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Synchro 8.0 Features

- Tool Bar
 - Show LOS-V/C by Movement
 - Move Tool Bar
- Default Detector Settings

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Synchro 8.0 Features

- LOS By Movement



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Synchro 8.0 Features

- Move Tool Bar



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SimTraffic 8.0 Features

- Synchro Coded
 - Mandatory Stop on Yellow
 - Increase Cycle & Split Times
 - Link is Hidden
- SimTraffic
 - Video Recorder
 - Enable 3D File Button
 - SSAM Export

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SimTraffic 8.0 Features

- Synchro Coded
 - Mandatory Stop on Yellow (Timing Settings)
 - Increase Cycle & Split Times
 - Link is Hidden (Lane Settings)

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SimTraffic 8.0 Features


- Mandatory Stop on Yellow (Timing Settings)



Phase	Color	Start	End	Split	Split %	Priority	Control	Start	End	Split	Split %	Priority	Control
1	Green	00:00	00:15	100	100	1	Priority	00:00	00:15	100	100	1	Priority
2	Green	00:15	00:30	100	100	1	Priority	00:15	00:30	100	100	1	Priority
3	Green	00:30	00:45	100	100	1	Priority	00:30	00:45	100	100	1	Priority
4	Green	00:45	01:00	100	100	1	Priority	00:45	01:00	100	100	1	Priority
5	Green	01:00	01:15	100	100	1	Priority	01:00	01:15	100	100	1	Priority
6	Green	01:15	01:30	100	100	1	Priority	01:15	01:30	100	100	1	Priority
7	Green	01:30	01:45	100	100	1	Priority	01:30	01:45	100	100	1	Priority
8	Green	01:45	02:00	100	100	1	Priority	01:45	02:00	100	100	1	Priority
9	Green	02:00	02:15	100	100	1	Priority	02:00	02:15	100	100	1	Priority
10	Green	02:15	02:30	100	100	1	Priority	02:15	02:30	100	100	1	Priority
11	Green	02:30	02:45	100	100	1	Priority	02:30	02:45	100	100	1	Priority
12	Green	02:45	03:00	100	100	1	Priority	02:45	03:00	100	100	1	Priority
13	Green	03:00	03:15	100	100	1	Priority	03:00	03:15	100	100	1	Priority
14	Green	03:15	03:30	100	100	1	Priority	03:15	03:30	100	100	1	Priority
15	Green	03:30	03:45	100	100	1	Priority	03:30	03:45	100	100	1	Priority
16	Green	03:45	04:00	100	100	1	Priority	03:45	04:00	100	100	1	Priority
17	Green	04:00	04:15	100	100	1	Priority	04:00	04:15	100	100	1	Priority
18	Green	04:15	04:30	100	100	1	Priority	04:15	04:30	100	100	1	Priority
19	Green	04:30	04:45	100	100	1	Priority	04:30	04:45	100	100	1	Priority
20	Green	04:45	05:00	100	100	1	Priority	04:45	05:00	100	100	1	Priority
21	Green	05:00	05:15	100	100	1	Priority	05:00	05:15	100	100	1	Priority
22	Green	05:15	05:30	100	100	1	Priority	05:15	05:30	100	100	1	Priority
23	Green	05:30	05:45	100	100	1	Priority	05:30	05:45	100	100	1	Priority
24	Green	05:45	06:00	100	100	1	Priority	05:45	06:00	100	100	1	Priority
25	Green	06:00	06:15	100	100	1	Priority	06:00	06:15	100	100	1	Priority
26	Green	06:15	06:30	100	100	1	Priority	06:15	06:30	100	100	1	Priority
27	Green	06:30	06:45	100	100	1	Priority	06:30	06:45	100	100	1	Priority
28	Green	06:45	07:00	100	100	1	Priority	06:45	07:00	100	100	1	Priority
29	Green	07:00	07:15	100	100	1	Priority	07:00	07:15	100	100	1	Priority
30	Green	07:15	07:30	100	100	1	Priority	07:15	07:30	100	100	1	Priority
31	Green	07:30	07:45	100	100	1	Priority	07:30	07:45	100	100	1	Priority
32	Green	07:45	08:00	100	100	1	Priority	07:45	08:00	100	100	1	Priority
33	Green	08:00	08:15	100	100	1	Priority	08:00	08:15	100	100	1	Priority
34	Green	08:15	08:30	100	100	1	Priority	08:15	08:30	100	100	1	Priority
35	Green	08:30	08:45	100	100	1	Priority	08:30	08:45	100	100	1	Priority
36	Green	08:45	09:00	100	100	1	Priority	08:45	09:00	100	100	1	Priority
37	Green	09:00	09:15	100	100	1	Priority	09:00	09:15	100	100	1	Priority
38	Green	09:15	09:30	100	100	1	Priority	09:15	09:30	100	100	1	Priority
39	Green	09:30	09:45	100	100	1	Priority	09:30	09:45	100	100	1	Priority
40	Green	09:45	10:00	100	100	1	Priority	09:45	10:00	100	100	1	Priority

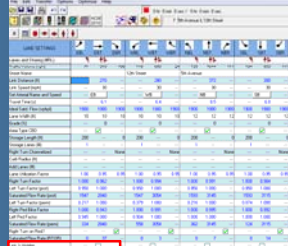
SimTraffic 8.0 Features

- Increase Cycle and Split Times



SimTraffic 8.0 Features

- Link is Hidden (Lane Settings)



SimTraffic 8.0 Features

- SimTraffic
 - Video Recorder
 - Enable 3D File Button
 - SSAM Export

SimTraffic 8.0 Features

- Video Recorder

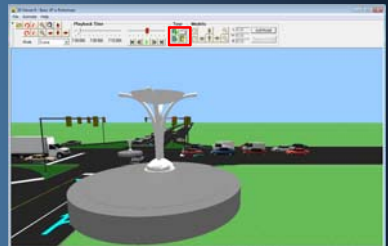


3D Viewer 8.0 Features

- 3D Viewer
 - Import Custom 3ds Objects
 - Changing Size of an Object
 - Generate Digital Videos

3D Viewer 8.0 Features

- Generate Digital Videos – Pause Feature



HCM 2010 Revisions

- HCM Chapters
 - Signalized Intersections – Chapters 18 & 31
 - Roundabouts – Chapters 21 & 33

Intersection	Type of Revision
Urban Street Facilities	New Method
Urban Street Segments	Updated
Signalized Intersections	Updated
Unsignalized Intersections	Separate TWSC & AWSC Chapters
Roundabouts	New Method
Interchange Ramp Terminals	Updated
Off-Street Ped/Bike Facilities	Minor Changes

HCM 2010 Revisions
Multi-Modalism

- Pedestrian, Bicycle and Transit incorporated into respective chapters
- Quality of service and level of service

HCM 2010 Revisions
Signalized Intersections (Dual Ring Approach (NEMA) Phasing)

HCM 2010 Revisions
Signalized Intersections (Iterative Phase Duration Procedure)

- New Methodology
- Iteratively calculates average green durations based on user provided signal timing and phasing information (min, max, recall, detection, etc.)
- Benefits actuated and coordinated phases
- Average green time not required by user

HCM 2010 Revisions
Signalized Intersections (IQA Method)

- Incremental Queue Accumulation Method for calculating d_i and Q_i
- Methodology estimates delay based on changing capacities and arrival rates during the signal cycle
- Several Queue Accumulation Polygons (QAP) are required depending on phasing and lane usage

HCM 2010 Revisions
Signalized Intersections (Comp. Engine)

The screenshot shows a software interface with multiple panels. On the left, there are input fields for 'Phase Sequence and Left Turn Lane'. In the center, there is a table with columns for 'Phase', 'Green Time', 'Yellow Time', 'Red Time', and 'Total Time'. On the right, there are sections for 'ENTER SIGNALING AND PHASING', 'SIGNALS AND PERFORMANCE', and 'ENTER SIGNALING AND PHASING'.

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HCM 2010 Revisions
Signalized Intersections (Synchro Auto Mode Window)

The screenshot shows the Synchro Auto Mode window with a table of HCM 2010 Revisions. The table includes columns for 'HCM 2010 Revisions', 'Auto Mode', 'HCM 2010 Revisions', 'Auto Mode', 'HCM 2010 Revisions', and 'Auto Mode'. The table lists various intersection types and their corresponding HCM 2010 Revisions.

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HCM 2010 Revisions
Signalized Intersections (Key Auto Mode Limitations)

- Turn bay overflow
- Demand starvation due to closely spaced intersections
- Queue spillback
- Phase overlap
- A right-turn movement that is not under signal control
- RTOR volume prediction or resulting delay
- Turn movements served by more than two exclusive lanes
- Comp Engine does not consider actuated-coord signals (Synchro estimates based on procedures within HCM)

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HCM 2010 Revisions
Signalized Intersections (MMLoS)

- New Approach
- Pedestrian and Bicycle Facilities LOS now included
- HCM 2010 includes procedures to describe the integrated multi-modal performance of an intersection or facility

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HCM 2010 Revisions
Signalized Intersections (Pedestrian Mode Synchro Window)

The screenshot shows the Synchro Pedestrian Mode window with a table of HCM 2010 Revisions. The table includes columns for 'HCM 2010 Revisions', 'Auto Mode', 'HCM 2010 Revisions', 'Auto Mode', 'HCM 2010 Revisions', and 'Auto Mode'. The table lists various intersection types and their corresponding HCM 2010 Revisions.

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HCM 2010 Revisions
Signalized Intersections (Bicycle Mode Synchro Window)


The screenshot shows the Synchro Bicycle Mode window with a table of HCM 2010 Revisions. The table includes columns for 'HCM 2010 BICYCLE MODE', 'Auto Mode', 'HCM 2010 BICYCLE MODE', 'Auto Mode', 'HCM 2010 BICYCLE MODE', and 'Auto Mode'. The table lists various intersection types and their corresponding HCM 2010 Revisions.

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HCM 2010 Revisions
Signalized Intersections (Key Pedestrian Mode Limitations)

- Grades >2%
- Presence of railroad crossings
- Unpaved sidewalk
- Free channelized right turn lanes with multiple lanes or high-speed operation

HCM 2010 Revisions
Roundabouts



- Based on empirical data within US
- Lower capacities than other countries
- Analysis of two-lane roundabouts
 - Lane-by-lane analysis for multilane roundabouts
- Capacity sensitive to number of lanes
 - Effect of geometric features shadowed by variations in driver behavior
- Encouraged to calibrate to local conditions
 - Critical and follow-up headways

HCM 2010 Revisions
Roundabouts cont.

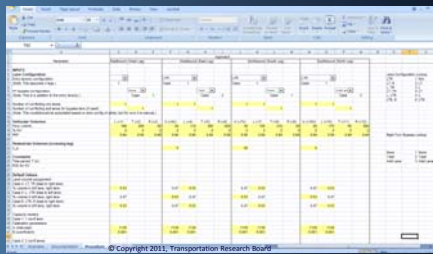
- Entry, exit and conflicting flow rates
 - Lane-by-lane assignment of flows
- Capacity function of conflicting flow
 - Right & left computed separately
- Right-turn by-pass lanes considered
 - Either yielding exits or free flowing
- Encouraged to calibrate to local conditions
 - Critical and follow-up headways

HCM 2010 Revisions
Roundabouts (LOS Thresholds)

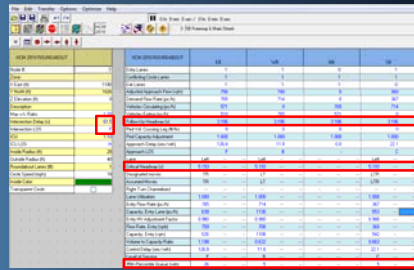
- Delay Values mimic Unsignalized Thresholds
- Note LOS if $v/c > 1.0$

Control Delay (s/veh)	Unsignalized	$v/c > 1.0$
0 - 10	A	F
> 10 - 15	B	F
> 15 - 25	C	F
> 25 - 35	D	F
> 35 - 50	E	F
> 50	F	F

HCM 2010 Revisions
Roundabouts Comp. Engine



HCM 2010 Revisions
Roundabouts (Synchro Window)



HCM 2010 Revisions
Roundabout Key Limitations

- Upstream/downstream roundabouts or signalized intersections
- Extremely high entering traffic volumes
- High volumes of pedestrians and/or bicyclists
- More than two entry lanes
- Limited or short entry designs
- Pedestrian model not based on U.S. roundabouts
- Bicycle operations not available

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Synchro Studio 8.1?

➤ What is *Trafficware* working on?

- Unsignalized Intersections
 - AWSC
 - TWSC
- Urban Streets
 - Multimodal LOS
 - Segments
 - Facilities

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Synchro 8.0 Summary

➤ Several new features within Synchro & SimTraffic

➤ HCM 2010 Methodology

- Signalized Intersections
- Roundabouts

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SynchroGreen

Real-Time Adaptive Traffic Control System



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What is SynchroGreen?

- Real-time adaptive traffic control system
- Adjusts signal timing based on current traffic
 - Normal fluctuations
 - Traffic surges
 - Accidents
 - Diversion



SynchroGreen
Real-Time Adaptive Traffic Control System

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What is SynchroGreen?

- Uses SynchroGreen MIB inside the controller
- Utilizes standard NTCIP
- Does not use old style "black box"
- Uses Synchro™ and SimTraffic™ to setup and simulate
- Optimize adaptive settings before deployment
- You are in control!

SynchroGreen
Real-Time Adaptive Traffic Control System

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Topology – Localized Control


- Uses fully actuated local controller
- Enter/Exit Adaptive mode instantly
- Local controller setup is minimal
 - Phase sequences and coordinated direction
 - Can change by time-of-day
- Compatible with existing hardware and ATMS

SynchroGreen
Real-Time Adaptive Traffic Control System

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Strategy




- SynchroGreen Balanced Mode
 - Minimizes network delay
- SynchroGreen Progression Mode
 - Favors progression along the corridor
- SynchroGreen Critical Movement Mode
 - Focuses on critical movements, while minimizing delay



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Benefits


- No additional proprietary hardware
- Resides inside your traffic controller
- NTCIP Compliant
- Uses existing infrastructure
 - Controllers
 - Detection
- Flexible management system
 - Central system
 - Closed loop
- Web interface

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Case Study


- SR 436 in Seminole County, Florida
- Previously actuated-coordinated system
- 12 Signalized Intersections
- 1.7 miles
- 59,600 ADT
- Heavy Pedestrian Activity (>1,100 peds/day)
- Preemption requests (>150 requests/day)
- Challenging corridor to test SynchroGreen




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SR 436 Results

Travel Time

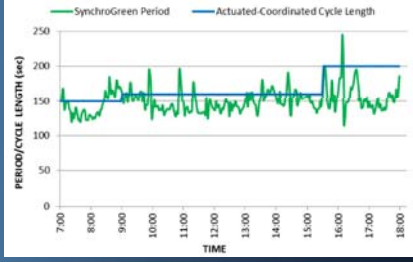



	Percent Reduction		
	AM Peak	MD Peak	PM Peak
Enbound	5%	22%	16%
Westbound	6%	25%	7%



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SR 436 Results


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SR 436 Results

Fuel Consumption



	Percent Reduction		
	AM Peak	MD Peak	PM Peak
Enbound	6%	21%	15%
Westbound	6%	20%	6%




SR 436 Results

Emissions

Percent Reduction			
HC Emissions			
	AM Peak	MD Peak	PM Peak
Eastbound	-11%	-29%	-11%
Westbound	-5%	-25%	-8%
CO Emissions			
	AM Peak	MD Peak	PM Peak
Eastbound	-9%	-28%	-11%
Westbound	-6%	-23%	-10%
NOx Emissions			
	AM Peak	MD Peak	PM Peak
Eastbound	-10%	-25%	-6%
Westbound	-4%	-25%	-4%

Summary

- Traffic conditions less than favorable
- Unpredictable traffic conditions
- SynchroGreen showed improved operations
- SynchroGreen is being expanded in Seminole County




Website

www.synchrogreen.com



Getting Started

- Visit our website
- Send us your Synchro file
- Work with a Trafficware Engineer
- Simulate using Synchro/SimTraffic and SynchroGreen

Send us your Synchro file and we will take care of the rest. SynchroGreen can do it all.

Marshall Cheek, PE, PTOE
Traffic Engineer
Trafficware, Ltd.

Trafficware UNIVERSITY

The intersection of knowledge, ideas & implementation




Mission Statement


Trafficware University has been developed to offer engineers, planners and technicians an array of valuable instruction on many topics within the transportation field. TU's mission is to provide traffic engineers the most current information to increase traffic system performance and professional productivity. The newly formed courses provide an expanded curriculum for gaining knowledge within the field of traffic engineering.

Instructors

Every Trafficware University instructor is a seasoned engineer or planner within the transportation field. Most bring over two decades of experience in their chosen area of study to the course they teach.

Professional Development Hours

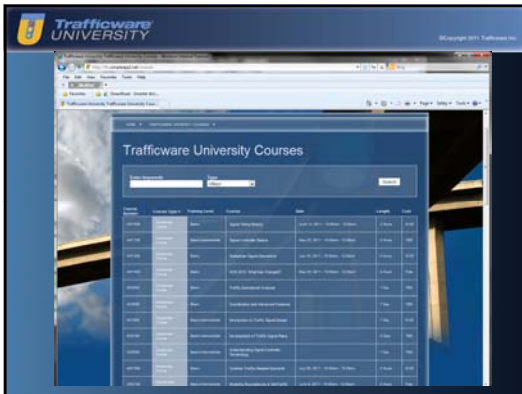
Certificate awarded based on passing quiz



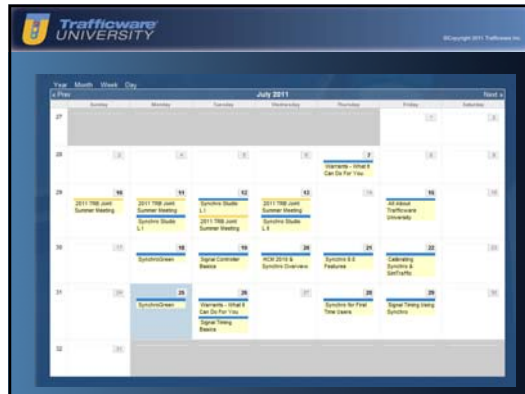
The image shows a 'Training Certificate' awarded to Bill Jack. The certificate text reads: 'By successful completion of a training course on Structure and Site Traffic at Philadelphia, Pennsylvania May 11, 12 & 13 - 2011 (3 PDHs)'. It is signed by Steve Henson, PE, PSE, Director.



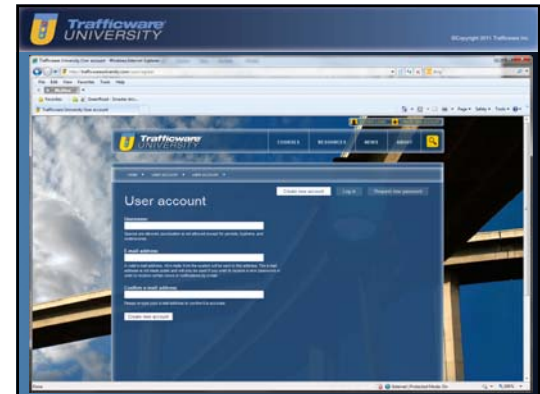
The image shows the main homepage of the Trafficware University website. It features a navigation menu at the top with 'HOME', 'ABOUT', and 'CONTACT'. The main content area includes a search bar and four featured sections: 'Announcements', 'Course Search', 'Calendar', and 'Knowledge Base'. The background image shows a traffic light at night.



The image shows a screenshot of the 'Trafficware University Courses' page. It features a search bar at the top and a table listing various courses. The table has columns for 'Course ID', 'Course Title', 'Instructor', 'Start Date', 'End Date', 'Length', and 'Cost'. Several courses are listed, including 'Signal Timing' and 'Signal Timing Using Simulation'.

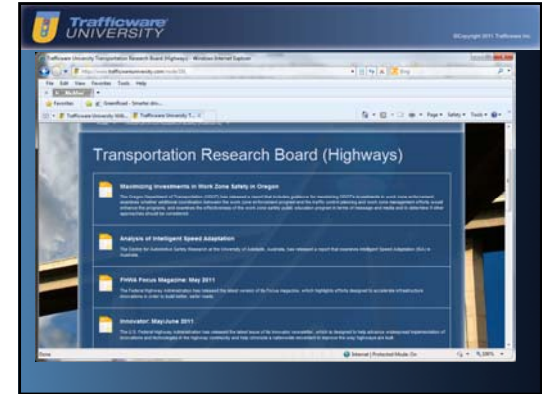
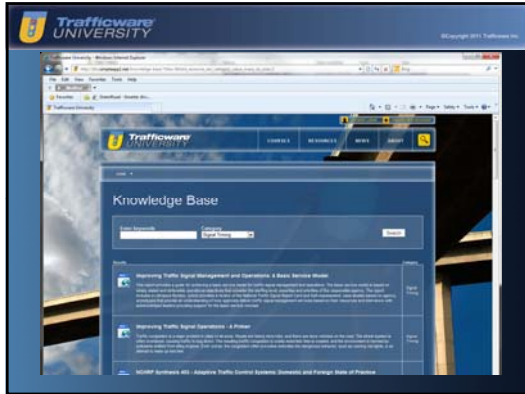


The image shows a screenshot of the 'Trafficware University Calendar' for July 2011. The calendar displays various events and courses scheduled throughout the month, with dates ranging from 27 to 31. Events include 'Signal Timing Using Simulation' and 'Signal Timing Using Simulation'.




The image shows a screenshot of the 'Trafficware University User Account' page. It includes a search bar at the top and a form for user registration or login. The form has fields for 'Email Address', 'Password', and 'Confirm Password'. There are also checkboxes for 'I agree to the Terms and Conditions' and 'I agree to the Privacy Policy'.





We Want Your Input

- Submit resources
- Suggest new date & time for a course
- Suggest course topics
- Course evaluations



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Thank You

- Submit resources
- Suggest new date & time for a course
- Suggest course topics
- Course evaluations

