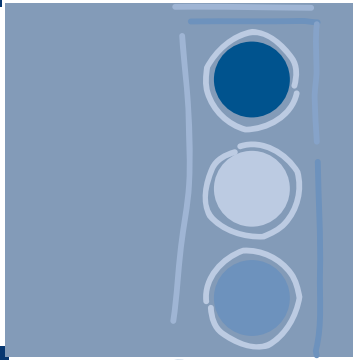
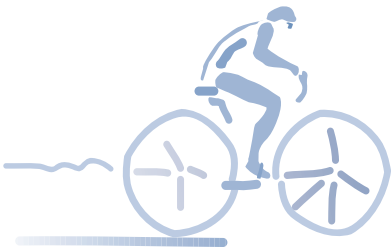


## McTrans Distributes U.S.DOT's ITS Awareness Seminar

The U.S. Department of Transportation has initiated its Intelligent Transportation Systems "Professional Capacity Building" outreach and education program. The Federal Highway Administration has asked McTrans to assist in making these sessions available to the broader transportation community. See the New Products section for a brief description of the first in the seminar series.

hcm

1997 Update  
& Beyond...



Mc  
byte

John Zegeer is the informed source on what to expect from the coming HCM upgrade and more in our cover story beginning on Page 2. A report by B.R. Pati on the implementation of a signal timing strategy in Lakeland, Florida begins on Page 3. The new products are reviewed on Page 5 & 6: Beam Analysis Program by David Juntunen; Datasets for Standardized Small Sign Support Hardware, a guidebook published by AASHTO; Traffic Engineer's Toolbox, a new Windows program; and the ITS PCB Seminar, announced above. Updates for HEC-RAS, PASSER IV-96, Transit Route Planning CAI Course and TSIS are described on Pages 6 & 7. Please note important announcements on Pages 8, 9 & 10. Coming events and training are on the last page.



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## 2 Highway Capacity Analysis Techniques Are Changing

by John D. Zegeer, P.E.,  
Senior Associate, Kittelson &  
Associates, Ft. Lauderdale, FL

Chair of the TRB Committee on  
Highway Capacity and Quality of  
Service

In 1994, the Transportation Research Board published an update to the 1985 Highway Capacity Manual (HCM). This document (and the companion software) provided a current set of analysis procedures for a wide range of transportation facilities. The table of contents to the HCM illustrates the range of facility types which can be analyzed:

1. Introduction, Concepts and Applications
2. Traffic Characteristics
3. Basic Freeway Sections
4. Weaving Areas
5. Ramps and Ramp Junctions
6. Freeway Systems
7. Multilane Rural and Suburban Highways
8. Two-Lane Highways
9. Signalized Intersections
10. Unsignalized Intersections
11. Urban and Suburban Arterials
12. Transit Capacity
13. Pedestrian
14. Bicycles

### The 1997 Update to the HCM

Advances are continuing to be made in the determination of capacity for all facilities and in the selection of appropriate performance measures to determine levels of service. The FHWA, National Cooperative Highway Research Program (NCHRP), the Transit Cooperative Research Program (TCRP), and State Departments of Transportation have funded numerous research efforts to enhance our understanding of capacity and traffic flow. This has resulted in the decision to publish a 1997 Update to the HCM. That update will contain the following revised chapters:

The Basic Freeway Sections chapter (Chapter 3) will include a revised procedure where capacity is primarily based on a measurement of density. The capacity of a freeway lane will vary by the free-flow speed (from 2250 pcphpl for a 55 mph free-flow speed to 2400 pcphpl for a 70 mph free-flow speed).

The Signalized Intersection chapter (Chapter 9) is one of the most widely used chapters in the HCM. The 1997 Update will include the findings from recent research on actuated signals. The delay

equation will be modified to account for signal coordination, over-saturation,

variable length analysis periods, and the presence of initial queues at the beginning of an analysis period. The measure of effectiveness (MOE) will be changed from average stopped delay per vehicle to total delay. Adjustments will be made to the permitted left turn model and the left-turn equivalence table. Additional guidance will be provided on the use of the CBD adjustment factor, the application of lost time, and the proper use of the lane utilization factor.

The Urban and Suburban Arterials chapter (Chapter 11) will incorporate changes to the Signalized Intersection chapter which affect Chapter 11. The effect of the filtering/metering of arriving platoons by upstream signals (which reduces the randomness of arrivals) will be introduced. A fourth arterial classification to account for "high speed" arterials will be included. And, additional sample problems (dealing with arterials controlled by both signals and stop signs and dealing with two-lane arterials) will be provided.

**The Unsignalized Intersections chapter (Chapter 10) has been completely revised to incorporate the results of a nationwide research project in the United States at two-way and four-way stop-controlled intersections. The impact on capacity at a two-way stop-controlled intersections due to the presence of an upstream traffic signal and a procedure for accounting for two-stage gap acceptance (when motorists cross one stream of traffic, then store in a median area to enter or cross a stream of traffic in the opposite direction) are provided. General guidance for estimating the capacity of roundabouts will also be provided.**

By the end of 1997, a Windows-based software package will be available from **McTrans** to assist in the application of the 1997 updated procedures.

A Metric User's Guide will be prepared as a companion to the 1997 Update to the HCM. This will allow the analyst to make metric conversions where appropriate. In the Year 2000, the HCM itself will use metric units.

### Looking Ahead to HCM 2000

Despite the extensive number of improvements which will be incorporated in the 1997 Update of the HCM, plans are already underway for a complete revision of the HCM in the Year 2000. The HCM 2000 will incorporate a number of ongoing research efforts:

- NCHRP is sponsoring a Weaving Area Research Project.
- FHWA is sponsoring a Freeway Systems Research Project.
- NCHRP is sponsoring a Two-Lane Highways Research Project and FHWA has provided additional funding to develop an enhanced simulation package for operational analysis of two-lane highways.
- TCRP has sponsored a research project on the operational analysis of bus lanes on arterials, which will be used to modify the analysis procedures in the Urban and Suburban Arterials chapter.
- TCRP is sponsoring a complete revision to the Transit Capacity chapter of the HCM. In addition, the initial steps leading toward the development of a separate Transit Capacity Manual are underway.
- FHWA is sponsoring a research project on the effects of bicycle and pedestrians on roadway and intersection capacity.
- NCHRP is sponsoring the development of enhanced planning procedures which will provide more accurate predictions of speed and service volumes for all roadway facilities.
- NCHRP is sponsoring research into the capacity of interchange ramp terminals.
- NCHRP is sponsoring research into an improved set of performance measures which will more accurately predict level of service for undersaturated and oversaturated conditions.
- NCHRP is sponsoring a project to ensure the production of HCM 2000. This document will be delivered in three media: a loose-leaf paper



document, the calculating software, and a CD-ROM. The CD-ROM will provide a multi-media format for the manual, sample problems, a tutorial, and a link to the calculating software.

### How You Can Learn More

The Highway Capacity and Quality of Service Committee (HCQS) of the Transportation Research Board acts as the primary overseer for research and enhancement of the HCM. Responsibility for documenting the various activities of the HCQS has been distributed across several WWW sites. The following home pages provide access to this information:

#### The HCQS Home Page

(<http://traffic.ce.gatech.edu/hcm/overview.htm>)

This site documents the ongoing activities (technical and otherwise) of the HCQS committee. Information includes current committee membership, current technical activities, upcoming events and meetings, the e-mail server, and past meeting minutes.

#### Highway Capacity Manual

(<http://www.nmaa.org/hcmweb>)

Recognizing a need for increased communication between HCM users and developers, the Federal Highway Administration (FHWA) created a web site with the latest information on training, a data base of current HCM users, and the **HCM Advantage** - a newsletter dedicated to the HCM user community.

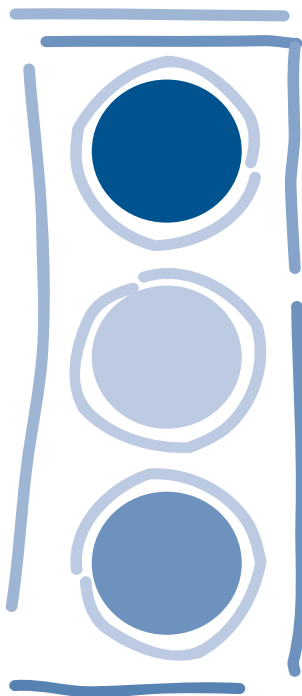
#### Highway Capacity Software

(<http://www-mctrans.ce.ufl.edu/info-cen/hcs/hcs.htm>)

**McTrans** is responsible for distribution of the Highway Capacity Software (HCS). This site contains information on the latest HCS developments, versions, updates, tutorials, fixes and patches, and other software-related issues.

We welcome your input and participation in advancing our understanding of highway capacity issues.

Reprinted from **Florida Transportation Modeling**, a quarterly publication of the Florida Department of Transportation, Systems Planning Office in Tallahassee.



## Procedure for an Efficient Signal Timing: The Lakeland Experience

By Bikash Ron Pati, P.E.  
PB Farradyne, Inc.

PB Farradyne, Inc. (PBF) recently developed and implemented signal timing plans for 53 intersections, under 15 control sections, in the City of Lakeland, Florida. The signal timing plan development was required for expansion of the existing "UTCS Hybrid" Computerized Traffic Signal System (CTSS). The Florida Department of Transportation (FDOT) District 1, along with the City of Lakeland and Polk County, administered the project, which was completed in 1995. This article describes a unique strategy for development of optimal timing plan and provides useful recommendations for a fine-tuning process.

The goals of signal timing for a development in Lakeland were to minimize overall delay and maximize signal coordination in 15 control sections that included arterial and network configurations. The major data collection effort consisted of traffic counts, signal equipment, and intersection inventory. The 24-hour system counts were plotted and based on traffic volume distributions, dial assignments were finalized. A minimum of six different timing patterns were developed for each control section, including AM, AM Off, Noon, PM, PM Off, and Night plans. A seventh plan was developed for a few sections to provide control during extraordinary traffic conditions. The night plan was also used during early morning hours and weekends.

TRANSYT-7F, a macroscopic traffic optimization/simulation model, was used to evaluate arterial and network configurations in the City of Lakeland. This program has been successfully used in numerous signal timing projects. TRANSYT simulates traffic flows in small time increments and disperses traffic using a platoon dispersion algorithm as vehicles travel downstream. A hill climb optimization process minimizes an objective function called performance index (PI) which is a linear combination of delay, stops and (optionally) excess queue and operating cost. TRANSYT is particularly suitable for modeling arteries and networks with usual geometry and phasing schemes as was encountered in the City of Lakeland. Flow profile and platoon

4 progression diagrams were used for analyzing signal coordination.

The following procedure was used by PBF1 for developing optimal signal timings for the City of Lakeland:

- Existing phasing schemes were evaluated using Signal Operations Analysis Package (SOAP). Alternative phasing schemes were compared.
- TRANSYT optimization runs with minimum and maximum cycle length (150 seconds) with increments of ten seconds were performed. The minimum cycle length, depending on the length of the pedestrian phase, varied in each control section.
- The cycle length selection runs were executed with detailed output that enabled examination of MOEs for each cycle. For a few sections, the best cycle length obtained from the program was not selected if MOEs suggested that a higher or lower cycle length could serve the control section better in terms of profession bandwidth and queue clearance.
- Arteries with high turning volumes originating from an upstream intersection were coordinated with the through movement of the downstream intersection.
- Traffic progression was provided along major arterials in a network configuration.
- Double cycling at low volume intersections was implemented in control sections with low and high volume intersections.
- All offsets were referenced to the beginning of the coordinated movements except in situations where the non-coordinated movement is the high volume street. Offsets were then referenced to the beginning of the non-coordinated movements.

- The minimum green for intersections with call to non-actuated (CNA) active included walk and don't walk times to assure coordination during pedestrian activity. Intersections with high pedestrian volume displayed walk signals in all cycles using the CNA feature.
- After the cycle length was selected, a program called Time Space/Platoon Progression Diagram (TS/PPD) was used to examine and manipulate offsets for each timing pattern to obtain maximum bandwidths. All optimized splits were unchanged.
- Finally, TRANSYT-7F simulation runs were executed with selected cycle lengths and revised offsets.

After all TRANSYT runs were approved, controller timing tables were prepared including isolated controller settings such as minimum green, extension, yellow, all red, pedestrian Walk and Don't Walk. Coordination settings included phase splits and offsets for each pattern. The system software, JHK 2000, currently being used in Lakeland does not require computation of force-offs and permissive periods. All timings were manually entered at the individual controllers. A timing database was created for the JHK 2000 software for central control. Once a control section was brought on-line all changes to the signal timing were downloaded from the control center located in the City of Lakeland traffic engineering department.

It is impossible to perfectly model real-life traffic conditions. Therefore, fine tuning is almost always necessary. This process verifies how well the implemented timing plans are likely to perform in actual traffic conditions. The extent of fine tuning may vary from simply changing an offset or a controller setting as minimum green, maximum green extension, or pedestrian timings to modifying phase splits, and even the cycle length.

Fine tuning for the Lakeland project was a three-step process, as mandated in the technical special provisions. The first step was an initial field verification of timings within 48 hours of implementation. During this step cycle lengths, splits, and offsets were verified in the field. The second step was a detailed on-street review of the operation of each timing plan for all control sections. On-street reviews were conducted by PBF1 and accompanied by the City of Lakeland officials. All changes were reported to the control center using a two-way mobile radio. The third step was revisiting all control sections along with FDOT, City and County officials for final approval.

Based on the Lakeland experience, the following are useful observations on fine tuning:

1. Individual intersections within a control section were observed for several cycles during peak hours to verify satisfactory operation with the new timings. Several trial runs along both directions of an arterial were undertaken at the prevailing traffic speed to ascertain progression. Offsets were adjusted where necessary to improve coordination. A stop watch can be used to measure bandwidths.
2. Controller settings such as minimum green extension, Walk and Don't Walk times may need to be adjusted. If significant truck traffic is prevalent, extension may need to be increased for safe passage of trucks. The lack of platoon formation in low volume arterials may warrant longer extension to prevent coordination gap out.
3. The maximum green time for the side street and main street left turns was observed. Queuing vehicles should clear during most cycles otherwise, the maximum green may need to be increased.
4. The early release of side street green was observed in low volume side streets particularly during the night plan. The ex-

cess green time from side street will switch to the main street coordinated phase and change the offset reference. Frequent early release may warrant offset adjustments along the entire control section.

5. Separate dials for school start and end times may be considered for traffic signals in school zones. An adequate side-street green time should be provided. All other times, generally side street activity is minimal, and flashing operation may be suitable.
6. Traffic signals at ramp terminals should have adequate green time to prevent excessive queue formation on exit ramps. Preferably, exit ramp queue should clear during each cycle.
7. Fine tuning of network configurations pose greater challenge. Generally, avoid offset adjustment on the common intersection unless such a change benefits both arterials involved.

Signal timing or retiming projects have documented a high benefit cost ratio and therefore, are popular projects for state and local agencies. Adopting an efficient timing procedure and undergoing a thorough fine tuning are necessary to maximize benefits. Signal retiming often invokes citizen complaints during the first few days of installation. These complaints should be taken seriously. The operation of the intersections should be monitored after all retiming tasks have been completed.

Note: The article is based on the opinions and ideas of the author and not necessarily of the agencies that administered the project. The author would like to acknowledge Chris Birozak (FDOT), Frank Rodwick (City of Lakeland), Tim Malone (TCD) and Cary Vick (PB Farradyne) for their help during various phases of this project.

## Beam Analysis Program

BAP is a Windows 3.1/Windows 95 application that solves for the reactions, shears, moments, and deflections for continuous beams. The beam can have changes in cross section along its length and internal hinges. Point loads and distributed loads can be applied to the beam. Input is in the easy-to-use Windows environment. The beam's profile with applied loads is shown to aid input verification. The program solves for the beam's reactions, and then shows the shear, moment, and deflection diagrams, as well as a table of the respective values for each. The program has an interactive help file. All information, including graphics, can be printed. BAP can be evaluated free of charge for 30 days. If you find the program useful, and want to continue using it, registration is required. Bap was developed by David Juntunen, a practicing bridge engineer in Michigan.

**Beam Analysis Program (#BAP) by David Juntunen is available at LOS 4 for \$10.**

## Datasets for Standardized Small Sign Support Hardware

Datasets containing the materials incorporated in the 1997 publication *A Guide to Standardized Small Sign Support Hardware* in CAD and wordprocessor formats. This guide is published jointly by the American Association of State Highway and Transportation Officials (AASHTO), the American Road and Transportation Builders Association (ARTBA), and the Association of General Contractors (AGC). This Guide contains drawings and specifications for proprietary and non-proprietary small sign support hardware. The designs included are those most widely used and therefore the most logical systems and components for standardization. Proprietary items are included in this Guide for the convenience of users, but this does not confer or imply any approval by AASHTO, ARTBA, AGC, or the FHWA. The propri-

etary materials were provided by the manufacturers for the convenience of highway designers.

The CAD and wordprocessor datasets are believed to be useful in updating design, installation, or maintenance practices to all members of the roadside safety community, including state engineers, consultants, manufacturers of hardware, installation contractors, and researchers. This hardware guide includes a large number of new components and systems that are now in common use and removes many components and systems that have become obsolete or are seldom used today.

The drawings for the hardware and systems in this guide were produced using Intergraph Microstation version 5. The text specifications were produced using WordPerfect 5.1.

This revised guide includes not only components of small sign support hardware but drawings and specifications for common sign support systems. Some of the details shown in this guide have been revised from earlier details in the belief that doing so would result in more balanced and versatile designs. Every effort has been made to assure the correctness of the drawings and specifications at the time of publication, but a designer wishing to use details in this guide should assure themselves of the geometric and structural adequacy of the design. Citations to the roadside safety literature have been provided so designers may search out the test results and become familiar with the development of each small sign system.

This Guide is organized into four sections. The first section contains the introductory material, tables of contents, cross references, and general information. The next two sections contain drawings and specifications of fastener and post components. The fourth section contains drawings of small sign support systems. The small sign support system drawings and specifications show how the components

shown in the fastener and post sections of the guide can be assembled to produce a variety of small sign support systems. Fasteners include bolts, nuts, and washers. Post components are those parts that serve to support the sign and also the components of the breakaway, yielding or foundation mechanism. Each component has been assigned a unique designator that identifies the component and also serves as a page number with components being arranged alphabetically by designator. The designator used in this small sign support hardware guide follow are consistent with those found in *A Guide to Standardized Highway Barrier Hardware*. Many of the fastener used in this Guide also appear, with the same designator, in the Hardware Guide.

The guide has been produced totally in the International System (SI) of units. All length dimensions in this guide are in millimeters (mm), the units of stress are Mega-Pascals (MPa), the units of force are Newtons (N), and units of mass are kilograms (kg). Units of length are not shown on the drawings since all dimensions are in millimeters. Customary weights of pounds (lbs) have been converted to the SI mass unit of kilograms (kg). All the components and systems shown in this guide where originally developed in the foot-pound-second system and have been converted into their present form. Dimensions were converted and rounded as suggested in AASHTO R1-91 I (ASTM E 380-89a).

The 1994 AASHTO "Standard Specification for Structural Support for Highway Signs, Luminaries and Traffic Signals" relate specifically to the safety performance evaluation for small sign support system. All of the sign support systems included in this guide have been crash tested and evaluated in terms of the above specifications. Only those sign support systems judged by the FHWA to have met the safety performance requirements of the specifications are included. This document only addresses crash-

worthiness aspects of small sign support designs. Other design considerations affecting the structural adequacy such as normal live loads, wind loads, fatigue, and corrosion are also important although they are not addressed in this document.

**Datasets for Standardized Small Sign Support Hardware (#GSSH), by NCHRP is available at LOS 5 for \$30 from AASHTO.**

## Traffic Engineer's ToolBox – Eleven Tools in One Package

The Traffic Engineer's Toolbox, Version 1.0, Release 1, is a windows software which contains eleven tools (modules) which help increase the traffic engineer's productivity. The eleven tools are: Benefit Cost Ratio, Collision Diagram, Conduit Fill, Detector Loop Locations, Left Turn Storage Length, Metric Conversion, Skidding Distance, Spot Speed Study, Stopping Sight Distance, Work Zone & Detour Plans, and Yellow Timing/Don't Walk Times.

The Windows interface provides for easy data entry with consistency between modules. The Traffic Engineer's Toolbox produces professional quality reports, extensive on-line help, and an user manual which describes field by field how to utilize the power of the program. The program was designed by a professional traffic engineer with over twenty years of experience.

**Traffic Engineer's Toolbox (#TET) by J.B. Technology is available at LOS 6 for \$250.**

## U.S. Department of Transportation's Intelligent Transportation Systems Awareness Seminar

This one-day general awareness seminar provides a general understanding of ITS and ITS infrastructure. The seminar illustrates the nine ITS infrastructure components by showcasing those

[more→](#)

systems that are deployed around the country. Institutional and technical elements in deploying ITS infrastructure are presented, including planning, design, architecture, standards, procurement, installation and construction, operation and maintenance and funding. The seminar also acquaints participants who are or will be involved in the implementation of ITS, with benefit-cost issues related to ITS and ITS infrastructure implementation. Qualitative and quantitative benefits of ITS are presented through examples of systems deployed around the country.

The seminar is for transportation professionals who are currently not generally involved in ITS, but expect to be involved in ITS planning, implementation, operations or maintenance.

These one-day seminars are currently being presented in each Federal Region for DOT field staff in FY 1997. They are available from **McTrans** for presentation in other settings. The seminar consists of a Microsoft PowerPoint Version 7.0 presentation on 12 diskettes and comes with an Instructor's Guide.

**Professional Capacity Building (#PCB) by the U.S.DOT is available at LOS 4 for \$25.**

## HEC-RAS, Version 2.0, Available

The HEC-RAS River Analysis System (#HECRAS.WIN) package has been received from the Hydrologic Engineering Center and is ready for distribution at \$125 for new users. Registered users can upgrade for \$30. (If you are ordering an upgrade, please be sure to include your current registration number(s) on the order form.) A set of release notes detailing the features of the new package is attached for your information. The HEC-RAS User's Manual and Hydraulic Reference have been updated and a new HEC-RAS Applications Manual is now included in the documentation (#HECRAS.D) for \$25.

HEC-RAS Version 2.0 requires Windows 3.1, 95 or NT. Data files are upwardly compatible from older versions only, but Version 2.0 files cannot be used in previous versions.

Since the last release of the HEC-RAS software, many new features have been added and some modifications to existing features have been made. Several minor bugs have been found and fixed. The HEC-RAS User's Manual and Hydraulic Reference manual have been updated for version 2.0, including the addition of a new manual entitled "HEC-RAS Applications Manual."

The following is a list of the new features and program modifications that have been made since the version 1.2 release.

- Many new features have been added to the geometric data model schematic.
- The Inline Weirs and Gated Spillways option allows the user to enter a weir and/or a series of gated spillways, as a structure that is directly in line with the main river system.
- The user can now perform channel modifications as a series of trapezoidal cuts, which can be performed over a range of cross sections simultaneously.
- HEC-RAS now has the ability to import stream-system schematic information and cross-section data from GIS/CADD systems.
- An option has been added to the HEC-RAS bridge routines to allow user's to use the WSPRO bridge hydraulics methodology for low flow hydraulics.
- Bridge scour computations can now be performed within HEC-RAS using the procedures outlined in HEC-18 (Hydraulic Engineering Circular No. 18).
- Two new culvert shapes have been added to the HEC-RAS list of available culverts, High Profile Arch culvert and the Low Profile Arch culvert.
- HEC-RAS now has the capability to model adverse sloping culverts; culverts under supercritical flow conditions; and culverts with mixed flow regime inside of the culvert barrel.
- The user now has the capability to modify the two internal bridge sections.

update

WATCH

Package	Version	Status	Target	Distribution
HCS	2.1e	Testing	Summer	Patch File
HEC-RAS	2.0	Complete	Available	Registered users may upgrade
HYDRAIN	7.0	Testing	Summer	Registered users may upgrade
TSIS (Corsim)		Complete	June	Registered users may upgrade

- The ability to import multiple HEC-2 data sets into existing Geometric data files has been added.
- You can now enter k value roughness heights instead of Manning's n values.
- The Lines, Symbols and Colors editor has been updated to give users the control to change any line type, thickness, color; symbol type, size and color, and fill patterns and colors.
- Users can now control the point size of all text displayed on the graphics.
- Users now have more control over the user defined tables.
- Three new tables have been added of the new Inline weir and gated spillway option
- Many new variables have been added to the standard cross section specific table, the bridge table, and the culvert table.
- A printer setup option has been added to the graphical and tabular output options.
- Two new description boxes have been added for a project description box on the main window, and a plan description box on the Steady Flow Analysis window.
- The ability to enter the road embankment side slopes on the Deck/Roadway editor has been added to show the sloping embankments in the profile plot.

**HEC-RAS Version 2.0 (#HECRAS) by Hydrologic Engineering Center is available at LOS 2 for \$125.**

### PASSER IV-96

PASSER IV-96 a program for timing traffic signals in networks based on progression bandwidth optimization. Version 2.1, like the previous versions of PASSER IV, is still a DOS-based program. However, the optimization module in this version is compiled to run in extended memory. This change, in addition to a complete re-structuring of data structures, has doubled the computational efficiency of the program. Further, all known bugs, many of them reported by the user community, have been fixed.

The following is a list of new features:

1. A batch processing mode has been added to allow optimization of several data sets with one command.
2. Optimal timing information in the arterial sections has been removed and the signal-by-signal output section has been expanded. The expanded section provides several additional pieces of information and several measures-of-effectiveness. These include: phase-reversal information, stops, queue lengths, fuel consumption and vehicular emissions.
3. The user can choose different measurement units for input data and program output.
4. The user can specify a master signal for referencing the offsets. In addition, either the beginning or ending of phases can be specified as reference points.
5. A summary page has been added at the end of each output report. This page provides a solution summary for each arterial followed by network wide summary.
6. The program capacity has been increased from 35 intersections to 50 intersections.
7. Now, the program can be installed on a local area network.

**PASSER IV-96 (#P496) by Texas Transportation Institute is available at LOS 1 for \$250.**

**The update was sent out automatically to all registered users.**

### Traffic Software Integrated System (TSIS) Available

The Traffic Software Integrated System (TSIS) package has been received from the Federal Highway Administration (FHWA) and is ready for distribution.

Complete printed documentation is available for the TSIS package, as well as comprehensive online help. **McTrans** has technical assistants to answer any questions or problems concerning this new package. Additionally, we have contracted with the developer for the highest level of technical support.

Upgrade and new purchase pricing for the software and documentation is shown below:

Currently Registered User of:	Program	Document
Complete new TSIS package	\$500	\$20
TRAF-NETSIM and FRESIM	\$150	\$20
TRAF-NETSIM only	\$200	\$20
FRESIM only	\$250	\$20
ITRAF with Documentation	\$20	included

### Transit Route Planning CAI Course

The Transit Route Planning CAI Course is a fast introduction to transit route planning. The course is intended for inexperienced transit planners, students of urban planning or transportation planning, and transit system managers. The course consists of three modules, each module taking about 2 hours to complete.

The modules are:

**Transit Route Relationships**  
**Principles of Route Location**  
**Ridership Forecasting: The Basics**

The course mainly consists of a series of multiple choice questions. The software asks the questions, evaluates the responses, keeps score, provides encouragement, and sometimes explains the correct answers. The course can be completed by someone working alone or by groups of people in a classroom environment. The course was originally developed in 1985 by UMTA (now FTA), and it has been recently revised for Windows.

**Transit Route Planning CAI Course (#CAI) by Alan Horowitz is available at LOS 5 for \$15.**

ITRAF is a companion program that serves as a graphical input processor for CORSIM, one of the TSIS component programs. ITRAF is considered a "prototype" and will be distributed separately as an unsupported package for \$20, including complete documentation.

**Please note that TSIS with its component programs, CORSIM and TRAFVU, require Windows95 or WindowsNT with a minimum of 8 MB on a 486 (33MHz) computer, but 16 MB on a Pentium class computer is suggested. ITRAF is also a Windows95 application.**

See the article in the March newsletter for details on this new package. Check the Product List in this issue for upgrade product numbers.

**Traffic Software Integrated System (#TSIS.W95) by FHWA is available at LOS 1 for \$500.**

# 3<sup>rd</sup> International Symposium on Intersections Without Traffic Signals

Portland, Oregon  
Red Lion Hotel  
at Lloyd Center

Setting a new research agenda

## July 21-23

**Purpose:** To bring together researchers and practitioners with an interest in unsignalized intersections.

**Country Reports:** Australia, Brazil, Canada, Finland, France, Germany, Japan, Netherlands, Poland, South Africa, Sweden, Switzerland, USA

**Research Results:** Access Management, Capacity & Delay, Computations, Roundabouts, Simulation Models, Accident Analysis & Safety, Design & Control Decisions

**Sponsored by**

Transportation Research Board  
Federal Highway Administration

University of Idaho's National Center for Advanced Transportation Technology

University of Washington's TransNow

The symposium is being offered in advance of Fall release of the new version of Chapter 10 of the Highway Capacity Manual.

The Transportation Research Board's Highway Capacity and Quality of Service Committee will meet following the symposium, July 23-26.

Visit our home page for registration information and further details:

<http://www.uidaho.edu/ncatt/>  
or call toll free 1-888-884-3246.  
Early registration fee: \$285.  
After June 20: \$315.

# McTrans™

Center for Microcomputers in Transportation

presents

## Highway Capacity Analysis Seminar

in Boston, Massachusetts

at the State Transportation Building,  
10 Park Plaza, July 31-August 1, 1997.

It will include information on the 1997 Update to the Highway Capacity Manual with demonstrations of the Highway Capacity Software. Sponsored by the Technology Transfer Center, University of Florida.

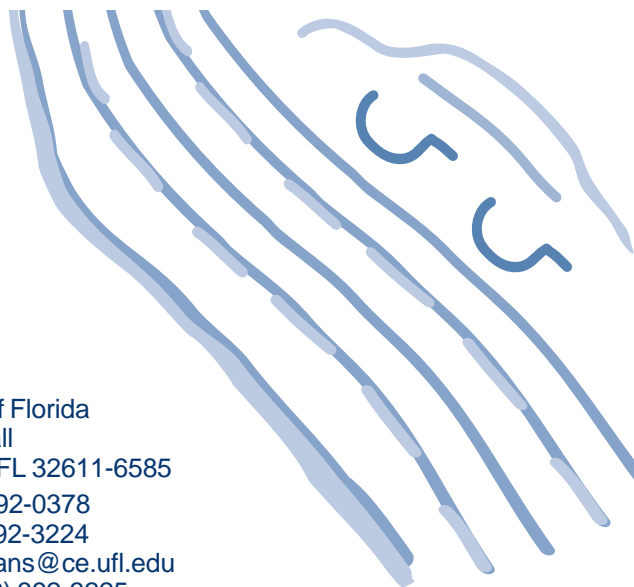
**Including** Chapter 3 Basic Freeway Segments  
Chapter 5 Ramps & Ramp Junctions  
Chapter 7 Multilane Highways  
Chapter 9 Signalized Intersections  
Chapter 10 Unsignalized Intersections  
Chapter 11 Urban & Suburban Arterials.  
A demonstration of the look-and-feel of Release 3 of the HCS Windows version is planned.

## Registration by July 28: \$195

### Contact McTrans

University of Florida  
512 Weil Hall  
Gainesville FL 32611-6585  
Call (352) 392-0378  
Fax (352) 392-3224  
E-mail [mctrans@ce.ufl.edu](mailto:mctrans@ce.ufl.edu)  
McLink (352) 392-3225

<http://www-mctrans.ce.ufl.edu/info-cen/hcs/hcaw.htm>





# 4TH WORLD CONGRESS ON INTELLIGENT TRANSPORT SYSTEMS

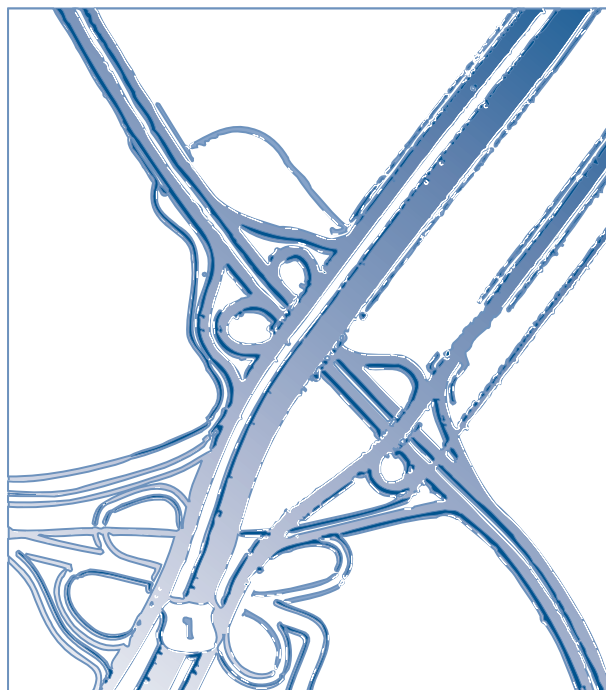
21-24 October 1997  
ICC Berlin, Germany

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## INTERNATIONAL EXHIBITION

This extensive trade fair will run concurrently with the Congress in the Messe Berlin halls n°, directly connected to the Congress premises. Congress attendees will have unlimited free access to the exhibition. All aspects of intelligent transportation will be on view. Leading international ITS companies will exhibit their latest products and services.



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E-mail: vertis@po.ijnet.or.jp

## Chinese Delegation

**Visits McTrans** The TRC hosted a highway delegation from China on May 1, 1997. The delegation was primarily interested in learning more about **McTrans'** software development and technology transfer and TRC's research on highway capacity. Front row, left to right: **Ken Courage**, TRC faculty member; **Charles Wallace**, TRC director; Delegate **Huichen Xing**; **Albert Gan**, TRC faculty. Back row: **Bill Sampson**, TRC assistant director; **Ronggui Zhou**; **Songchang Huang**, Highway Research Institute; **Yudao Wu**, Highway Planning and Design Institute; TRC student **Caijun Luo**; and **Wei Deng** of South-East University.



# SIDRA5 Workshop

**Boston, Massachusetts, USA**  
**Thursday - Friday, 7-8 August**  
**1997 (Immediately after the ITE**  
**67th Annual Meeting)**

ARRB Transport Research, in association with CTPS (Central Transportation Planning Staff), Boston Metropolitan Organization, will conduct a two-day SIDRA 5 training workshop in Boston during 7-8 August 1997. The workshop level is beginner to intermediate.

### Workshop objectives

- to increase the general knowledge of the SIDRA package and provide hands-on experience.
- to discuss SIDRA extensions compared with the HCM-HCS method;
- to increase knowledge of intersection design;
- to achieve a good understanding of the capacity, level of service, and timing analysis methods used in SIDRA.
- to explain important aspects of the Windows-based package to help with its use;
- to discuss new features of SIDRA 5 traffic models, particularly the new actuated signal analysis method and progression factors for queue-related performance statistics. General familiarity with traffic engineering methods, basic knowledge of intersection capacity concepts and Windows skills are assumed.

**Presenter: Dr. Rahmi Akelik, Chief Research Scientist, ARRB Transport Research**

**Early registration deadline 27 June: US\$420**  
**Late registration (After 27 June): US\$490**

**Venue: Massachusetts State Transportation Building Conference Rooms 1-3**  
**10 Park Plaza, Boston, MA 02116, USA**

**Contact: Ms Efi Pagitsas, Manager, Traffic Analysis and Design, Central Transportation Planning Staff, Room 2150, 10 Park Plaza Boston, MA, 02116, USA.**

**Fax: (617) 973-8855**

**Phone: (617) 973-7106**

**Email: 102264.1157@compuserve.com**

**Detailed information about SIDRA can be found on the web page**  
**[www.arrb.org.au/sidra.htm](http://www.arrb.org.au/sidra.htm)**

# McTrans

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