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# NEWS

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January/February 2005  
Volume 13, Issue 1

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## PRESIDENT'S MESSAGE

By **Scott E. Nodes, PE, PTOE**



Dear AZITE Members,

Thank you for helping us to have an excellent start to the 2004 – 2005 ITE year! We continue to have a variety of activities for our members. Last month, we had a Holiday Party with the Arizona Society of Professional Engineers (ASPE) at the University Club in Phoenix. I would like to

thank Steven D. Nowaczyk (ASPE Central Chapter President) for serving as one of the hosts for the party. We had approximately 80 people in attendance at the party. I would like to thank our sponsors for this event, including ITE Engineers & Consultants, Siemens ITS, Lee Engineering, Kimley-Horn & Associates, Parsons Brinckerhoff, Wood, Patel & Associates, Kirkham Michael, Phoenix Highway Products, 3M, URS, CK Engineering, and Transportation CADD Services. In addition, I would like to thank our members for bringing in donations for the Chrysalis Shelter for battered women; furthermore, I would like to thank Andrew Smigielski for transporting our donated items to the shelter!

The Future City Competition is a national program sponsored by the engineering community to promote technological literacy and engineering to 7<sup>th</sup> and 8<sup>th</sup> grade students. The program encourages the use of math, science, and engineering skills. A group of three students, one teacher, and one engineering mentor are involved for each team. The following are the four phases in the process: Design a city, Write an essay and abstract, Build a scale model, and Communicate the results. In the first phase, the team uses SimCity software to design its city. In the second phase, the team writes an essay on an engineering topic selected by the national competition and writes an abstract to describe their future cities function. In the third phase, the team builds a scale model of their city using a budget of \$100 for the material. In the fourth phase, only the three students are allowed to participate and they give a presentation to the judges and answer questions.

In January, our members volunteered their valuable time to serve as judges for the Future City Competition. The Institute of Transportation Engineers (ITE) Arizona Section sponsored the “Best Multimodal Transportation Systems” Award and the Intelligent Transportation Society of Arizona (ITS Arizona) sponsored the “Best Future Transportation Systems” Award. The City of Laeta Luna, created by students from Veritas Preparatory Academy, won the “Best Multimodal Transportation Systems” Award. The City of Ubiquity, created by students of Ira Murphy Elementary School, won the “Best Future Transportation Systems” Award, (see page 2 for pictures).

I would like to thank the following ITE members that served as judges for both awards: Kim Carroll, Sarath Joshua, Scott Nodes, Mike Riggs, Ashish Sabnekar, Sarah Simpson, and Lavanya Vallabhaneni. In addition, I would like to thank Paul Porell for serving as the engineering mentor for the City of Ubiquity. Furthermore, I would like to thank other members that served as judges in the general competition or for another professional society including Tracy Crocker, German Piedrahita, and Andrew Smigielski.

We have numerous ITE activities planned for February and March. On February 5<sup>th</sup>, there will be a Future City Competition Golf Tournament; please contact Andrew Smigielski for further information. From February 20<sup>th</sup> to 26<sup>th</sup>, Engineers Week is scheduled. On February 26<sup>th</sup>, the ITE Arizona Section will have an exhibit at the Arizona Science Center; please contact me if you would like to assist me with the exhibit. On February 24<sup>th</sup>, we will have our monthly luncheon meeting. From March 8<sup>th</sup> through March 10<sup>th</sup>, we will have our annual Spring Conference with the International Municipal Signal Association (IMSA). On March 8<sup>th</sup>, we will have a golf tournament and a tennis tournament. On March 9<sup>th</sup> and 10<sup>th</sup>, we will have technical sessions and exhibits as part of our Spring Conference. The programs and registration forms will be sent to our members in February; please contact me if you do not receive this information.

City of Laeta Luna (students from Veritas Preparatory Academy): “Best Multimodal Transportation Systems Winners”



City of Ubiquity (Students from Ira Murphy Elementary School): “Best Future Transportation Systems Winners”



### ACTIVE MEMBERS GROUP

The AMG meets once per month, separately from the Arizona ITE monthly meeting/luncheon, to plan events and to network with each other. The group has now grown to over 20 members. The next meeting of the Active Members Group will be on February 7th at Rosie McCaffrey's at 5:30 PM. Rosie McCaffrey's is located at 906 East Camelback Road, Phoenix. AMG is also planning the [Future Cities Golf Tournament](#) for Saturday, February 5th, 2005 at the Estrella Mountain Ranch Golf Course. For additional information, contact Chris Williams at [CWilliams@taskeng.net](mailto:CWilliams@taskeng.net). All ITE members are welcome and encouraged to attend. Don't forget to invite a friend or colleague too.

**VENDOR'S CORNER**

### This Space Available!

*(The Vendor's Corner highlights a different vendor in our industry in each issue.)*

Sorry, no Vendor's Corner this issue. Contact the newsletter editor, Amara Ibeji @ [aibeji@ckengr.com](mailto:aibeji@ckengr.com) to use this space



### FUTURE CITIES GOLF TOURNAMENT...

The Future Cities Golf Tournament will be held on February 5, 2005 at the beautiful Estrella Mountain Ranch Golf Club. The Future Cities is a national event sponsored by the engineering community to promote and challenge middle school students technologically. It helps create interest in math, science and engineering application in young students. Contact Andrew Smigielski, (602) 684-0676 for more information.

### CALL FOR PRESENTATIONS

#### ITE/IMSA/MAG Spring Conference, March '05

Do you have an interesting topic or project that you would like to present at the 2005 ITE/IMSA Spring Conference in Phoenix? Please contact Jennifer Kroening, Program Committee Chairperson at [kroening@cox.net](mailto:kroening@cox.net) for more information.

### ENGINEERS WEEK 2005

Engineers week for the Greater Phoenix Area is slated for February 20th—26th 2005. See attached flyer for more information on this exciting and innovative event.

### MEMBER NEWS

This space is free and open for all AZITE members to share any special or exciting news with fellow ITE members. Please feel free to send thoughts, comments or articles to Scott Nodes or Amara Ibeji for inclusion in the newsletter.

### FEBRUARY ARTICLE

This month, we have a special article from Bob Steele at the City of Phoenix. It is on the Phoenix Downtown Transportation Management System (DTMS). It was authored by Mike Frisbie, PE, Bob Steele, both from the City of Phoenix, and Glen Fromm, PE, PB Farradyne Inc. Technical content was edited by Andrea Spyropoulos, P.B. Farradyne Inc.



*City of Phoenix*  
*Downtown Traffic Management*  
*System (DTMS)*  
*Project Summary*

**Authors:**

- **Michael S. Frisbie, P.E., City Of Phoenix**
- **Bob Steele, City Of Phoenix**
- **Glen J. Fromm, P.E., P.B. Farradyne Inc.**

**Technical Editor:**

**Andrea Spyropoulos, P.B. Farradyne Inc.**

**For more information, please contact:**

**Bob Steele**  
**ITS Manager**  
**City of Phoenix**  
**Street Transportation Department**  
**200 West Washington Street, 6<sup>th</sup> Floor**  
**Phoenix, AZ 85003-1611**

**Phone: 602-495-0238**  
**E-mail: [bob.steele@phoenix.gov](mailto:bob.steele@phoenix.gov)**

***January 2005***

## INTRODUCTION

Over the last decade, the City of Phoenix, Arizona has continued to experience significant growth and vitality in its cultural, sports and civic events. Most of these events occur in the City's downtown core at various facilities, including Bank One Ballpark, America West Arena, and the Civic Plaza and Convention Center. The Downtown Traffic Management System (DTMS) was initiated to help the responsible agencies manage the significant circulation and parking demand that typically accompanies these events.

The DTMS is a cross-jurisdictional ITS success story. The project required that multiple public and private partners cooperate in planning, building and operating the system. The DTMS has successfully applied innovation in technical solutions and the overall procurement process. This City of Phoenix project demonstrates a true ITS success by enhancing the City's traffic operations and security needs in managing major downtown events.

## PROJECT DESCRIPTION

Event traffic management improvements were needed in Phoenix, due to the current and future demand on operational resources and the projected growth for event traffic. These improvements had to be accomplished within a tight budget.

Construction of the City of Phoenix Downtown Traffic Management System (DTMS) has significantly improved event traffic management practices in the downtown area. This hybrid project included minor roadway geometric enhancements, installation of conduit and fiber optic cable, closed-circuit television (CCTV) cameras, dynamic message signs (DMS), program logic field controllers (PLC), video walls, and blank-out traffic control signs (BOS). In addition to these construction elements, a key component of this project was the development, furnishing, installation, integration and testing of Intelligent Transportation System (ITS) control software.

Given the emergence of security as a core ITS responsibility, the project also gave top priority to addressing security concerns. As implemented, the City of Phoenix Police Department shares video and full DTMS capability with the City's traffic management center.

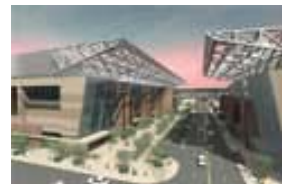
The DTMS provides event traffic management for Phoenix's largest venues:



*Bank One Ballpark  
Seating Capacity: 53,000*



*America West Arena  
Seating Capacity: 19,000*



*Civic Plaza and Convention Center  
Current size: 375,000 sq. ft.  
Future size: 900,000 sq. ft.*

### ***Project Objectives and Partners***

The DTMS project's primary objectives were to:

- Improve event ingress and egress
- Improve event security
- Improve interagency coordination
- Enhance current control methods
- Coordinate detection, monitoring, and communications technologies and integrate these technologies system-wide

The project accomplished all of these objectives by integrating the operations of the City of Phoenix Transportation Management Center, the City of Phoenix Police Event Management Center, and the Arizona Department of Transportation (ADOT)'s Freeway Traffic Operations Center. This integration was achieved through a common central control and monitoring software system.

### **Public Sector Partners**

The DTMS is a multi-agency public/private partnership. Public partners include:

- City of Phoenix
  - Street Transportation Department
  - Event Management Police
  - Information Technology Department
  - Civic Plaza Department
- Arizona Department of Transportation (ADOT)
  - Traffic Operations Center

The Phoenix Event Management Police are the project's primary DTMS operators with support from the Phoenix Traffic Management Center staff (TMC). Most events are also coordinated with ADOT's Freeway Traffic Operations Center.

### **Private Sector Partners**

Private partnerships were key to the successful planning and implementation of the DTMS. Private partners include:

- Downtown Phoenix Partnership
- PB Farradyne (Construction Manager at Risk)
  - Parsons Brinckerhoff (construction services)
  - CS Construction (field construction)
  - Wunderlich-Mallick (PLC system)
  - 360 Surveillance (central software)
  - Mauell Corporation (videowall)
- Kimley-Horn and Associates (design professional)
- WilTel Communications (fiber optic infrastructure)
- Time-Warner Communications (fiber optic infrastructure)
- Sterling Group (fiber optic infrastructure)

## **PROJECT INNOVATIONS**

With major ITS projects such as the DTMS, the primary difficulties commonly faced often relate to institutional rather than technical issues. For the DTMS, most institutional issues were minimized through the public and private partners' cooperative efforts during the planning and design stages. During project delivery, the use of an innovative procurement process – Construction Manager at Risk – minimized delivery issues and enhanced opportunities for technical innovation.

### **Project Delivery Innovations**

The City of Phoenix received permission from the Federal Highway Administration (FHWA) through the Special Experimental Projects 14 program to use the Construction Manager at Risk (CM@R) alternative delivery method.

The CM@R process has proven suitable for the DTMS project for two primary reasons:

- 1) The contractor selection was qualification-based, which allowed the City to select a contractor that was able to successfully implement the project's complex technical components; and
- 2) The pre-construction phase of the CM@R contract method utilized an extensive evaluation process, which allowed constructability and design issues to be examined and addressed before construction began.

This approach was very successful because it improved the final product's quality and reduced the project cost.

The CM@R process consisted of two phases:

- 1) Pre-construction services were completed in August 2003
- 2) Construction services were completed in November 2004

During the CM@R pre-construction phase, the CM@R was able to minimize change orders through value engineering and field verification prior to the construction bid process. Competitive bids for major components (i.e., software, field construction, and video walls) were received. The last task completed during the pre-construction phase was establishment of a Guaranteed Maximum Price (GMP) and bonds for all construction.

### **Technical Innovations**

The DTMS provides for distributed control and monitoring of a variety of traffic management and surveillance systems. Although the integration of these systems is not a first, this project represents one of the early successes for application to an event management need. This DTMS project also advances inter-regional and inter-agency integration, by providing the Arizona DOT and the City of Phoenix with the ability to share device control and monitoring.

The DTMS is also technically innovative in its core scalability. This system was designed and implemented to allow integration with future parking management systems and the City of Phoenix's traffic signal system. The DTMS will accommodate the City's growing event management needs, because it provides a scalable framework for the expansion of devices and accommodation of an increasing number of users.

An additional technical innovation was achieved through the value engineering (VE) inherent to the CM@R process. The VE process produced two key technical recommendations: the use of Programmable Logic Controllers (PLC) for Blank-Out Sign control and Light Emitting Diode (LED) technology for the Blank-Out signs. Traditionally, the traffic market has relied on traditional NEMA or Type 170 controllers for lane/signal device control. The initial design for the DTMS proposed Type 170 controllers, but the value engineering phase recommended use of PLC technology. For this application, an advanced interface controller with LCD display was used to manage each set of field PLCs, which gives operations personnel an intuitive means to adjust lane operations from the field cabinets. The PLC solution saved nearly \$80K and decreased the footprint for the field cabinets – moving from sidewalk cabinets to pole-mounted cabinets. The PLC solution also eases long-term maintenance costs.

The change from fiber-optic to LED technology provided an additional \$50K in overall project savings. With a traditional low bid procurement, it is unlikely that either of these changes would have been suggested or implemented, and the associated cost savings would not have resulted.

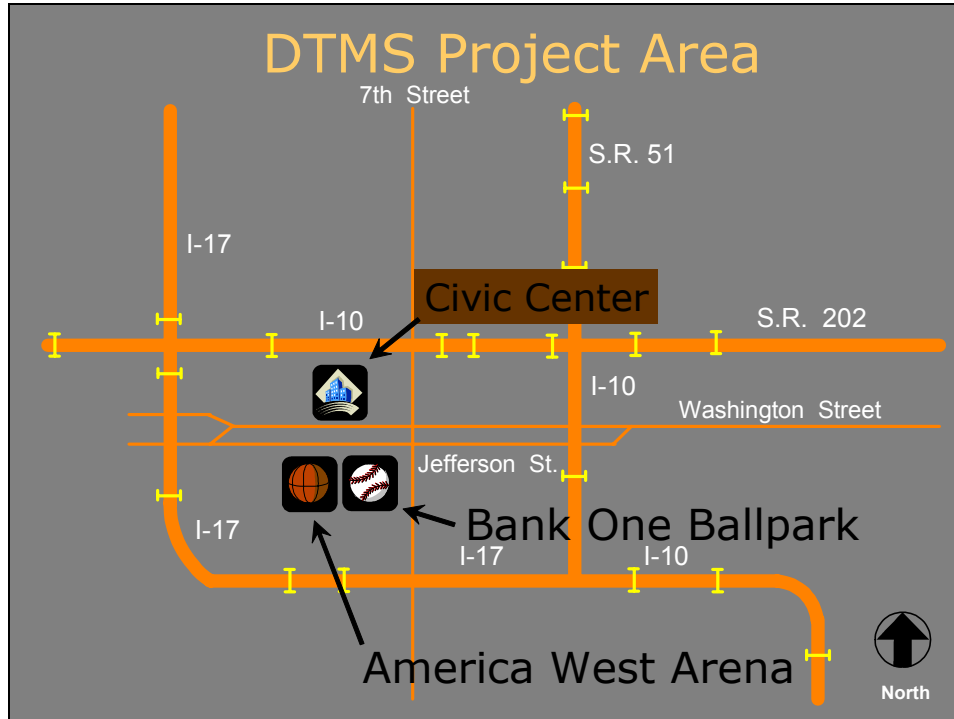
## **PROJECT BENEFITS TO THE COMMUNITY AND TO ITS STATE-OF-THE-ART**

This project benefits the Phoenix area community by enhancing traffic management and security for the many cultural, sports and civic events attended each year in the City's downtown core. The cooperative effort demonstrated throughout the acquisition of the system and currently demonstrated in its operation are a testament to the inter-jurisdictional and public/private partnership that was the foundation for the project's success.

As the Phoenix area continues to grow, the vitality of the stadium and civic center areas will be critical to serving the community's diverse needs. The DTMS provides a true inter-jurisdictional ITS tool that meets the current and future needs of this very important community resource.

## **PROJECT PHOTOS**

### **DTMS Project Area**



### **Surveillance - CCTV**



**Traveler Information – Dynamic Message Signs**



**Traffic Management – Blank Out Signs**



## Traffic Management - Video Walls



## NEWS...

### **KIMLEY-HORN & ASSOCIATES, INC.**

You see their work everyday and take it totally for granted: good roads; clean water; safe air travel; pleasant subdivisions. Engineering and land planning are invisible professions that produce very tangible results, but a local firm popped into the limelight today for how well it handled the intangibles.

Kimley-Horn and Associates, Inc., with local offices in Phoenix, has been selected for FORTUNE magazine's annual listing of the 100 Best Companies to Work For, released today.

The 1,550-member engineering and land planning firm has 54 offices in 14 states. The number 46 ranking marks its first appearance on the FORTUNE list, which will appear in the January 24 issue of the magazine. Among "small" firms (1000-2500) in the listing, Kimley-Horn ranked 21.

The firm's health coverage and 401(k) match were specifically cited as exceptional.

Kimley-Horn was also recognized as the number 1 Best Civil Engineering Firm to Work For by Civil Engineering News magazine in 2004.

Kimley-Horn is an entrepreneurially oriented firm organized around its "practice builders"-essentially in-house entrepreneurs who build a business, or practice, under the umbrella of the larger firm. Practice builders have the freedom to build even multi-million dollar enterprises without the administrative responsibilities of running their own companies.

The privately-owned firm shares its financial success with every member of its staff through a series of incentive programs and through hefty annual contributions to each staff member's retirement fund.

Challenging work includes opportunities to grow into new responsibilities and is balanced by company-sponsored fun.

"We think this ranking reinforces what we've always known: that Kimley-Horn is a great place to be," said Director of Human Resources Barry Barber. "It's a great place to be because of our culture and because of our people."

"We're proud to be recognized among the best in the country," commented President Mark Wilson. "But while it's great to be recognized among some truly great organizations, the greatest satisfaction is serving our clients well on a daily basis. It's our clients' top ranking that we most covet."

## **ITE 2005 Technical Conference and Exhibit**

*Held in partnership with the Federal Highway Administration and in cooperation with the National Transportation Operations Coalition*

**Mobility Now!: Get Moving with Transportation Management and Operations**

The information generated at the conference is critical to transportation professionals employed by federal, state/provincial, regional and local government agencies, consulting firms, universities and manufacturers as well as community activists and policy decision-makers.

### **Here's why you should attend:**

- ITE will provide the information needed to make immediate improvements through solutions and ideas discussed during the conference.
- You will hear from preeminent transportation professionals, community leaders and leaders in allied disciplines.
- Opportunities will be available for informal discussions with speakers, exhibitors and other meeting attendees.
- Exhibits of transportation products and services will introduce you to some of the latest advancements in the industry. The exhibit hall is sold out.
- You will be armed with an Action Kit to help you act quickly once you return from the conference. This aggressive program is supplemented with three professional seminars. More information on these seminars/sessions can be found at [www.ite.org/Conference/proseminars.asp](http://www.ite.org/Conference/proseminars.asp).

### Professional Development Seminars

- **"Designing Accessible Pedestrian Facilities in the Public Rights-of-Way"** serves as a companion piece for the *Public Rights-of-Way Access Manual*. Participants will better understand the challenges of identifying the many types of pedestrian special needs requirements and addressing these effectively within the overall intersection design process.
- The **"Professional Traffic Operations Engineer (TM) Refresher Course"** provides an overview of PTOE topics, key references for additional information and a brief independent study guide organized by topic.
- **"Bus Rapid Transit (BRT)"** is an emerging technology for mass transit that is being implemented by metropolitan areas throughout the world. BRT combines the convenience of a bus with the advantages of a rail system, while operating on dedicated transit lanes. This course is being presented with ITE's partners: Federal Transit Administration (FTA), Transportation and Development Institute (TD&I) of the American Society of Civil Engineers (ASCE) and the National Transit Institute (NTI).

If you feel strongly about management and operations and are looking for tools to solve your M&O problems, you need to attend this dynamic conference. To register online go to [http://www.ite.org/emodules/scriptcontent/events/eventinfo.cfm?product\\_major=MY05](http://www.ite.org/emodules/scriptcontent/events/eventinfo.cfm?product_major=MY05).

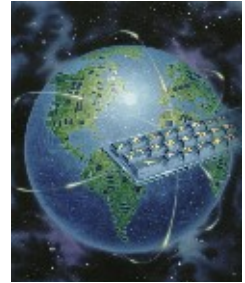
For a complete look at the **ITE 2005 Technical Conference and Exhibit** program, please visit the ITE Web site at [www.ite.org/conference](http://www.ite.org/conference).

We look forward to seeing you in Las Vegas at the ITE 2005 Technical Conference and Exhibit.

# ***ENGINEERS WEEK 2005***

## ***Greater Phoenix Area***

### ***February 20<sup>th</sup> to 26<sup>th</sup> 2005***



Engineer's Week is an exciting time for engineers and scientists across the country. Engineers get involved with their communities via national, regional and local programs, carrying on a tradition that began in 1952.

This year, in an effort to make this a valley-wide event, Engineers Week – Greater Phoenix Area will be organized by a committee of various professional engineering and science organizations throughout the area. We are planning exciting events for E-Week 2005.

- Outreach. Engineers visit schools and community organizations. Hands on experiments and demonstrations illustrate basic scientific and engineering principles and promote careers in the industry.
- “Engineer’s Day” at the Arizona Science Center. The Center in downtown Phoenix is the perfect venue for engineering societies, university students and industry representatives to set up events, which excite all the visitors. Past events have attracted large attendances. The date is Saturday February 26<sup>th</sup> 2005 from 10 am to 4 pm.
- Engineer’s Week Awards. In order to recognize engineers, students, educators and projects that have made outstanding contributions to the profession a number of awards will be presented for 2004.
- E-Week Banquet. This event is scheduled for Thursday February 24<sup>th</sup> and has become an integral part of E week. The evening, which includes the presentation of the awards, will also feature a dynamic guest speaker.

For information for all these events and how to sign up please visit [www.eweek-phx.org](http://www.eweek-phx.org). Also visit Engineers Week at the national website, [www.eweek.org](http://www.eweek.org).

Thank you to all of the 2004 sponsors for making last year such a success. We look forward to your continued support this year.

Sincerely, Alex McLaren, P.E. Chair, E-Week Committee.  
[amclaren@scottsdaleaz.gov](mailto:amclaren@scottsdaleaz.gov)



The Arizona Sections of the Institute of Transportation Engineers and the International Municipal Signal Association announce the

**23<sup>rd</sup> ANNUAL ITE/IMSA SPRING CONFERENCE**

**MAKING CONNECTIONS**

March 8, 9, & 10, 2005

The Black Canyon Conference Center  
9440 No. 25<sup>th</sup> Avenue  
Phoenix, AZ

*ITE and IMSA are pleased to welcome the Honorable Phil Gordon, Mayor of Phoenix, (invited) as the keynote speaker and Mary Peters of FHWA (invited) as luncheon speaker on Wednesday, March 9.*



**In addition, this year's conference offers:**

- Over 20 technical sessions presenting the full range of transportation topics including design, studies, operations, planning, and safety.
- Five training sessions covering the fields of signing, roundabouts, signal controllers, public relations, and ITE Training modules.
- More than 30 exhibits and vendor booths displaying the latest technology and vendor products
- The opportunity to interview students at the Student / Intern Job Fair
- Dinner dance and the ever-popular Casino Night on Wednesday, March 9.
- Golf Tournament on Tuesday, March 8
- Tennis Tournament on Tuesday, March 8



For more information, please contact:



**CONFERENCE CHAIR**

SETH CHALMERS  
Chalmers Engineering  
(480) 949-0925  
[swchalmers@juno.com](mailto:swchalmers@juno.com)

**EXHIBITOR CHAIR**

KIM KONTE  
Phoenix Highway Products  
(623) 434-0509  
[Kim@phoenixhighwayproducts.com](mailto:Kim@phoenixhighwayproducts.com)

## OFFICERS

**President**  
Scott Nodes  
City of Goodyear  
623.882.7519

**Vice President**  
Mark Poppe  
Stanley  
602.912.6500

**Secretary**  
Kimberly Carroll  
Kirkham Michael  
602.944.6564

**Treasurer**  
Micah Henry  
ITS Engineers and Contractors  
602.943.2525

**Past President**  
Sarith Joshua  
Maricopa Assn. of Gov'ts.  
602.254.6300

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## COMMITTEE CHAIRS

**Ambassador**  
Bill Birdwell  
Town Of Gilbert  
480.503.6737

**Career Guidance**  
Chris Lemka  
City of Glendale  
623.930.2925

**ITE/IMSA Spring Conference**  
Seth Chalmers  
480.949.0925  
Jennifer Kroening  
[kroening@cox.net](mailto:kroening@cox.net)

**Legislative**  
Dave Eberhardt  
Thunderbird Consulting  
623.412.0050

**Membership**  
Dan Hartig  
Parsons Brinckerhoff  
480.966.8295

**Newsletter**  
Amara Ibeji  
CK Engineering  
602.482.5884

**Active Member Group**  
Chris Williams  
Task Engineering  
602.277.4224

**Technical**  
Volunteers Needed

**Website**  
Sylvia Mousseux  
City of Scottsdale  
480.312.2508

## MEETING ANNOUNCEMENTS



### FEBRUARY MEETING ANNOUNCEMENT

The Next Monthly Meeting of the Arizona Section of ITE will be held on  
February 24, 2005 at 11:50 A.M.

Location: Macayo's Mexican Kitchen  
4001 N. Central Avenue  
Phoenix, Arizona

Cost: \$20.00  
Menu: Miniature Buffet

Speaker: Mr. Al Zubi, PE, ADOT  
Topic: The Arizona Supplement to the 2003 MUTCD

RSVP by noon, Monday, February 21 to Micah Henry  
Phone: (602) 943-2525  
Email: [micah@itsengineers.com](mailto:micah@itsengineers.com)



C/O Amara Ibeji  
CK Engineering, Inc.  
16448 N. 40th Street  
Suite A  
Phoenix, AZ 85032

This newsletter is a bi-monthly publication of the Arizona Section of ITE. Send, e-mail or fax your articles to Amara Ibeji @ CK Engineering, Inc. (fax: 602.482.2885, [aibeji@ckengr.com](mailto:aibeji@ckengr.com))