

2010 Highway Capacity SoftwareTM

Under Development ...

Work on *HCS*TM to implement the updated procedures coming in the 2010 HCM has made great progress. *McTrans*' goal is to be ready with the *HCS* upgrade to coincide with 2010 HCM publication.

The major overhaul to a comprehensive module to implement the new procedures for signalized intersections, urban streets and interchange ramp terminals, built from an entirely new program architecture to take advantage of the latest programming techniques, is certainly the biggest challenge.

This new structure will not only make implementing these complex new procedures much more efficient, it will also provide maximum flexibility to the user with many alternatives built into the interface. Our goal is to blend the familiar screens with new options to make the transition for users easier, while adding functionality.

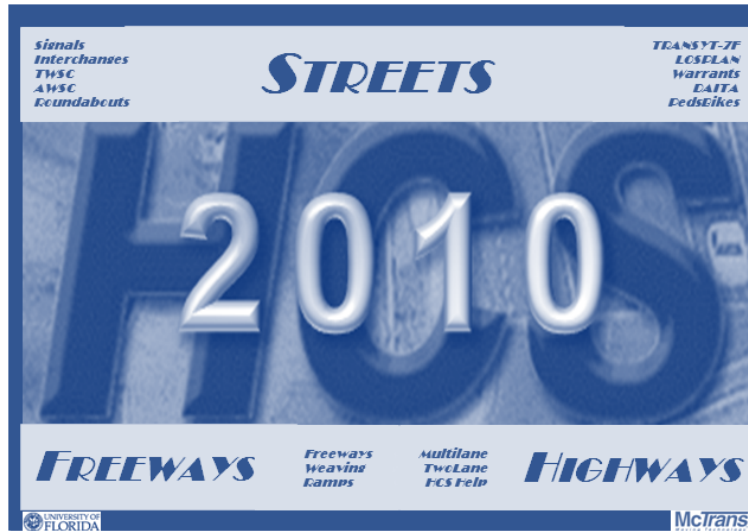
As you will see on the next two pages, there has been a lot of effort devoted to providing the best of what *HCS* has been while adding many new features to improve functionality and efficiency for the user.

A completely redesigned Urban Streets module (Streets) includes Signalized Intersections (Signals) and Interchange Ramp Terminals (Interchanges) in one integrated program to implement the common procedures prescribed in the 2010 HCM for these three applications in *HCS*.

Overhauled modules for Roundabouts and Weaving provide for the major changes in

these methodologies while retaining the traditional *HCS* look and feel.

This major upgrade will be delivered automatically to all users whose support subscriptions are current.



2010 HCM Workshop

August 12, 2010

Royal Plaza Hotel - Walt Disney World Resort

Orlando, FL

The workshop has been developed for transportation professionals interested in the latest updates and software applications to the 2010 HCM. (6.0 PDHs will be provided to attendees.)

http://trc.ce.ufl.edu/news_and_events/hcm_2010_Workshop.php

Inside ... *HCS 2010* Screens and Reports (Pages 2-3) Updates, Training & Calendar (Page 4)

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HCS 2010

Streets, Signals and Interchanges

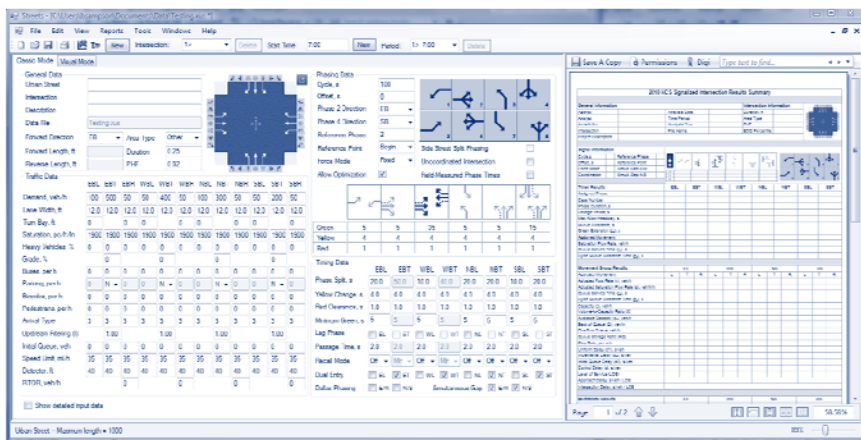
Urban Streets (HCM Chapters 16 and 17)
Signalized Intersections (HCM Chapter 18)
Interchange Ramp Terminals (HCM Chapter 22)

McTrans has focused on the major upgrade to the Streets, Signals and Interchanges modules that implement the new HCM procedures for HCM Chapters 16, 17, 18 and 22. Signals and Interchanges are subsets to Streets in this new integrated design.

There are now two options for data entry for these combined modules. The traditional split screen with dynamic reports (classic mode) and a graphical option with tabular screens (visual mode).

Classic Mode

The more familiar split screen has been organized to permit the most common data entry on one view without having to scroll, while providing for detailed data options below and the dynamic report in the lower pane.



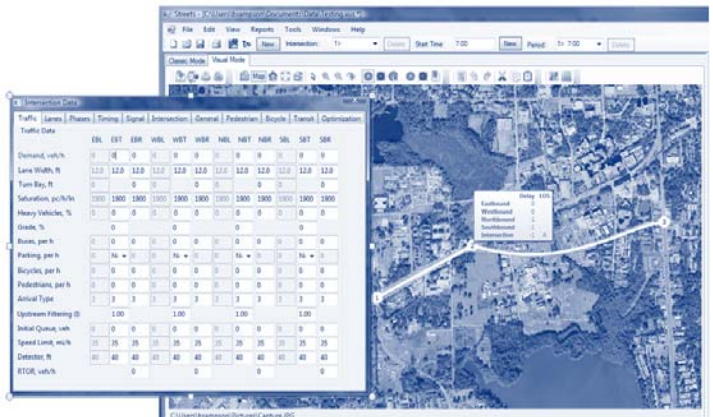
Quick Entry, Quick Lanes and Quick Phases

To expand features for more efficient and more intuitive data coding, McTrans has added a more comprehensive preliminary screen (Quick Entry) to establish a set of data values to begin an analysis. Users can even design their own set of customized initial values and settings.

A new graphical tool (Quick Phases) provides for entering NEMA Phasing data with a companion Sequential Phasing graphic to help in this transition. The lane configuration tool (Quick Lanes) has been retained as it functioned in HCS2000 and HCS+.

Visual Mode

This new screen facilitates locating intersections (both signalized and access points) for the urban street geographically. It also provides a set of tabs to access data for each intersection as it is selected from this view. Each tab presents a different section of the input data



organized into general, intersection, traffic, phasing, timing, segment, access points and other detailed data. A context menu is provided to supplement tool bar access. Delay and LOS results are displayed by approach for any selected intersection.

More New Features ...

- One-touch animation for multiple signals in a street analysis
- One-touch optimization using TRAN-SYT-7F on an arterial
- Replication of intersection data to facilitate coding multiple similar signals along an urban street facility
- Multiple-period analysis for analyzing congested conditions for signals, interchanges and streets
- SpyGlass to view details of the procedure not documented directly in the HCM, only in engine code
- Customizable modular templates for reusable data
- Customizable and redesigned formatted reports
- Time-space diagram to visualize signal coordination

HCS 2010

Major Overhauls

Roundabouts (HCM Chapter 21)

This *HCS* module has been upgraded to include the ability to analyze one-lane or two-lane roundabouts for results that include delay and level of service based on US conditions. Multilane entries and exits, as well as right-turn yielding or non-yielding bypass lanes, are also accommodated. The procedure can deal with U-turns and estimates lane utilization within a multilane roundabout.

Eastbound			Westbound			Northbound			Southbound																										
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right																								
Number of Lanes and Usage																																			
0			0			0			0																										
Shared			Shared			Shared			Shared																										
50			50			50			50																										
Percent of Entry Vehicles using Left Lane																																			
1			1			1			1																										
Conflicting Lanes on Entry																																			
1			1			1			1																										
Right-Turn Bypass																																			
None			Eastbound U-Turn			Westbound U-Turn			Northbound U-Turn			Southbound U-Turn																							
Conflicting Lane																																			
1			1			1			1			1																							
Vol (vph)			PHF			% HV			Vol (vph)			PHF			% HV			Vol (vph)			PHF			% HV			Vol (vph)			PHF			% HV		
0			1.00			3			0			1.00			3			0			1.00			3			0			1.00			3		

Significant Changes

Off-Street Pedestrian and Bicycle Facilities (HCM Chapter 23)

This brand new module within *HCS* will provide for one program to analyze pedestrians and bicycle on off-street facilities, including the results of FHWA research. The results include capacity and level of service for walkways, stairways, exclusive off-street bicycle paths and shared-use paths.

Two-Lane Highways (HCM Chapter 15)

A third class of two-lane highways is introduced for roadways that serve moderately developed areas passing through small towns or developed areas. The analysis of bicycles along the two-lane roadway is also included. The two-way analysis is eliminated in favor of a weighted average of directional results.

Basic Freeway Segments (HCM Chapter 11)

New speed-flow curves are implemented with the modified module, with no interpolation between free-flow speeds. The adjustments to base free-flow speed have also been changed to include ramp density and eliminate the adjustment for number of lanes. A permanent curve for 75 mi/h free-flow speeds has been installed.

Freeway Weaving Segments (HCM Chapter 12)

Lane-changing rates as direct measures of turbulence are now key to this analysis. Weaving and non-weaving speeds are computed for various lane configuration, including one-sided and two-sided weaving, with maximum weaving lengths determined. Capacities are produced for ideal and prevailing conditions. Level of service is based on density, except for v/c ratios over 1.0.

ROADWAY CONDITIONS		CONFIGURATION CHARACTERISTICS				
Weaving configuration	One-Sided	Segment Type	Freeway			
Number of lanes, N	4	Terrain	Level			
Weaving segment length, L _w	1500 ft	Grade	0%			
Free-way free-flow speed, FFS	65 mi/h	Length	mi			
Minimum segment speed, S _{MIN}	15 mi/h	Number of weaving lanes, N _w	2			
Free-way max capacity, C _{FF}	pc/h/ln	Interchange density, ID	0.00 1/ln			
		Minimum FF lane changes, LC _{FF}	1144 lch			
		Minimum FR lane changes, LC _{FR}	782 lch			
		Minimum RR lane changes, LC _{RR}	1926 lch			
		Minimum RL lane changes, LC _{RL}	1926 lch			
		Total lane changes, LC _{TOT}	1926 lch			
VOLUME						
Volume Components						
Non-weaving Volumes						
V _{FF}	V _{FR}	V _{RR}	V _{RL}			
1815 veh/h	1037 veh/h	632 veh/h	632 veh/h			
RESULTS						
Weaving configuration						
Weaving segment flow rate, v				9596 pc/h	Weaving intensity factor, W	0.275
Weaving segment capacity, C _w				veh/h	Weaving segment speed, S	53.1 mi/h
Weaving segment v/c ratio					Average weaving speed, S _w	54.2 mi/h
Weaving segment density, D				26.3 pc/h/ln	Average non-weaving speed, S _{non-w}	52.6 mi/h
Level of service, LOS				C	Maximum weaving length, L _{MAX}	4639 ft
Peak hour factor, PHF				0.91		
Peak 15-minute volume, V ₁₅				493 veh		
				285 veh		
				19		

More Changes

Multilane Highways (HCM Chapter 14)

The analysis of bicycles is now included, along with the elimination of free-flow speed-interpolation.

Two-Way Stop Controlled Intersections (HCM Chapter 19)

The ability to analyze intersections with a six-lane major roadway, including U-turns, is now implemented.

All-Way Stop Controlled Intersections (HCM Chapter 20)

The ability to analyze AWSC intersections with three-lane approaches is now implemented.

Freeway Facilities (HCM Chapter 10)

The update will implement the new weaving methodology and provide for a facility LOS based on density.

Freeway Merge and Diverge Segments (HCM Chapter 13)

Minor changes provide for lane balancing of flow rates and to eliminate a discontinuous density situation.

Update Watch

Package	Version	Status	Target	Distribution
HCS+	5.5	Complete	Available	HCS+T7F Patch Download
TRANSYT-7F	11.31	Complete	Available	HCS+T7F Patch Download
TSIS+T7F	6.3	In Testing	October	TSIS+T7F Patch Download
DYNASMART-P	1.3.0	Complete	Available	Sent to Registered Users
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

Calendar

Training

2010 HCM Workshop	August 12, 2010	Orlando, FL
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Conferences

ITE Annual Meeting	August 8-11, 2010	Vancouver, BC
TRB Annual Meeting	January 23-27, 2011	Washington, DC

Online Catalog	http://mctrans.ce.ufl.edu/catalog/	(Searching and ordering software)
Order Form	http://mctrans.ce.ufl.edu/orderform/	(For purchase orders and checks)
Training	http://mctrans.ce.ufl.edu/training/	(HCS+, TRANSYT-7F & CORSIM)