



## IN THIS ISSUE

Are Intelligent Transportation Systems the Solution or the Problem?.....	3
New WebCam on Teton Pass Exceeds Expectations.....	6
ITS Applications for Congestion Management in Denver.....	8
News from around the Region.....	11
Upcoming Events.....	12

## Message from the President

Welcome to our Winter newsletter. This edition of the newsletter includes articles on ITS operations and maintenance programs, as well as a wrap-up of news and events in the region. We have feature articles on special event management in Denver and the application of ITS tools for effective operations and maintenance. Keith's article raises the issue of the appropriate application of technology to solve real problems. From time to time we still see and hear of projects that are done "because we can" rather than addressing clearly identified problems. Our continuing challenge in the public and the private sectors is to provide solid, measurable and repeatable value to our customers.



The annual WTS symposium is scheduled for April 7<sup>th</sup> in Denver and will provide a great forum for learning and networking. Plan to attend. Also, be certain to place the 2006 National Rural ITS Conference (August 13-16, 2006) in Big Sky, Montana on your calendars. It promises to be an informative and enjoyable event hosted by the Western Transportation Institute and the Rocky Mountain Chapter of ITS America. The conference is being sponsored in part by the FHWA/USDOT, ITS America, Institute of Transportation Engineers District 6, the Critical Illness and Trauma Foundation, the Montana Department of Transportation, and ThomTech Design, Inc. This edition of the newsletter has a Call for Abstracts for the conference. We will also be holding our annual meeting at the conference. Keep an eye out for further sponsorship and volunteer opportunities for this event ([www.2006nrits.org](http://www.2006nrits.org)).

As always, we would like to encourage all members to become involved in the chapter and help get the word out about the quality of work being done in our region. Remember to complete your membership survey! Please phone, fax or email any comments, suggestions and opportunities to me or to our Chapter web site [www.itsrm.org](http://www.itsrm.org).

- Richard Hodges, Chapter President ([RHodges@uta.cog.ut.us](mailto:RHodges@uta.cog.ut.us))

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## Chapter Notes...

### Complete the Membership Survey!

Help shape the future of the ITS Rocky Mountain Chapter by completing the membership survey online. We want to hear from everyone (member or not), so please, logon and let us know what you think! Go to [www.itsrm.org/membershipsurvey.htm](http://www.itsrm.org/membershipsurvey.htm).



### Submit an Article

You can submit an article for publication in the ITS Rocky Mountain Newsletter! Articles must be no more than 3 pages in length and must contain contact information for the author. While any article may be submitted, publication priority will be given to articles that match the respective Newsletter's theme. Graphics and photos are welcome!

**2006** submission deadlines are as follows:

*April/May/June (Spring)* - April 21st. Theme: "Traveler Information"

*July/August/September (Summer)* - July 21st. Theme: "Transportation in the Rockies" (Members are invited to provide topics that they would like to see addressed in this issue. Feedback on Chapter services and activities is also encouraged.)

*October/November/December (Fall)* - This issue will include a recap of the annual meeting. No articles will be accepted.

### Place a Job Announcement

If you would like an ad placed in the ITS Rocky Mountain Newsletter and/or the ITS Rocky Mountain website please email [employment@itsrm.org](mailto:employment@itsrm.org).

# Are Intelligent Transportation Systems the Solution or the Problem?

**H**ave you ever been asked to justify your budget request? Have you thought, “It’s inherently obvious this technology project is beneficial, but how do I prove it?” Have you struggled with the conflicting demands of higher-ups saying, “I want these new things installed, and they need to be managed and operated with your existing staff?”

These questions often represent the day-to-day experiences of both public and private participants in the transportation industry. As with most new technologies, ITS is neither the solution nor the problem. It is the application of these ITS tools that determines whether they are the solution or the problem (think of the atomic energy analogy). While many existing transportation industry tools do not provide the necessary details to address these experiences with certainty, tools exist that may provide some answers.

Management and Operations (M&O) represents an evolutionary change in the transportation industry thought process, and it is one tool that can offer improvement. It is the integration of everything ITS, and can potentially encompass the activities within an entire transportation organization. This includes not only managing, operating, and maintaining ITS devices, but also looking at how the use of these devices affect traffic flow, safety (of both travelers and transportation professionals), and construction scheduling to name a few. Most importantly to executive management and political oversight, M&O represents an opportunity to optimize the return on the public’s tax dollar investment, thereby justifying appropriate budget requests.

Traditionally, transportation professionals have viewed their networks as stand-alone systems. The transportation profession was concerned only with the status of the system for which he had control. In an era where transportation users were primarily local, this view was appropriate.

To today’s system user, this is a flawed operational model. More often than not, today’s user is integrated into a larger, non-local transportation network. This includes the user whose commute takes her through multiple jurisdictions as well as the commercial carrier who must navigate multiple transportation networks in order to make a just-in-time delivery. These users care less about who manages and operates a portion of the network than about ensuring their trip is as efficient and as safe as possible.

Within the last decade, ITS has been promoted as a cure all for congestion and safety problems. While the technology does offer some ability to address these issues, how the technologies are applied will more directly impact the success than the technologies themselves. Other industries such as the utility industry have already developed M&O techniques that help guide this process; we can adopt these techniques to use in the transportation arena. The three steps to a successful M&O program are appropriate technology application, system operation, and system management.

The first step in a successful M&O process is the appropriate application of technology. As an extreme example of inappropriate technology application, installation of



Keith Trimels  
ITS Rocky Mountain State Senator (Wyoming)

## continued from page 3...

an intersection collision avoidance system to address a single vehicle crash problem will do little, if anything, to improve roadway safety. Likewise, a municipal water company will likely not construct five miles of infrastructure to serve an area with two houses. Rather, they might recommend the use of appropriate technologies, in this case a water well and a septic system. In these cases, the inappropriate application of technology may not only fail to solve the problem, it could commit the owner organization to long-term maintenance and operational expenses. Therefore, for either a utility or a transportation department, appropriate application of technologies (including ITS) is crucial to the long-term success of the owner organization.

The second step in a successful M&O process is the planning, from the very initial stages, for long-term system operation. This involves looking at not only the obvious personnel demands, but also the life-cycle infrastructure requirements any system will require. To accomplish this with ITS, the Federal Highway Administration (FHWA) has mandated the use of a system engineering process (23 CFR §940) while the Federal Transit Administration (FTA) references the FHWA requirements (49 CFR §600). Although a requirement for the use of Federal funds, system engineering makes good business sense.

Take, for example, the multi-state power company. Before they construct a new power plant, they conduct a full system engineering process. This includes a determination of the power plant's ultimate capacity, although the plant's initial capacity may be a fraction of the ultimate capacity. They also analyze installation location to facilitate distribution of power from the plant, access to raw fuel to power the plant, and existing infrastructure for plant management and operations. This consideration includes the personnel necessary to continually maintain and operate the plant. To gather all potentially valuable information, the power company will canvass all stakeholders, including fuel suppliers, plant customers, plant operators, and plant maintainers. This information is aggregated in a concept of operations (ConOps) that drives the development of the power plant's requirements, and ultimately the plant's design.

In a similar fashion, transportation departments can improve their systems' operations, including ITS, by developing a ConOps before deploying a system. By including system stakeholders early in this process, a successful ConOps can provide a solid foundation from which the system requirements could be derived. The system requirements will then define the necessary personnel, hardware, infrastructure, and ultimately financial requirements to successfully build, operate, and maintain the system.

Finally, the third step in a successful M&O process is system management. This is the implementation of the processes necessary to ensure the system remains operational throughout its planned life. System management therefore includes system maintenance. System maintenance may be as trivial as knowing what circuit boards and firmware are in each controller (this helps troubleshoot any performance problems) to planning for the system wide preventive maintenance necessary to keep a system running. It also includes understanding the current system, the ultimate system, and the necessary steps to move from the current system to the ultimate system. These steps must occur while the current system continues to

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operate, thus continuing to provide service and minimizing impact to adjacent systems.

Referring back to the multi-state power company, if they desire to increase the capacity of an existing plant, taking the plant offline could leave multiple customers with no power. Those customers would either be without power, or would request it from an alternate plant. This could cause demand at the alternate power plant to exceed capacity. Either option is not an attractive one. Further, if the utility did not address the increasing demand, they may introduce random rolling brownouts. Recent experience has shown the public outcry when this happens with a power utility. One reason this does not occur more frequently is that utility companies have implemented tools to more effectively manage their networks.

When it comes to transportation network, however, we have viewed regular rolling brownouts (in the form of recurring daily congestion or multi-day road closures) as a normal condition. Unfortunately, the traveling public is becoming less tolerant of these service interruptions, and is demanding a higher level of service. By integrating system management into an overall M&O program, we can begin to address these concerns while providing decision makers with the justification for required personnel and funds. Knowing what software an ITS system is running (including version number) along with the various deployed hardware components (including BIOS and firmware information) can smooth planned system upgrades and reduce unforeseen impacts to adjacent systems. Instituting a change control board can help guarantee proposed ITS additions are within accomplishing the agency's objectives.



Approval from the change control board provides decision makers with a requirement for additional capital funds and perhaps additional operations personnel. Ultimately, this can lead to better system performance, higher customer satisfaction, and more efficient expenditure of increasingly scarce financial resources.

Implementing an M&O philosophy offers the opportunity to reconcile the transportation system operation with the user's current expectations. It can provide the tools to justify budget requests, to document safety and congestion improvements, and to ensure deployed systems will remain operational. It requires a change from a traditional civil engineering highway mindset to a more current civil engineering water distribution mindset. Will it ultimately satisfy every customer? No. However, as the utility industry has discovered, an effective M&O system can create a more dependable network that customers can depend upon. ■

*Keith A. Trimels, P.E. serves as an ITS Rocky Mountain Senator for the state of Wyoming. He can be reached at (307) 638-6037.*

# New Web Cam on Teton Pass Exceeds Expectations

The long-anticipated goal of placing a Web camera atop Teton Pass near Jackson in northwestern Wyoming became a reality last fall, and public popularity of the installation has figuratively snowballed.

Teton Pass is located on Wyoming Highway 22, which crosses the south flank of the Teton Range at 8,429 feet. The route provides a scenically spectacular gateway into Jackson Hole; during winter, it doubles as a popular destination for backcountry skiing and snowboarding enthusiasts. Travel is often difficult and during strong storms, can be downright treacherous. In addition to its scenic and recreational appeal, WYO 22 also features several snow slide areas, including the notorious Glory Bowl chute. The Wyoming Department of Transportation (WYDOT) must close the road frequently for avalanche control work, a direct result of the heavy snowfall and steep mountain slopes.

Based on opinion frequently expressed both within WYDOT and by the general public, no one doubted that the location would be popular for Web viewers. As it turns out, the response exceeded the most optimistic predictions by WYDOT's ITS staffers. Installation of a camera and other ITS devices were initially constrained by the lack of a power source and readily available communication infrastructure. But when WYDOT undertook a project last year to upgrade guardrail and resurface WYO 22 over the pass, the decision was made to include the installation of the necessary infrastructure to enable placement of the camera as well as automated weather reporting equipment.

Over the summer, work crews installed a new Axis 2120, along with a radio transmitter and new AC power line. By fall, video began streaming to the WYDOT shop south of Jackson, and thereafter, transmissions began going directly to the "WYOROAD" Webserver, resulting in automatically updated images every five minutes. The initial statistics from the device showed usage numbers which were somewhat staggering, by Wyoming standards. Soon after the image was added to the agency's Web-based Wyoming Road Report, viewer requests began increasing rapidly; and during only the first two months, more than 2 million "hits" were recorded. That figures out to a visit, on average, every 2.5 seconds, and during peak times, nearly one request per second.

The results of the Teton Pass Web camera installation are reminiscent of the beginning of



Bruce Burrows  
Wyoming Department of Transportation  
Bruce.Burrows@dot.state.wy.us

continued from page 6...

WYDOT's Web camera program back in 1999. That year, the very first installation, consisting of an Axis 200+ device, was made at the Summit Interchange on I-80 east of Laramie, where winter road conditions occur often due to high elevation, coupled with frequent snowfall and persistent high winds. The camera delivered periodic "snapshots" via a dial-up phone line connection, originally running at a 9.6K baud rate, providing a refresh every 15 to 30 minutes.

The "Summit cam" quickly became the most visited page on the entire WYDOT Web site, providing a valuable "lesson learned" for the agency; that public interest is high in being able to view images transmitted from locations prone to difficult road conditions. "Like our counterparts in other states, we've come a long way in a relatively short time frame with these technologies," says Brian Peel, WYDOT's ITS development supervisor. "In making our first installation at the Summit, we had no formal ITS program to guide the process and it was up to field IT and Traffic personnel to assemble the necessary components."

WYDOT is now installing a third generation of Web cameras, Peel reports. The first generation, such as original Axis unit at the I-80 Summit, have for the most part been replaced by newer models by Axis, as well as by Pelco and Cohu, which produce better images and have improved functionality. The agency Web site now offers a menu of 36 road images, and more sites are in the offing. Now, deployment of cameras and other ITS devices occur in conjunction with road improvement projects and in some cases, ITS-specific projects, along with input from a wide range of department personnel and suggestions from the public.

In addition to Teton Pass, recent camera installations have been made at Vedauwoo and the "Old Tavern" site on I-80 between the Summit and Cheyenne, at Wyo Hill on I-25 south of Cheyenne and on the South Pass road (WYO 28) southwest of Lander. A number of approaches can be used to capture and transmit the images back to WYDOT servers, depending on site characteristics and requirements. For all but three remaining dial-up sites, transmission modes include radio, digital microwave and fiber optics, and combinations thereof; transmission speeds range from 900 MHz to as high as 5.4 GHz.

Regardless of the technical procedures used, the end product has consistently drawn praise from the public. For example, one traveler wrote, "The webcams on the (I-80) summit ... are super great! As a commuter to Cheyenne from Laramie, it is really helpful to get a glimpse of what the world is like up on the 'hill' and with these new views, it is even better!"

Although the Web camera images and other information generated by WYDOT's ITS program has become a popular public service for improved travel decision making, WYDOT finds itself having to continually remind some of the traveling public that the information is still not a substitute for individual judgment. The agency regularly attempts to tactfully remind motorists to keep in mind that road and weather conditions can change quickly and motorists should be ready to adjust their driving accordingly. ■

# ITS Applications for Congestion Management in Denver



Robert Kochevar  
City and County of Denver  
[Robert.Kochevar@ci.denver.co.us](mailto:Robert.Kochevar@ci.denver.co.us)

A recent report by the Office of Operations of the FHWA discussed traffic congestion and reliability including trends, causes and potential mitigation. It is no secret that traffic congestion continues to rise at all levels and in all locales. Travel trends show increased VMT (vehicle miles traveled) but with little increase in commensurate system capacity. The report identifies travel time as a key measure in determining congestion. Travel time reliability – the consistency of travel conditions on a day to day basis – is described as a significant method in tracking congestion trends. In order to determine congestion levels and trends, and then to attempt to mitigate increasing congestion, root causes or sources of congestion are listed as capacity bottlenecks, traffic incidents, work zones, weather, traffic control devices, special events, and fluctuation in normal traffic flow. While each of these root causes can result in some level of congestion, the interaction of any combination of these potential sources could easily cause complex events within the travel network. Mitigation, then, becomes a choice of what resources are available and cost effective while resulting in the most positive outcome – to reduce congestion and increase travel time reliability.

For example, to increase peak period capacity, the City and County of Denver Department of Public Works utilizes a very conservative approach in issuing permits for work zones within the right of way. Any construction project, either public or private that may affect any of the travel modes on our network, must apply for and obtain a street occupancy permit. The application includes information on project impacts to the travel way, duration, and necessary maintenance of traffic plans. During the review of the application, traffic staff will determine the street classification and potential for congestion. The permit will then be issued with conditions for work within the facility including restricted hours of lane occupancy, normally 8:30 AM to 3:30 PM. Where major roadways or other facilities are impacted and alternate detour routes are not available, restrictions may include the requirement of only night and weekend work to mitigate loss of network capacity. By employing this technique of dealing with this source of congestion, Denver Public Works can increase the reliability of travel time on its multimodal travel network. However, non-permitted rogue projects, emergencies, or violation of work hours can negatively affect the travel system no matter how well planned.



Reducing total congestion saves time and fuel and reduces vehicle emissions. These goals are also sought through other techniques applied in Denver. The application of ITS techniques seeks to provide a more efficient use of existing operational capacity. In addition to the work zone management described above, ITS type efforts include the management of planned special events, arterial and corridor management, and traveler information.

The key “tool” to providing these congestion mitigation techniques has been the development of the Transportation Management Center (TMC) by the Traffic Engineering Services section of Denver’s Department of Public Works. Many components make up the TMC including a traffic signal control system, closed circuit video cameras, video detection, dynamic message signs, highway advisory radios, and

continued from page 8...

internet based traveler information. Currently, about 540 of the 1250 traffic signals in Denver are being controlled by the TMC system. The TMC equipment is utilized to monitor and control traffic flow and operations into and out of Denver. Snapshot views of CCTV cameras are available from the City and County of Denver's website at [www.denvergov.org/traffic](http://www.denvergov.org/traffic).

Recently, ITS of America President and CEO Neil Schuster stated that ITS applications are instrumental in achieving the benefits of reducing delay: "ITS and other operational improvements have an immediate return on investment through significant congestion relief paybacks, a benefit demonstrated not only by reducing delay and driver frustration, but in helping to improve the movement of goods and provision of services nationwide."

Denver's hosting of the 2005 NBA All Star Game and weekend is an example of applying a combination of ITS techniques to address an event that could potentially cause significant congestion during peak hours as well as during the event activities. The City and County of Denver was chosen to host the 2005 NBA All Star Game at the Pepsi Center in February, 2005. Previous events at other large city venues resulted in monumental traffic jams due to a mix of local and visitor traffic and lack of sufficient pre-event traffic planning. Anecdotes from a previous All Star game in another city included an NBA All Star game player leaving his chauffeur driven limousine and walking many blocks to the arena after sitting in traffic that was gridlocked. While the veracity of such stories was not tested, Denver did not want to find itself in the position of lacking sufficient preparation and plans that would result in negative consequences for Denver in the minds of visitors or citizens.

### **Planned Special Event Traffic Management**

A series of meetings was held with participants from all stakeholder groups including NBA staff and promoters, charter transportation and tour operators, Public Works staff including Street Maintenance and Parking Management, CDOT, the local transit agency (RTD), police, fire, and other emergency service providers, hotel and convention center operators, traffic management contractors, and, of course, elected officials, including the Mayor's office. These meetings were held to identify the scope of the travel demands that the event would put upon the systems, the size and number of potential visitors, number, location, and timing of ancillary events attached to the NBA weekend—and others that would occur independent of the NBA, but with potential traffic and or public safety concerns. These planning meetings were held at regular intervals for several months until a set of operational plans were developed and a schedule for implementation was determined.

### **Arterial and Corridor Management**

The resulting operational plans centered on the movement of NBA personnel, staff and up to 40,000 expected out-of-town guests through the streets of Downtown Denver via various modes – particularly charter buses, limousines and vans. The scheduled events throughout the four day weekend, (the event coincided with the Presidents Day holiday weekend), required that special lanes be identified for continuous movement of the NBA designated vehicles. Temporary HOV lanes were established within the existing downtown street network. Other congestion reduction techniques included the closure of some streets near the Colorado Convention Center for loading and unloading of buses; one way streets were reassigned to accommodate special purpose vehicle flow; and a street entrance to the Pepsi Center was restricted





## News from around the region...

### Support for Scholarship Fund Continues to Grow

The Board of Directors of the ITS Rocky Mountain Chapter has determined that students interested in ITS-related topics in our region should have the support and encouragement that will help them to grow as well-rounded professionals. Each year the Chapter offers an annual Student Paper Award and Scholarship. The Award recipient receives a \$500 travel award to be used to attend the annual Chapter meeting (conference or workshop) and a \$500 scholarship. All winning essays will be published in the ITS Rocky Mountain Newsletter and posted to the Chapter website. If there are additional scholarship monies available students can apply for travel scholarships to attend other ITS events.

ITS Rocky Mountain would like to thank Kar-Gor, Inc. and Kimley-Horn & Associates for their recent donation to the ITS Rocky Mountain scholarship fund. Curtis D. Rowe, PE, PTOE of Kimley-Horn sent the following statement with their donation: "We are pleased to extend (a) donation to support the scholarship and travel stipend for a worthy student candidate to present their paper at an annual Chapter event....Being active in ITS, we are a strong believer in supporting college students interested in the field." Without the continued support of ITS Rocky Mountain corporate and individual members the scholarship program would not be possible.

Within our region, the University of Wyoming as well as Idaho State University, has an active ITS student chapter, and Montana State University has plans to start a cooperative ITS student chapter this spring. Other universities have plans to follow suit.

If you would like additional information about the student program or would like to make a donation please call or visit us online at [www.itsrm.org/studentinfo.htm](http://www.itsrm.org/studentinfo.htm).

### Colorado's Road Rage Hotline is Heating Up

For more than 6 years motorists on Colorado highways have had a direct hotline to report reckless drivers to the Colorado State Patrol. \*CSP dialed on their cellphones gives drivers a chance to report road rage incidents to the authorities rather than take it out on the next guy. Calls have increased by 50% since the programs inception to more than 134 calls sent per day. In fact almost 49,000 calls were received by the Colorado State Patrol in the last fiscal year.

So what action is taken once a call pours in? None-the first and second time a certain car's license plate is called in. But, the third, fourth, and fifth time a driver is reported as being too aggressive by his fellow highway travellers a warning letter is sent out by the State Patrol. Also, after a driver's fifth report an officer follows up by meeting with the car's owner, observing his driving, or possibly issuing a citation.

In 2005 the State Patrol sent letters to more than 220 aggressive drivers and 27 of them were written to three times. According to Colorado State Trooper Eric Wynn, "A small number of drivers-fewer than 1 percent-are habitually reckless, but we take all the calls very seriously."

# Upcoming Events...

## Fourth Annual Spring Transportation Symposium

4th Annual Spring Transportation Symposium produced by ITS Rocky Mountain, Colorado-Wyoming Section of ITE, and the Women's Transportation Seminar (WTS), Colorado Chapter will be held on Friday, April 7, 2006 from 7:30 AM to 1:30 PM, in Denver, Colorado.



Sessions will include an elected officials panel discussion of the SAFETEA-LU legislation; Transit-Oriented Development; T-REX, (SE Corridor of I-25) update and prelude to completion on the multi-modal highway and transit project; Predicting the Future: Transportation Modelling; and a keynote speaker for a all attendee luncheon. Sponsorships are available for this fund-raising event that will benefit college scholarship programs of the three organizations.

## Call for Abstracts for 2006 National Rural ITS Conference

The Planning Committee of the 2006 National Rural ITS Conference would like to invite you to submit an abstract for presentation at the upcoming conference. All abstracts must be received by **February 17, 2006** and authors should ensure that abstracts submitted follow guidelines.

Abstracts crediting multiple authors must designate one lead author. Unless it is indicated otherwise, the lead author will be expected to make the technical presentation. Abstract selection will be completed by March 24th at which time selected authors will be notified. These authors will then be asked to submit a brief (250 words or less) bio for inclusion in the conference agenda. A copy of the final presentation will also need to be provided to conference staff for inclusion in the conference proceedings. (Paper submittals will not be necessary.)

For approved abstract topic areas and more detailed information please visit [www.2006nrirts.org](http://www.2006nrirts.org).

## CITE Offering Introduction and Advanced Telecommunications as “Blended” Courses in February and April

The Consortium for ITS Training and Education (CITE) will offer Introduction to Telecommunications and Advanced Telecommunications courses in a “blended” format.

“Blended” courses combine the best features of both instructor-led and web-based instruction. These features include:

- Live discussions with the instructor through the use of conference calls,
- Convenient, flexible web-based learning,
- A specific time schedule in which to complete the course, and
- Interaction with other students through the use of class problems posted on a discussion board.

Telecommunications is the backbone of all ITS applications. It provides the means for sending data, voice, and video information between devices. The Introduction



continued from page 12...

The affairs and business of the ITS Rocky Mountain Chapter are managed and controlled by its Board of Directors. This Board, made up of representatives or Senators from each of the six member states, delegates to the Chapter Officers the necessary powers to conduct Chapter business.

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Utah Transit Authority

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course is a primer on telecommunications for the ITS professional with little or no formal training in telecommunications. With so many ITS projects now requiring a telecommunications aspect, the course is a must for project managers. The overall goal of the Advanced course is to provide a system-level understanding of the operation of modern broadband transportation communications networks. The course focuses on how to plan and implement telecommunications networks to support a major ITS infrastructure.

The instructor for the course is Andrew Afflerbach, Ph.D., P.E., CEO/Principal Engineer for Columbia Telecommunications. Dr. Afflerbach specializes in system-level planning, design, and implementation of wide-area and local-area telecommunications networks. His expertise includes emerging technologies and state-of-the-art technological applications.

Dr. Afflerbach has assisted numerous local governments and nonprofit institutions with technological projects – ranging from fiber-optic to wireless communications networks; from educational to homeland security applications; from cable system performance evaluation to development of local emergency override capabilities; and from negotiations with the telecommunications industry to technical briefing of Commissioners and staff of the Federal Communications Commission.

The Introduction to Telecommunications course will begin on Feb 17, 2006 and continue through April 3, 2006. The Advanced Telecommunications course begins on April 5, 2006 and continues through May 31, 2006. The fee for the each course separately is \$150. If students take both courses, the fee is only \$200. Students can register by going to the CITE web site at <http://www.citeconsortium.org>. For more information about this course, visit [www.citeconsortium.org](http://www.citeconsortium.org) or contact Denise Twisdale, [mztwiz@umd.edu](mailto:mztwiz@umd.edu) or 301-403-4592.