American Society of Civil Engineers (Southern Nevada Branch), Institute of Transportation Engineers (Nevada Chapter), Intelligent Transportation Systems - Nevada, and the Transportation Research Center. Presentation, *Evaluation of Mid-Block Pedestrian Crash Patterns within Las Vegas*, Las Vegas, September 1999

Walter C. Vodrazka, Jr. and Shashi Nambisan: 1999 Fall Transportation Conference, sponsored by American Society of Civil Engineers (Southern Nevada Branch), Institute of Transportation Engineers (Nevada Chapter), Intelligent Transportation Systems - Nevada, and the Transportation Research Center. Presentation, *Analysis of Child Safety Seat Usage in the State of Nevada*, Las Vegas, September 1999

Mohamed Kaseko, Tom Miller, and Walt Vodrazka, Jr. 1999 Fall Transportation Conference, sponsored by American Society of Civil Engineers (Southern Nevada Branch), Institute of Transportation Engineers (Nevada Chapter), Intelligent Transportation Systems - Nevada, and the Transportation Research Center. Presentation, *Evaluation of Pavement Marking Materials*, Las Vegas, September 1999

- Walter C. Vodrazka, Jr.: 1999 Institute of Transportation Engineers International and District 6 Annual Meeting, Moderator, District 6 Poster Session, Las Vegas, August 1999
- Walter C. Vodrazka, Jr.: 1999 Institute of Transportation Engineers International Annual Business Meeting, People Mover Technical Tour Coordinator, Las Vegas, August 1999
- Srinivas S. Pulugurtha and Shashi S. Nambisan, "Estimating Time Dependent Trip Tables for ITS Applications", the 69<sup>th</sup> Annual ITE and District 6 ITE Conference, Las Vegas, August 1-4, 1999.
- Thomas D. Miller, Srinivas S. Pulugurtha, Shashi S. Nambisan, Jeffery J. Jensen, and Chang Hwan Park, "An Internet Based Transportation Projects Management System", the 69<sup>th</sup> Annual ITE and District 6 ITE Conference, Las Vegas, August 1-4, 1999.
- Erin Breen, "Traffic Safety," Seroptimist Club, Las Vegas, June 1999.
- Srinivas S. Pulugurtha, Shashi S. Nambisan and Nanda Srinivasan, "Evaluating Accessibility and Optimizing Locations of Transit Service Facilities Using GIS", the 2<sup>nd</sup> National GIS in Transit Conference, Tampa, FL, May 16-18, 1999.
- Erin Breen, "Safe Community Partnership Update," ITE Nevada Section Luncheon, Las Vegas, May 1999.
- Erin Breen, "Child Passenger Safety," Mesquite Club, Las Vegas, May 1999.
- Edward S. Neumann. "Urban Cable Propelled People Movers - 22 Years of Progress" *Proceedings of the 7<sup>th</sup> International Conference on Automated People Movers*, Society of Danish Engineers and ASCE. May 5-8, 1999, Copenhagen.
- Edward S. Neumann. Session Moderator - Session L, New APM Roles in Urban Setting 7<sup>th</sup> International Conference on Automated People Movers, Copenhagen, Denmark, May 5-8, 1999.
- Srinivas S. Pulugurtha, Chang-Hwan Park and Shashi Nambisan, "Transportation Management System Using Internet Mapping", the 9<sup>th</sup> Annual Conference of the Nevada Geographic Information Society, Reno, April 21-23, 1999.
- Mohamed Kaseko, "Field Evaluation of the Performance of Pavement Marking Materials and Raised Pavement Markers in the Las Vegas Valley", the 1999 Nevada Street and Highway Conference, Las Vegas, April 13-14, 1999
- Shashi S. Nambisan. *Estimation of Temporal Variations in Origin-Destination Trip Tables in Urban Areas*. Transportation Science Seminar, Institute of Transportation Studies, University of California, Berkeley, CA. April 9, 1999. (Invited Presentation).
- Erin Breen, "Aggressive Driving," American Society of Safety Engineers, Las Vegas Chapter, Las Vegas, February 1999.
- Shashi S. Nambisan. *Evaluation of Left-turn Factors at Signalized Intersections*. Department of Civil and Environmental Engineering. Virginia Polytechnic Institute and State University, Blacksburg, VA. February 23, 1999. (Invited Presentation).
- Srinivas S. Pulugurtha, "Modeling Temporal Variations in Travel Demand for Intelligent Transportation Systems", the Seminar on Doctoral Student Research in Transportation Modeling (Sponsored by the Committees on Transportation Network Modeling, Passenger Travel Demand Forecasting and Traveler Behavior and Values), the 78<sup>th</sup> Annual Transportation Research Board Meeting, Washington, D. C., January 10 - 14, 1999.

Shashi S. Nambisan, Srinivas S. Pulugurtha, Jeffery J. Jensen, Robert Puterski, Thomas D. Miller, Chang-Hwan Park, "Prototype Internet Applications for Transportation Management System", the 78<sup>th</sup> Annual Transportation Research Board Meeting, Washington, D. C., January 10 - 14, 1999, Paper Number 990804.

### **3. Sponsored Research Projects and Grants** (listed in reverse chronological order)

Grant for Research on Transportation Risk Analysis. Grant from the TRW Foundation, Cleveland, OH. December 1999. PI: Shashi Nambisan; Co-PI: Walt Vodrazka, Jr.. \$30,000. This grant is to support research and development activities related to evaluating transportation risks for nuclear waste transportation.

Facilities Management System for UNLV. Funded by the Planning Initiatives Awards Program, Office of the President, the University of Nevada Las Vegas, Las Vegas, NV. July 1999 to June 2000, PI: Shashi Sathisan Nambisan. (PI). Co-PIs: Kari Coburn, John Amend, Mora Snyder, Don Drake, Tom Miller. \$29,649. The objective of this project is to develop a computerized decision support system to coordinate facilities management, parking, traffic circulation and classroom utilization at UNLV. Graduate Student: Jyothi Tallapragada; Undergraduate student: Don Durgin. TRC staff members Dr. Srinivas Pulugurtha and Bob Puterski are also presently working on this project.

Risk Assessment for Nuclear Waste Transportation through Lincoln County. Sponsored by Lincoln County, NV. April 1999 - September 1999. PI: Shashi Nambisan. \$15,000. The purpose of this project was to evaluate some of the transportation related risks of transporting spent nuclear fuel and high level radioactive waste through Lincoln County. TRC staff members Walt Vodrazka and Bob Puterski worked on this project.

Clark County Public Works Internet Mapping. Sponsored by the Western Alliance to Expand Student Opportunities (WAESO), Arizona. June 1999 -August 1999. PI: Shashi Nambisan. \$1,378.

Child Safety Seat Use Survey. Sponsored by the Office of Traffic Safety, Department of Motor Vehicles and Public Safety, Nevada. June 1999 - September 1999. PI: Shashi Nambisan. \$24,970.

Development of Internet Applications for Transportation System Management. Sponsored by Clark County Department of Public Works and the University of Nevada Las Vegas, Las Vegas, NV. November 1998 - October 1999. PI: Shashi Sathisan Nambisan. \$53,869. Students: Chang Hwan Park, Tom Miller. TRC staff members Dr. Srinivas Pulugurtha and Bob Puterski are also presently working on this project. The objective of this project is to develop Internet applications for the Clark County Department of Public Works to enable them to disseminate information regarding their roadway design, construction and maintenance projects.

Safe Communities Coalition/Partnership. Sponsored by the Nevada Office of Traffic Safety. October 1998 to September 1999. PI: Edward Neuman. \$84,819. October 1999 through March 2001 Extension, \$ 111,238. Erin Breen is the primary individual working on the project that seeks to develop educational, enforcement and engineering strategies to enhance safety on the transportation network in Clark County. She is assisted, as needed, by various undergraduate and graduate students, and by other professional staff.

Grant for Enhancing Transportation Education and Research Programs at UNLV. Grant from the TRW Foundation, Cleveland, OH. September 1998. PI: Shashi Sathisan Nambisan - \$30,000. This

grant is to support upgrade existing equipment, acquire new equipment and to support research efforts related to Transportation.

Evaluation of Mid-block Pedestrian Crash Patterns. Sponsored by the Nevada DOT. PI: Neumann, E. S.; \$68,727; co-PI: Puterski, R.; 8-06-98 to 6-30-99. The objective of this project is to collect and analyze data pertaining to crashes (including factors influencing such crashes) on the roadways involving pedestrians with special focus on those that occur at mid-block locations. Kim Neyrinck, an undergraduate student, provided assistance on the project.

Evaluation of Pavement Marking Materials Performance and Specifications for Clark County Roads. Sponsored by the Clark County Regional Transportation Commission, Las Vegas and the University of Nevada Las Vegas, Las Vegas, NV. April 1998 - June 2000. PI - Mohamed Kaseko; \$240,341; co-PI: Shashi Nambisan. Walt Vodrazka, Jr., a TRC staff member is assisting on this project. Graduate Students providing assistance for the project: Zhenzhong Cui, Ranjit Menon, Tom Miller, Chang Hwan Park, Jyothi Tallapragada. Undergraduate Students providing assistance for the project: Mike Bradford, Donald Durgin. High School student assisting on the project: Mani Mani. The objective of this project is to evaluate the performance of various pavement markers and markings that involves vendors, contractors and the public agencies. The evaluation will be based on field measurements as well as laboratory tests.

Development of GPS Capabilities for Professional Practice, Research and Education/ GIS and Internet Applications for Transportation. Sponsored by Clark County Department of Public Works and the University of Nevada Las Vegas, Las Vegas, NV. February 1998 - June 1999. PI: Shashi Nambisan \$192,948. Co-PI: Barbara Luke. Students: Chang Hwan Park, Tom Miller. High School student assisting on the project: Mani Mani. Dr. Srinivas Pulugurtha and Bob Puterski, TRC staff members are also presently working on this project.

An Evaluation of Maintenance and Rehabilitation Costs of Road Networks in Counties and Incorporated Municipalities in Nevada. Sponsored by the Nevada State Legislative Counsel Bureau, Carson City, NV. November 1997 - April 1999. PI: Shashi Nambisan \$200,805; Co-PI: Ed Neumann. Zhenzhong Cui, a graduate student, is working on the project. Walter Vodrazka Jr., a TRC staff member is presently working on this project. Les Dunn, worked as a consultant to support efforts on this project.

Development of Operational and Management Programs for Traffic Infrastructure management Systems (TIMS) for Clark County. ACE+3 Student Internship/Fellowship Program. Sponsored by Clark County Department of Public Works, Las Vegas, NV. May 1997 - March 1999. (PI \$18,377). Kaizad Yazdani (MS program - Transportation Engr) worked on this project. The principal focus of this year's efforts (this project is a continuation of the ACE+3 program initiated last year) is to develop decision support tools for the management of pavement markers and markings used by the CCDPW.

Traffic Crash Data Analysis. This is co-operative arrangement between the Nevada Department of Transportation (NDOT) and the TRC. NDOT periodically (a few times a year) provides the TRC crash report data for crashes that occurred on the roadways in Clark County. TRC staff and students incorporate these data into a database maintained by the TRC. Then, the TRC responds to requests received from Consultants (routed through NDOT staff in Carson City) to perform

analyses of crashes at intersections of interest to the consultant. Typically, these are related to Traffic Impact Studies performed by the Consultants. The Consultant is billed for the efforts. So, this project is self supporting. The turnaround time for requests forwarded to TRC has been less than two weeks which is significantly shorter than what the response time would have been had the previous procedure of having NDOT staff perform the analysis been in place. PI: Ed Neumann.

#### **4. Professional Society Activities and Public Service** (listed by individual)

##### ***Erin Breen***

Member, American Public Works Association.  
Member, National Association of Female Executives.  
Member, Las Vegas Chamber of Commerce.  
Member, International Association of Business Communicators.  
Member, Board of Directors, Safe Kids Coalition.  
Member, Board of Directors, Las Vegas Little Theater.  
Member, Board of Directors, Community Food Bank.

##### ***Mohamed S. Kaseko***

###### American Society of Civil Engineers (ASCE).

Member, Transportation Committee, ASCE Southern Nevada Chapter: Activities included: Organizing the 1999 Annual Fall Transportation Conference, jointly sponsored by ASCE, ITE, ITS Nevada, and TRC.

###### Institute of Transportation Engineers (ITE)

Member, Scholarship Committee, Nevada Chapter.  
Faculty Advisor, ITE, UNLV Student Chapter.

###### American Society of Engineering Education (ASEE)

Member, organizing committee for the 1999 ASEE PSW Annual Meeting to be hosted by UNLV College of Engineering. The meeting was held in Las Vegas, March 19-20, 1999.

###### ITS – America, Nevada Chapter

Committee member, Annual Conference organizing committee for 1999.

Member, Project Steering Committee for the Las Vegas Area Freeway Management System (Since July 1998). The project involves high level design of a multi-million dollar freeway management system for the Las Vegas area, using Intelligent Transportation Systems (ITS) components. Project being managed by NDOT.

***Shashi Sathisan Nambisan***

American Society of Civil Engineers Air Transport Division

Chair, Environmental and Planning Committee.

Chaired a committee meeting in Newark, NJ. April 15-17, 1999.

Member, Conference Steering Committee, 26<sup>th</sup> International Air Transportation Conference (to be held in San Francisco, CA in June 2000). Air Transport Division. August 199 to present.

Chair, Student Paper Competition. 26<sup>th</sup> International Air Transportation Conference (to be held in San Francisco, CA in June 2000). Air Transport Division. August 199 to present.

American Society of Civil Engineers Urban Planning and Development Division

Member, Education Committee.

American Society of Civil Engineers Urban Transport Division

Chair, Planning Committee.

ASCE Nevada Chapter

Served on the Steering Committee for the 1999 Annual Transportation Conference held in Las Vegas, NV (September 14-16, 1999).

American Society for Engineering Education (ASEE)

Completed service (September 30, 1999) as the Immediate-Past Chair of the Pacific Southwest Section which includes 41 Universities that offer Engineering Programs in Arizona, California, Hawaii and Nevada. Attended a meeting of the Executive Board of ASEE/PSW in Las Vegas, NV on March 17, 1999.

ITE Nevada Chapter

Co-Chair, Technical Program Committee, 1999 International Annual Meeting and also the District 6 Annual Meeting to be held in Las Vegas, NV (August 1999). Participated in bi-monthly meetings of the Local Activities Committee to plan for the Conference, in the review of abstracts and development of program with the Annual Meeting Technical Program Committee for the meeting.

Tau Beta Pi, Nevada Beta Chapter, Engineering Honor Society

Faculty Advisor.

Transportation Research Board, National Research Council

Member, TRB Committee (A5008) on Expert Systems.

Member, TRB Task Force (A4T52) on Geographic Information Systems for Transportation.



***Edward S. Neumann***

Chair, TRB Committee A1E14 New Transportation Systems and Technology (until June 1999).  
Chair, ASCE Committee on Automated People Movers, Urban Transportation Division.  
Control Group, ASCE Committee on Automated People Mover Standards.  
Member of Scientific Committee for APM99 Sponsored by the Society of Danish Engineers and ASCE.

***Srinivas Pulugurtha***

Affiliate Member, Transportation Research Board (TRB).  
Associate Member, ASCE.  
Associate Member, Institute of Transportation Engineers (ITE).  
ITS Nevada Chapter.

***Robert Puterski***

URISA (Urban and Regional Information Systems Association).  
Member, Program Committee, Nevada State Geographic Information Society - 1999-2000 Annual Conference.

***Walter C. Vodrazka,***

Member, Committee on Construction and Maintenance of Highways. Highway Division. American Society of Civil Engineers (ASCE).  
ABET Visitor Representing ASCE.  
Faculty Advisor, UNLV ASCE Student Chapter.  
Member, National Society of Professional Engineers.  
Faculty Advisor, Nevada Beta Chapter of Tau Beta Pi National Engineering Honor Society.

***Walter C. Vodrazka, Jr.***

American Society of Civil Engineers

Local Student Model Bridge Building Competition Committee Member. Attended monthly meetings since August of 1998, in charge of tours, rooms, audio/visual equipment. Held in February, 1999 at UNLV.

Local Student Model Bridge Building Competition Committee Member. Attended monthly meetings, in charge of tours, rooms, audio/visual equipment. To be held in February, 2000 at UNLV.

Board Member, ASCE Nevada Section - Practitioner Advisor to the UNLV ASCE Student Chapter. Attend monthly meetings to promote a close relationship between the Professional and Student Chapters.

UNLV ASCE Student Chapter Staff Advisor. Provide guidance and help to the student chapter. Attend Monthly luncheons (second Thursday of the month).

1999 Fall Transportation Conference Planning Committee, Sponsored by American Society of Civil Engineers (Southern Nevada Branch), Institute of Transportation Engineers (Nevada Chapter), Intelligent Transportation Systems - Nevada, and the Transportation Research Center, Las Vegas, September 1999.

Institute of Transportation Engineers

Member, Local Arrangements Committee Member, 1999 International Annual Meeting and also the District 6 Annual Meeting held in Las Vegas, NV (August 1999). Participated in bi-monthly meetings of the Local Activities Committee to plan for the Conference, in the review of abstracts and development of program with the Annual Meeting Technical Program Committee for the meeting.

Tau Beta Pi, Nevada Beta Chapter, Engineering Honor Society

Staff Advisor.

***Other Service Activities***

University of Nevada, Las Vegas. College of Engineering and College of Sciences. Science and Technology Day. Presented a laboratory session on Transportation. Several TRC students, staff and faculty participated in the event. November 1999.

ASCE Bridge Building Competition. Conducted a technical tour shop for participants at the competition. Several hundred students from Elementary, Junior and High Schools from Clark County participated. Presenters included Tom Miller, Chang Hwan Par, and Michael Bradford. February 1999

Mathematics, Science, and Engineering Academy (MSEA). Conducted presentation on various projects conducted by the TRC and demonstrated software to students from MSEA.

TRC and the UNLV ITE Student Chapter hosted the April 1999 ITE professional chapter luncheon at UNLV.

**5. Graduate Students Advised & Graduated**

Menon, Ranjit. *A Windows Based Roadway Maintenance Management System*. November 1999.

Yazdani, Kaizad. *A GIS-based Traffic Infrastructure Management System for Pavement Markers and Markings*. October 1999.

**6. Honors and Recognitions**

Donald Durgin

1999 Student Scholarship, the Nevada chapter of the Institute of Transportation Engineers. (Cash award of \$750).

Stocker Engineering Scholarship, 1999. (\$1,100 per semester)

Carter Burgess, Inc. Civil Engineering Scholarship, 1999. (Cash Award of \$500).

Shashi Sathisan Nambisan

*Student Focused Faculty Award - Recognition of Academic Achievement and Commitment to student learning and development.* UNLV Alumni Association. November 1999.

*Campus Representative Award - Outstanding Achievement,* Pacific Southwest Section - Membership Promotion, American Society for Engineering Education. June 1999.

*1998 Distinguished Researcher Award,* Howard R. Hughes College of Engineering, UNLV. April 1999.

*Eminent Engineer,* Nevada Beta Chapter of Tau Beta Pi, UNLV. (Nominated by student members of the chapter). April 1999.

## **7. Workshops and Conferences Attended**

Michael Bradford

1999 Fall Transportation Conference, Las Vegas, NV, September 1999.

ITE International and District 6 Joint Meeting, Las Vegas, NV, August 1999.

Erin Breen

Life Savers; National Traffic Safety Conference, Seattle, Washington, March 1999.

State DUI Conference, Mesquite, Nevada, October 1999.

Zhenzhong Cui

1999 Fall Transportation Conference, Las Vegas, NV, September 1999.

ITE International and District 6 Joint Meeting, Las Vegas, NV, August 1999.

Donald Durgin

1999 Fall Transportation Conference, Las Vegas, NV, September 1999.

ITE International and District 6 Joint Meeting, Las Vegas, NV, August 1999.

Highway Capacity Analysis Workshop, Las Vegas, NV, July 1999.

ASCE, Pacific Southwest Regional Conference, Los Angeles, California, March 1999.

ASCE Zone IV Leadership Conference, Long Beach, California, February 1999.

Mohamed S. Kaseko

1999 Fall Transportation Conference, Las Vegas, NV, September 1999.

Travel Forecasting: The Quick Response Approach, Milwaukee, Wisconsin, June 1999.

1999 Nevada Street and Highway Conference, Las Vegas, NV, April 1999.

American Society for Engineering Education/ Pacific Southwest Section Annual Conference Las Vegas, NV, March 1999.

Mani Mani

ITE International and District 6 Joint Meeting, Las Vegas, NV, August 1999.

Shashi Sathisan Nambisan

American Society of Civil Engineers: Transportation Planning and Air Quality Conference, Lake Lanier, GA. November 14-17, 1999.

American Society of Civil Engineers: ExCEED- Effective College Teaching Seminar and ABET EC2000 Evaluator Training, Charlotte, NC, October 1999.

1999 Fall Transportation Conference, Las Vegas, NV, September 1999.

American Society for Engineering Education/ Pacific Southwest Section Annual Conference Las Vegas, NV, March 1999.

Transportation Research Board 75<sup>th</sup> Annual Meeting, Washington, D.C., January 1999.

Edward S. Neumann.

7<sup>th</sup> International Conference on Automated People Movers, Copenhagen, Denmark, May 1999.

Transportation Research Board 75<sup>th</sup> Annual Meeting, Washington, D.C., January 1999.

Chang Hwan Park

1999 Fall Transportation Conference, Las Vegas, NV, September 1999.

Transportation Research Board 75<sup>th</sup> Annual Meeting, Washington, D.C., January 1999.

Srinivas S. Pulugurtha

1999 Fall Transportation Conference, Las Vegas, NV, September 1999.

ITE International and District 6 Joint Meeting, Las Vegas, NV, August 1999.

The 2<sup>nd</sup> National GIS in Transit Conference, Tampa, FL, May 1999.

Transportation Research Board 75<sup>th</sup> Annual Meeting, Washington, D.C., January 1999.

Robert Puterski

1999 Fall Transportation Conference, Las Vegas, NV, September 1999.

ITE International and District 6 Joint Meeting, Las Vegas, NV, August 1999.

Joythi Tallapragada

1999 Fall Transportation Conference, Las Vegas, NV, September 1999.

ITE International and District 6 Joint Meeting, Las Vegas, NV, August 1999.

Walter C. Vodrazka

American Society of Civil Engineers International Conference, Charlotte, NC., October 1999.

American Society for Engineering Education Annual Meeting, Charlotte, NC., June 1999.

ASCE, Pacific Southwest Regional Conference, Los Angeles, California, March 1999.

ASCE Zone IV Leadership Conference, Long Beach, California, February 1999.

Transportation Research Board 75<sup>th</sup> Annual Meeting, Washington, D.C., January 1999.

Walter C. Vodrazka, Jr.

ASTM Workshop, Retroreflective Materials Used in Transportation, Baton Rouge, Louisiana, December 1999.

1999 Fall Transportation Conference, Las Vegas, NV, September 1999.  
ITE International and District 6 Joint Meeting, Las Vegas, NV, August 1999.  
ASCE, Pacific Southwest Regional Conference, Los Angeles, California, March 1999.  
ASCE Zone IV Leadership Conference, Long Beach, California, February 1999.  
Transportation Research Board 75<sup>th</sup> Annual Meeting, Washington, D.C., January, 1999.