BSI — Bridge Software Institute

Bridge Software from the University of Florida now available

FB-MultiPier: A nonlinear finite element analysis program capable of analyzing multiple bridge pier structures interconnected by bridge spans.

FB-Deep: Used to estimate the static axial capacity of drilled shafts and driven piles.
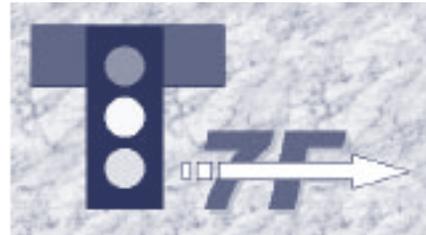
More on Page 3

HCS+™ is Available!

This major upgrade can now be ordered.

New in TRANSYT-7F

For the best CORSIM timing plan, try "Direct CORSIM Optimization" in TRANSYT-7F.

University of Florida
UF EDGE
Electronic Delivery of Graduate Engineering

Civil Masters Degree Online at the University of Florida

The Civil and Coastal Engineering Department is now offering a distance masters degree in Civil Engineering.

This new degree program provides an outstanding opportunity of off-campus students to obtain their masters degree in just two years. Practicing engineers can now earn their graduate degree at home or work. Admission and registration processing is now open for the first cohort, which will start in Fall 2005.
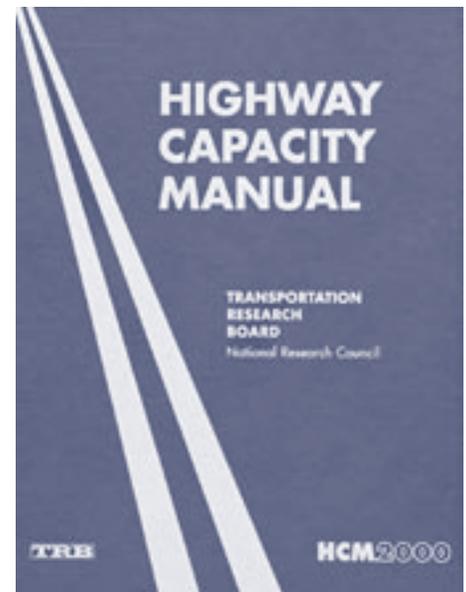
HCM 2000 Changes

by Robert S. Foyle, P.E.
North Carolina State University

The Highway Capacity Manual 2000 (HCM) is a dynamic document with oversight by TRB Committee AHB40 on Highway Capacity and Quality of Service (HCQS) that meets twice each year. During these meetings, issues arising from users implementing the methodologies prescribed in the HCM and from current research efforts sometimes dictate adjustments to those procedures. Since its publication in December 2000, the following computational changes have been approved by the HCQS committee:

HIGHWAY CAPACITY MANUAL

TRANSPORTATION RESEARCH BOARD
National Research Council

TRB — HCM2000

Civil Masters Degree Online at the University of Florida
(continued from Page 1)

These are the same courses taught by CCE faculty on campus. CCE graduate courses will be held in the college's EDGE distance education studios where the lectures will be recorded. Distance students will receive the same educational experience as on-campus students. Course presentations are delivered either via streaming video or DVD directly to the student. Distance students will participate in all traditional class activities such as homework, team projects and exams.

The new masters degree has been structured with a general civil engineering theme. Courses have been selected from civil engineering practice areas to provide a broad inter-disciplinary graduate education. Five courses for a total of 15 credit hours will be offered each year. The planned course offerings are:

• Construction Planning and Scheduling
• Traffic Engineering
• Ground Modification Design
• Public Works Planning
• Engineering Project Management
• Advanced Geotechnical Aspects of Landfill Design
• Construction Engineering I
• Construction Engineering II
• Traffic Flow Theory
• Design of Temporary Structures

For additional information on the CCE Distance Masters Degree contact:
Dr. Ralph Ellis
352/392-9537 x1485
relli@ce.ufl.edu

http://oeep.eng.ufl.edu

NEW Products

FB-MultiPier

The FB-MultiPier analysis program is a nonlinear finite element analysis program capable of analyzing multiple bridge pier structures interconnected by bridge spans. The full structure can be subject to a full array AASHTO load types in a static analysis or time varying load functions in a dynamic analysis. Each pier structure is composed of pier columns and cap supported on a pile cap and piles/shafts with nonlinear soil. This analysis program couples nonlinear structural finite element analysis with nonlinear static soil models for axial, lateral and torsional soil behavior to provide a robust system of analysis for coupled bridge pier structures and foundation systems. FB-MultiPier performs the generation of the finite element model internally given the geometric definition of the structure and foundation system as input graphically by the designer. This allows the engineer to work directly with the design parameters and lessens the bookkeeping necessary to create and interpret a model.

These programs are distributed as annual licenses that must be renewed each year at these same prices for support:

Full Bridge w/ Dynamics - $5000
Three Piers w/ Dynamics - $3000
Single Pier w/ Dynamics - $2000
Single Pier w/o Dynamics - $1200

Mulitple-copy discounts are available.

FB-Deep
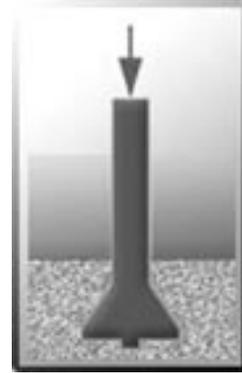
The FB-Deep computer program is a Windows-based program used to estimate the static axial capacity of drilled shafts and driven piles. The methodology is based upon Federal Highway Administration (FHWA) reports. FB-Deep guides the user through pile and shaft materials data, shape and dimensional inputs, soil properties, and boring log info. FB-Deep then computes drilled shaft or driven pile capacity in clays, sands, and intermediate geomaterials, provides settlement analyses, and load transfers. FB-Deep presents the data analysis in both clear graphical and text form. Among its advantages over competitors' software is FB-Deep's emphasis on user efficiency. The first screen the user sees is also the most important, serving as the program's control center, so the user doesn't waste time finding their way through the program.

This program is distributed as an annual license that must be renewed each year at these same prices for support at $400. Mulitple-copy discounts are available.

HCM 2000 Changes

Signalized Intersections
- Delay and queuing progression factor formula constraints revised (May 2001)
- Back of Queue calculation revisions (January 2002)
- Quick Estimation Procedure equation modifications (January 2003)

Unsignalized Intersections
- TWSC flared right turn methodology corrected (June 2002)
- TWSC upstream signal procedure modified (June 2002)
- TWSC upstream signals queue clearance limits revised (July 2003)

Two-Lane Highways
- Percent Time-Spent-Following directional equation modified (October 2004)
- Percent Time-Spent-Following directional no-passing table replaced (October 2004)

Urban Streets (Arterials)
- Travel speed equations modified (June 2002)
- Planning Application computation steps revised (June 2002)

Pedestrians
- Capacity flow through doors methodology adjusted (January 2003)

Areawide Analysis
- Link speed equations modified (June 2002)

In many instances, these computational changes in the HCM procedures can significantly affect your analysis results. For detailed descriptions of these (and many other editorial) changes, go to the HCQS Committee web site at: **http://www.ahb40.org/**

It is incumbent upon all users to know what changes are taking place within the HCM. This can de done by regularly visiting the HCQS Committee web site to view the latest errata posting. Also, users should view any readme file distributed with a software patch to understand the changes being implemented by the patch. Neither the HCQS Committee nor TRB provide direct support to any software developer to keep their software current with the HCM and approved corrections. Therefore, the user

HCS+ is Available!

Modules
Freeway Facilities: A complete overhaul of this module replaces the research-level spreadsheet with an HCS-style interface.

Warrants: This new module automates the procedures in the 2003 (MUTCD) for the eight prescribed signal warrants.

LOSPLAN: Three programs from the Florida Department of Transportation have been added for planning level analysis of Arterials, Freeways and Two-Lane Roads.

Signals
Several new features have been added to the Signals module to greatly improve the data coding and overall analysis efficiency of this most-widely used module.

Multiple-Period Analysis: This feature allows coding of multiple time periods, especially for oversaturated flow analysis.

Preset Phasing: The most likely phasing options are presented in a pull-down list based on coded lane configuration.

I-Value: The ability to import upstream signal data to get the volume-to-capacity ratios for determining the I-Value for each approach has been added.

Quick Entry: This feature has been updated to make coding lane configuration even more efficient.

Advice: A new feature in this release is the "Advice" button to monitor data coding relationships for potential errors and oversights.

Data
Collection: A program (DAITA) has been added to allow collecting intersection turning movement counts directly from within *HCS+*.

Reports: Several new formatted reports (saveable for easy forwarding or sharing) plus graphing sensitivity analyses is introduced.

CORSIM Optimization in TRANSYT-7F

Release 10.2 of TRANSYT-7F introduces direct CORSIM optimization of cycle length, splits, and offsets, using the genetic algorithm. T7F10 applies the genetic algorithm to supply timing plan candidates, and CORSIM evaluates them through its own simulation. The end result is a new copy of the original CORSIM input (*.TRF) file containing the optimized timing plan, plus TRAFVU animation for the optimized timing plan. Direct CORSIM optimization can be easily applied by anyone, because there is no learning curve. Simply launch T7F10, load any TRF file, select one of the nine available optimization objective functions, and click on "Run". This alone achieves a better CORSIM timing plan than any other program or process. Once the user gains experience in choosing genetic algorithm parameters, the optimization process becomes even more effective. Release 10.3, which features an improved Map View, is targeted for January 2006.
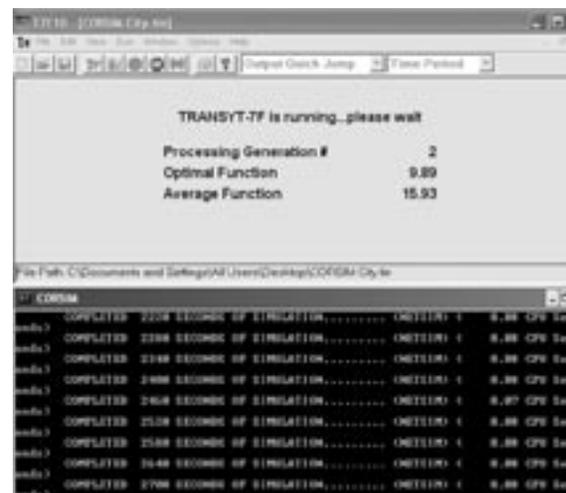
Direct CORSIM Optimization

Update

QuickZone 2.0

The development of QuickZone 2.0 has been a direct result of the needs and feedback generated by previous versions of QuickZone and the partnership program. The feedback from QuickZone users included three major requests for enhancements.

The network editor for the TSIS simulation program was adapted for use in QuickZone. The QuickZone Network Editor now provides an easy-to-use graphical user interface to easily create and modify QuickZone networks.

Version 2.0 has been enhanced to calculate capacities and directly model various types of two way one-lane operations including signal controlled (both fixed and optimized) and flagging operations.

A major focus area for QuickZone 2.0 was a detailed analysis of user cost estimation and the development of a more detailed user cost estimation module for QuickZone.

In addition to these three improvements, other features included in QuickZone 2.0 are:
  - Maryland State Highway Administration's (MDSHA) work zone capacity estimator;
  - Ability to model more complex work zone configurations;
  - Improved data entry including a re-designed work zone project information interface and the ability to copy construction phasing and work zone plans;
  - More comprehensive outputs that can be modified by the user; and
  - Packaging of the QuickZone and QZEdit (network editor) together.

Turbo Architecture 3.0

Turbo Architecture Version 3.1 is compatible with Version 5.1 of the National ITS Architecture (released in April 2005). Version 5.1 of the National ITS Architecture incorporates the following high-level changes:

Vehicle Control of Barriers/Gates: Added an Maintenance & Construction Vehicle to Roadway interface and an Emergency Vehicle to Roadway interface that directly controls gates/barriers via roadside Dedicated Short Range Communications (DSRC). Additionally, added flows between the Maintenance and Construction Management System and the Roadway to request activation/deactivation of gates so that the center has the same control capabilities as the vehicles.

Updated Equipment Packages Descriptions: The description of several Equipment Packages, called Functional Areas in Turbo, and related areas were revised.

Updated Functional Requirements: Functional Requirements were reorganized and some were modified in support of other changes to the Equipment Packages and underlying logical architecture detail.

The titles and document numbers for several of the ITS Standards that are mapped to the National ITS Architecture were modified since the release of version 5.0. These include the Location Referencing Message Specification (SAE J2266) and the standards in the DSRC 5.9 GHz Standards Group as well as the addition of a new standard to the Incident Management Standards Group - IEEE P1512.4: Standard for Common Traffic Incident Management Message Sets for Use in Entities External to Centers.

An update patch is available on the McTrans web site for all users of Turbo Architecture Version 3.0 at: **http://mctrans.ce.ufl.edu/ featured/turbo/**

Highway Safety Analysis

Highway Safety Analysis (HSA) Software is a computer program for conducting traffic accident studies on major highways or local roads. HSA Software is designed to assist engineers in analyzing accident data while performing highway safety investigations or other traffic engineering studies. HSA includes entering and editing crash data from the source documents, filtering data by multiple criteria, preparing accident data listing and summaries with proportional distribution of different accident categories, generating data charts, calculating accident rates using US customary (English) or metric units for the segment length, estimating safety benefits based on proposed safety improvements, and producing Collision Diagrams.

Collision Diagrams are generated based on accident data entered and filtered for the particular intersection or roadway segment. After the diagram is displayed, it may be edited to better reflect the existing conditions and accident locations. Accident symbols may be moved to more precise location and rotated. Also, symbols can be copied to display the same accident type with the same vehicle direction(s) of travel at different locations within one diagram. Different accident categories, such as fatal, injury, wet road, nighttime, multi-vehicle accidents, and crashes involving trucks may be highlighted. Diagrams can be prepared for the preset roadway layouts, such as a 4-legged intersection (which may be converted into an offset intersection), T-intersection, or segment, and for a custom geometry layout using an image file as a background.

Version 3.0 includes the following new features: Save Collision Diagrams, Undo/ Redo diagram editing commands, Rotate accident symbols, Reduce symbol size, Generate Data Charts (including Direction Daisy), and more. HSA Version 3.0 is offered at LOS 7 for $690 .

Did You Know? 5

HCS: In modeling congested signalized intersections, the use of a multiple-period analysis as prescribed by HCM Chapter 16, Appendix F, offers a much more detailed view of the overall operations. *HCS+* automates this procedure to allow residual queues from one period to be passed as initial queues in the next period to better estimate delays attributable to the building and dissipating of queues in oversaturated conditions.

TRANSYT-7F: The optimization node list is mentioned in the documentation, but is probably not emphasized enough. For large networks, or for direct CORSIM optimization, it is important to remove non-critical intersections (i.e., already operating at LOS A or B) from the node list for more efficient optimization.

TSIS-CORSIM: CORSIM can model pedestrians in three ways: 1. Coding pedestrian volume intensities. Higher pedestrian volumes cause vehicles to slow down more when making right-turns. 2. Pedestrian actuated signals. This is only applicable to actuated controllers, although actuated signals can be made to "act" pre-timed by invoking max recall. 3. Mean discharge headway (saturation flow rate). Mean discharge headways can be reduced to account for pedestrians as recommended by the Highway Capacity Manual procedures.

must determine if software is being maintained in a manner that reflects approved corrections to the HCM procedures.

Do you have questions about the HCM procedures? Questions that reach the committee are sent to the User Liaison Subcommittee for processing. They are treated either as a question or a clarification. Questions receive a response sent back to the user and are recorded as a response to a question. Questions where the issue requires a formal clarification of the procedures in the manual must be voted on by the HCQS Committee. These clarifications are also posted on the committee web site. Regardless of how questions are processed, the committee members enjoy hearing from users and responding to questions about and clarifications on the procedures in the HCM.

Another means for seeing how other users handle different kinds of analysis situations is through the HCM webboard. Any user can register for free on the webboard, select specific topic areas of interest, post questions, and respond to questions. The link to the webboard is found on the McTrans web site: **http://mctrans.ce.ufl.edu/**

The HCQS Committee members encourage all users to attend our mid-year and January meetings to hear the latest information and participate in discussions regarding the procedures in the HCM. Your input is vital to the quality and usability of the HCM procedures. Should you have an interest in becoming a member of the HCQS, you can start by attending a mid-year or annual meeting and becoming an active subcommittee member. Subcommittee activities cover all chapters of the HCM and meetings typically contain lively discussion about the methodologies in the HCM.

The HCM is a dynamic and changing document. User input through discussions at meetings and participation on research projects enables the HCM to set the standard for documented methodologies covering design, operational, and planning methodologies for highway, pedestrian, bicycle, and transit facilities. Your active participation in helping ensure that the HCM is current and relevant is vital to the HCQS Committee and the transportation profession.

HCS2000 was updated to include each approved HCM change through timely software patches. *HCS+* includes the latest Two-Lane modifications.

Update Watch

Package	Version	Status	Target	Distribution
HCS+™	5.1	Complete	Available	Registered Users may upgrade
TRANSYT-7F	10.2	Complete	Available	Patch download
TSIS	6.0	Testing	January	Registered Users may upgrade
IDAS	2.3	Complete	Available	Sent to Registered Users
QuickZone	2.0	Complete	Available	Sent to Registered Users
TNM	2.5	Complete	Available	Sent to Registered Users
Turbo Architecture	3.1	Complete	Available	Patch download

Calendar

NEED Training?

- **Highway Capacity Analysis (HCS+)**
- **TRANSYT-7F Release 10**
- **CORSIM (TSIS 5.1) for Beginners**
- **QuickZone**
- **Traffic Engineeing Fundamentals**
- **Site Impact Analysis**
- **Acess Management**

Contact **McTrans** to set up a training course in your area, or read about currently scheduled training courses at:
http://mctrans.ce.ufl.edu/ training/

Training

Signal Capacity Analysis Seminar	Aug 4, 2005	Kansas City, MD
McTrans 1-800- 226-1013 ext. 229	Aug 19, 2005	Ft. Lauderdale, FL
Highway Capacity Analysis Seminar	TBA	TBA
McTrans 1-800-226-1013 ext. 229		
Traffic Network Study (TRANSYT-7F) Seminar	Sep 20-21	Columbus, OH
McTrans 1-800- 226-1013 ext. 229	TBA	Washington, DC
	TBA	New Orleans, LA
CORSIM Simulation for Beginners	Sep 22-23	Columbus, OH
McTrans 1-800-226-1013 ext. 229	TBA	Washington, DC
	TBA	New Orleans, LA
"Designing Optimized Traffic Signals and Systems	Oct 24-26,2005	New Orleans, LA
Using TEAPAC, PASSER, TRANSYT and CORSIM"	Jan 11-13, 2006	Las Vegas, NV
University of Central Florida (407) 882-0260	Mar 13-15, 2006	Orlando, FL

Conferences

ITE Annual Meeting	Aug 7-10, 2005	Melbourne, AUS
ITE (202)289-0222		
TRB Annual Meeting	Jan 22-26, 2006	Washington, DC
TRB (202) 334-3472		

McTrans

Moving Technology   **http://mctrans.ce.ufl.edu/training/ for up-to-date training information**