Strong Concepts

InfoQueue

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SIGNAL*2000* Version 2 – A Major Upgrade

With this issue of *InfoQueue* Strong Concepts announces the first major upgrade of the **SIGNAL2000** program since its original release concurrent with the **2000 *Highway Capacity Manual***. This issue of *InfoQueue* focuses on the major enhancements included in Version 2, as well as recent related enhancements in other TEAPAC programs.

The major changes to SIGNAL2000 fall into one of the following major categories:

- Handle up to **500 intersections** in one file and with a single click,
- **Seamless integration** of SIGNAL2000 data with PRENETSIM, PRETRANSYT and PREPASSR,
- Accurate treatment of **NEMA-style, dual-ring** controllers,
- Major **enhancement to optimization** method for signal timing and phasing , and
- **Graphical view** of network with optional bitmap aerial or map background.

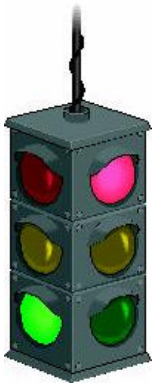
Licensees of SIGNAL2000 Version 1 have an easy upgrade path which allows licensing of a typical 12-intersection Version 2 upgrade for a fee of only $295. 100- and 500-intersection versions are also available as upgrades. New licenses for the 12- 100- and 500-intersection sizes cost $595, $695 and $795, respectively. As always, all TEAPAC licenses are automatically **site licenses for all computers** at the licensed address.

For a free demo of Version 2, visit our web page at www.StrongConcepts.com. The web page also provides details about all of these changes, as well as how current users will utilize the new features. The following articles provide some immediate insight into the vast number of enhancements this new version brings to its users.

Do a 500-Intersection Analysis with SIGNAL*2000* Version 2 – With a Single Click!

Gone are the days where you have to open 35 files to do 35 HCM capacity analyses, or where you have to manage 168 different data files in order to optimize the timing and phasing for each condition under study! SIGNAL2000 Ver 2 has the ability to manage the data for up to 500 intersections in a single file, and to execute capacity **analyses** and **optimizations** for **all intersections** with the press of a **single button!**

If you are working with a single intersection, trying different geometric designs with repeated optimizations for an impact analysis or an intersection design, you can keep your focus on that single intersection, as before. But projects frequently call for a re-analysis or re-optimization under new assumptions where managing all intersections and/or all scenarios individually becomes a huge time-consuming burden. Now when you need to do them all, SIGNAL2000 Ver 2 can easily produce a **true-HCM capacity analysis including worksheets**, or full timing/phasing optimization with a single click of your mouse.



Of course, Version 2 is compatible with old data files, and it's easy to combine multiple data files from Version 1, SIGNAL97, or even SIGNAL94 into a single file for Version 2. And all this comes with the reliability and true-blue capacity analysis techniques TEAPAC users have grown accustomed to expect from SIGNAL2000.

If you haven't tried SIGNAL2000 yet, now's the time. Give your fingers and budget a break -- get Version 2 today – <u>you can hardly afford not to</u>!

SIGNAL*2000* V2 Offers Seamless Integration to PRENETSIM, PRETRANSYT & PREPASSR

One of the advantages the new multi-intersection analysis option brings to SIGNAL2000 is the ability to **seamlessly integrate** its data with the PRENETSIM, PRETRANSYT and PREPASSR elements of the TEAPAC software package.

PRENETSIM manages the interface between the easy-to-understand TEAPAC data inputs and the complex inputs required by **CORSIM** from the Federal Highway Administration (FHWA) for **simulation and animation** of street networks. PRETRANSYT performs the same function for the TRANSYT-7F program which simulates traffic on a signalized network, while also providing a **time-proven method for optimizing the coordinated signal timings**. PREPASSR provides a similar function for the always-popular PASSER-II program, including the latest **PASSER II-02 Windows** version of PASSER-II. These programs easily share their data files and results with each other, including the optimized parameters, so for example, PASSER's optimized offsets can become TRANSYT's starting offsets, and the timing plans generated from either can be easily simulated and animated with CORSIM.

These programs have always been able to read the data files of SIGNAL2000 (and SIGNAL97, SIGNAL94 and SIGNAL85), but now the SIGNAL2000 user is only **one click away** from a CORSIM animation or a TRANSYT or PASSER optimization for a **complete system**.

Advanced Modeling Features Added to PRENETSIM and PRETRANSYT

Earlier this year major enhancements were made to PRENETSIM and PRETRANSYT to offer new options for advanced modeling of aspects of signalized networks not previously supported by the TEAPAC preprocessors. These new options include:

- sign-controlled movements
- startup lost time and end gain time by movement
- storage capacities by movement
- alternative upstream-downstream assignment methods (TRANSYT)
- dual-optional turn lane usage
- link curvature (CORSIM)
- free flow lanes
- specific definition of number of lanes
- right-turn-on-red
- heavy vehicle percentages

All of these changes are also supported in the new SIGNAL2000, and are available themselves as updates to current license-holders of PRENETSIM, PRETRANSYT and PREPASSR. The Updates page of our web site includes detailed discussions of all of these changes.

SIGNAL*2000* Version 2 Offers Method to Handle NEMA-style, Dual-ring Controllers

A troubling problem for some users of the *Highway Capacity Manual* (HCM) has been an apparent difficulty in representing timings for NEMA-style controllers, especially when there are small differences between the times allocated to left turn phases. Indeed, as **Chairman of the Signals Subcommittee** for the Transportation Research Board committee which publishes the HCM, Dennis Strong, the author of the SIGNAL software since its first version in 1974, fully understands this apparent problem. In Version 2 of SIGNAL2000, Dennis has solved this problem directly with a surprisingly simple solution – the ability to represent **negative phase times**! Although it sounds irrational on the surface, it's not that big of a stretch, as illustrated by the Convert button now available in the dialog when entering or viewing phase timings.

The user can quickly switch his/her view of the phase timings either from the perspective of the HCM (timings by phase) or of a NEMA-style controller (timings by movement). With this feature, timings with negative overlap 'phase' times can be seen easily in the 'by movement' view to see that they are perfectly valid timings for a NEMA-style controller, by virtue of the **new dual-ring diagram** which is displayed. As noted below, the optimizer in SIGNAL2000 is now also able to take advantage of this new way of representing timings to squeeze the most capacity out of a signalized intersection via timing and phasing optimization.

This produces the only available true-HCM optimization of dual-ring controllers.

SIGNAL*2000* Version 2 Offers Major Enhancement to Optimization Features

The fundamental optimization strategy used in SIGNAL2000 derives back to the first version of SIGNAL which optimized delay -- SIGNAL85 (based on the 1985 *Highway Capacity Manual*). Although the method has adapted to changes in the HCM over the years, the basic optimization technique has stood the test of time for the 17 years since that initial release. Experience shows **the optimization works**, and it provides users of the program with signal timings that clearly optimize the resulting capacity analysis, and that have been implemented in the field with great success. See the Testimonials section of our web page at www.StrongConcepts.com to hear from many of **TEAPAC's satisfied users**.

Now, with this release, a major enhancement to this time-proven optimization strategy has been implemented in Version 2 of SIGNAL2000. Of course, the fundamental optimization method hasn't changed, but the user control over the method has been vastly enhanced. For example, users could previously specify the level of service (LOS) to be targeted for the critical movements of each phase, **a hallmark feature of the SIGNAL software for nearly 30 years**. Now that feature has been expanded to allow the user to enter the specific amount of delay targeted for the critical movements as an alternate to the level of service. This allows two significant improvements over the previous method:

- A specific value of delay between two LOS boundaries can be targeted, rather than just the actual LOS boundaries, and
- Delay values greater than the arbitrary limit of 80 seconds for LOS E can be targeted.

This offers significant superior control over the delay targets, a frequent requirement for specific situations and design policies. Further, the increment of delay can now be specified, and will be used during the optimization process when the target delay cannot be met, permitting much more precise balancing of the critical movement delays when the target delay cannot be met.

In addition, the user may specify a limiting value of delay which, when exceeded in the design, will switch the optimization strategy over to a v/c optimization, with **targeted v/c limits** and increments specified by the user (similar to the delay targets). When desired, the user can also force this v/c optimization to be used without regard to the delay of the critical movements.

The optimization method is now permitted to create timings with **'negative' overlap phase times for NEMA-style, dual-ring controllers**, as discussed earlier in this newsletter. Also, the allocation algorithm to prioritize specified movements has been improved, including the special condition when right turns are critical.

Lastly, a new table of optimization results can be produced which shows the critical delay and/or v/c achieved for each combination of cycle length and phasing which was optimized, and the selection of the optimum cycle from these results more precisely identifies the best cycle. The **minimum cycle length** is also determined and displayed, and will never be violated.

All in all, these represent **huge enhancements** to the optimization strategy of SIGNAL2000, all of which lead to better, more precise optimizations which can be seen in the optimized capacity analyses which result.

New MUTCD*2000* Features in WARRANTS

Strong Concepts' WARRANTS2000 and TURNS programs have been updated to include a **Multiway Stop Warrant Analysis**. In addition, an option has been added for user-selection of the so-called **56% rule** for the Combination of Warrants used in a 2000 Signal Warrant

Electronic Notification Service

People who have enrolled in our Electronic Notification Service may have received much of the information contained in this newsletter via email at an earlier date. If you wish to get timely notice of developments at Strong Concepts via email as they happen, go to the Join Our Mailing List section of our web page at www.StrongConcepts.com and provide the necessary information.

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Analysis. Our new MUTCD watch page at our web site documents the current status of the 56% rule and the evolution it is going through, including links to the related **FHWA** web sites. WARRANTS2000 and TURNS continue to perform signal warrant analyses according to both the **1988 and 2000 MUTCD methods**.

Free demos are downloadable at our demo web site, and these updates are free at our update download page for up-to-date licensees. Licensees who have not updated recently will get the Version 5 interface update free with a paid update to the versions described here. Prices for the updates start at $69 each, depending on the version of an existing license.

Courses Feature SIGNAL*2000* Version 2

Our highly acclaimed course **"Designing Optimized Traffic Signals and Systems Using TEAPAC, PASSER, TRANSYT and CORSIM"** is a popular course which has a focus on specific solutions to signal timing and simulation problems from isolated intersections and arterials to diamond interchanges and grid systems. Hands-on work problems using each of the programs provide the user with real experience applying these solutions with the only software system that integrates all of these programs into a single system of software. The TEAPAC programs used include SIGNAL2000, NOSTOP, PREPASSR, PRETRANSYT and PRENETSIM, in addition to PASSER-II, TRANSYT-7F and TRAF-NETSIM/CORSIM. The new Version 2 of SIGNAL2000 is used in the course, as well as the recent new releases of PASSER II-02, TRANSYT-7F Release 9 and TSIS/CORSIM Version 5.

The next offerings of this very popular course will be at the following locations:

Boulder, Colorado	December 11-13
University of Wisconsin	(800) 462-0876
Orlando, Florida	March 17-19
University of Central Florida	(407) 207-4933
Evanston, Illinois	April 22-25
Northwestern Traffic Institute	(800) 323-4011

Call Strong Concepts at (847) 564-0386 for more course information, or check our web page for course outlines and on-line registration, as well as future offerings. These classes tend to fill up quickly, so call now to reserve your space. Dennis Strong, author of TEAPAC, is the primary instructor for all of these courses. Learn how to use the latest TEAPAC programs effectively and efficiently, and keep up on your continuing education requirements at the same time.

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