

## Automatic stage sequences in MOVA

Recent developments sponsored by the Traffic Management Division of DfT have introduced a measure of automatic stage sequence selection within MOVA.

The "automatic" bit refers to the ability of MOVA to vary the sequence used cycle by cycle based on the traffic conditions at the time. The first automatic sequence facility was for selecting the sequence in the situation where there are fully signalled right turns in both directions on a road. Figure 1 shows the 4 possible stages, and MOVA chooses the best two or three stage sequence each cycle. Note the choice of stage order, with the double right turn as stage 1 and the ahead movements in both directions as stage 4. This order is deliberately chosen, as MOVA tries to move through the required stages as quickly as is sensible. This order ensures that any "spare" time is concentrated in stage 4 servicing the ahead movements, which are invariably the biggest flow movements. Trials have shown this system to be very effective and capable of adding extra capacity at peak times and of reducing delay and queuing. This facility is available in the current issue of MOVA (MOVA Version 4).

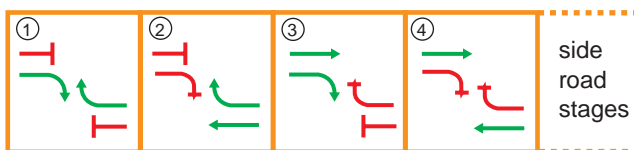


Figure 1: Automatic right turn sequence - the four possible stages

Recently TRL have developed a second automatic stage sequence facility, which gives MOVA the ability to decide when it is advantageous to double green a defined stage in the signal cycle. The MOVA system has always had the ability to run double greens within a single cycle of the signals. But this was a fixed facility that would always run two greens per cycle for the chosen stage, assuming there were demands present. A typical situation is where a major arterial road crosses a comparatively minor road and the major road has flared approaches or other reasons why it cannot sustain full saturation flow throughout a long green. The side roads are run separately to cater for high right turn movements onto the arterial. It is now possible to specify within MOVA a sequence which repeats the main road stage after each of the side road stages (Fig 2 shows the sequence at Hindhead, where 2 stages are repeated). MOVA then decides each cycle whether the traffic conditions favour running a basic cycle with only one main road green, or running the repeated green.

This system, which will be available in the next release of MOVA (MOVA 5), has been tested at Hindhead on the A3, where the system successfully reduced delays and improved capacity compared to a standard MOVA system. The trial was not fully successful



The MOVA junction on the A3 at Hindhead

though, in that the advantages of the repeated green system were so great that control switched from single green operation to repeated green operation early in the morning and did not change back to single greening until well after the evening peak had ended. It was thus difficult to gain much information about the accuracy of the switch-over process, although the value of the repeated green operation was clearly proven.

A second trial site, sponsored by DfT, on the Farnham bypass has been equipped and is about to begin trials. The trials will include operating the site in a standard single green MOVA set-up, as a permanent double-green MOVA site, and finally using the automatic sequence selection system to decide whether to double or single green. Hopefully, conditions at the site will be more variable, leading to more frequent changes between the two systems. Results from this trial will no doubt appear in a later issue of TSN. We will also liaise with the Highway Authority to see if there is any evidence of drivers having difficulty with the variable stage sequence. Driver acceptance has not been an issue in the previous trials.

TRL would like to see more use made of these automatic stage sequence systems. They can deliver worthwhile delay and capacity benefits at little extra cost. Trials of both these facilities have produced capacity gains in the range 0 to 4%. At peak times, this could deliver delay reductions of 10% or more. When specifying a MOVA junction, use of these systems is a no loss choice – if the site conditions are favourable, it will give you benefits, if not, the site will

operate as a standard MOVA set-up. It makes sense therefore to always specify the automatic stage sequence facilities at suitable junctions and let MOVA decide what to do for best results.

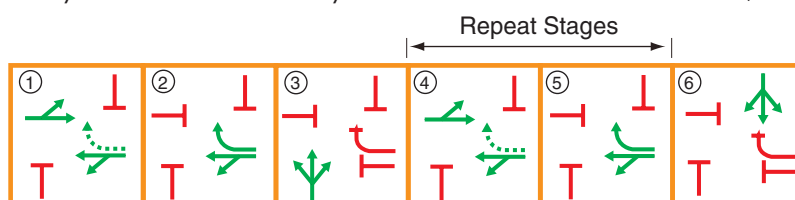


Figure 2: The 6 stage sequence at Hindhead

# Statistics from the Software Questionnaire

Thanks to all of you who sent back our Software Questionnaire. Here are some of the results

## Website Questions

54% who responded had used the Website  
 100% had used the Website for information  
 19% had used the Website for downloading  
 23% had used the Website for buying software  
 8% had used the Website for booking courses

90% prefer email as a method of contact

## Quality of Service (versus other providers)

	Better	Worse
Technical Support	85%	15%
Training	70%	30%
Information	100%	
Website	93%	7%
Sales Service	86%	14%
Technical Support Service	82%	18%

## Preferred method of purchasing software or training (some ticked multiple boxes)

Phone 40%  
 Fax 29%  
 Email 27%  
 Website 19%

## Rating of technical support

Excellent 17%  
 Good 50%  
 Average 13%  
 Poor 2%

Comments confirm that users think TSN is useful and informative. Some of you are very satisfied with our service and find the the sales staff friendly and helpful. The comments also show we have improved our training courses, but there is still room further improvement in our technical support response times.

**Ruth Tietjens**  
 rtietjens@trl.co.uk

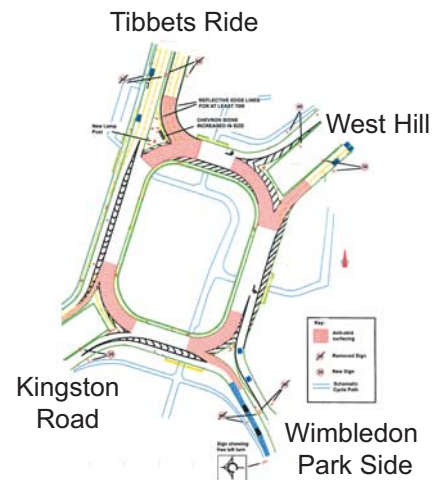
# ROUNDBABOUT SAFETY SCHEME IMPLEMENTED

A year ago we reported on a design study carried out for Wandsworth Borough Council. The study was to produce a layout for an old fashioned rectangular grade separated roundabout to improve its safety record without increasing delays. We can now report that TRL's improved layout has been in operation for 5 months. Wandsworth Borough Council believe it is very successful in eliminating unnecessary conflicts whilst easing many movements through the junction and encouraging drivers to circulate at more moderate speeds. TRL's recommendations have been carried out with only one minor addition. TRL had recommended the application of high friction surfacing on the four entries and on the four "corners" on the circulating carriageway (see layout drawing). Wandsworth Borough Council decided to extend the high friction surfacing all round the circulating carriageway.

The two free left turns are being well used, and very few drivers are crossing the ghost islands. The extended nose marking at the Wimbledon Park Side exit (see layout and photo) is successful at making drivers exit in single file and also position themselves early against the nearside of the circulating carriageway, making it easier for entering drivers to correctly assess the gaps.

Bus movements from Wimbledon Park Side to Tibbet's Ride are experiencing a couple of minor difficulties. The first is making the move from the nearside bus lane in Wimbledon Park Side to the off side lane to enter the roundabout correctly, and the second is crossing the free left turn lane at the Tibbet's Ride exit to access the bus lane and bus stop. Wandsworth Borough Council are planning minor alterations in these two areas to overcome the difficulties.

So far the scheme has run safely, but only time will tell if it has successfully removed this junction from Wandsworth's list of accident prone junctions, which it has topped for several years.



Proposed layout for A3 roundabout in Wandsworth  
 Reproduced by permission of Wandsworth Borough Council

**John Peirce, Email: [jpeirce@trl.co.uk](mailto:jpeirce@trl.co.uk)**



The extended nose marking at the Wimbledon Park Side exit



A view of the free left turn lane at the Wimbledon Park Side entry

# Study of West Worthing level crossing

**West Worthing level crossing is a busy rail crossing with 14 trains per hour throughout the working day. This alone would cause considerable delay to road traffic, with an average closure time of 2 minutes 22 seconds, or 40% of each hour. Combine this with the presence of a busy signalled junction so close that the crossing is between the junction and the signal heads, and it is easy to see why this becomes a regular cause of congestion and irritation to local drivers.**

West Sussex County Council asked TRL to carry out an operational assessment of the level crossing and the associated signals, and make recommendations for any improvements in the crossing/signals control system that would offer increased road capacity without compromising the safety of the rail crossing. TRL were also asked to check the local network for any worthwhile diversion routes that traffic could be encouraged to take to reduce the loading on the West Worthing crossing and signals.

TRL's study identified inefficiencies in the way the crossing and signals were integrated, both in the closing and opening procedures. The operation of the crossing and of the signals during the crossing closure periods is controlled from Lancing signal box. When the crossing is to be closed, the signalman sends a Hurry Call to the signals to command them into a special stage giving green to movements not crossing the railway. The signals can respond to the Hurry Call within 5 seconds, but at the

most inconvenient point in the signal cycle, can take as long as 30 seconds. The signalman must assume that the signals will take the full 30 seconds to respond, so up to 25 seconds of normal signal operation are lost on each closure. With special conditioning in the controller, the signal's response could be tailored to its position in the signal cycle, and timed to always arrive at the special stage in 25 seconds, with 5 seconds to spare. An initial estimate is that this could save an average of 15 seconds every time the crossing closes.

When the crossing opens, the signals are commanded to return to normal operation when the barriers reach the fully open position. Including the required intergreen, this takes 15 seconds. By 5 seconds into the opening sequence, the barriers are well clear of the roadspace and even an HGV in a nearside lane could pass safely. By commencing the return to normal operation at beginning of the opening sequence, the signals could be in normal operation 10 seconds earlier after each



*The level crossing at Worthing*

closure. These two measures alone could reduce the time the signals are not in normal operation by 8% from 45% to 37%, with substantial benefit to drivers.

In addition, TRL has recommended that queue loops be installed in three lanes most prone to congestion, both to

speed up the clearance of queues resulting from crossing closures, and also to keep the queues under tight control between the frequent closures. These and other minor measures are now being considered for implementation by West Sussex BC.

**John Peirce**  
[jpeirce@trl.co.uk](mailto:jpeirce@trl.co.uk)

## ARCADY, PICADY & TRANSYT WORKSHOPS - BOOK NOW!

**Workshop time is coming up fast again! The traffic workshops are always very popular, and we have expanded the number of courses considerably to meet the increased demand. If you planning to attend, please book early, to avoid disappointment.**

October is a busy month, with two ARCADY/PICADY workshops (1-2 & 3-4 Oct) and two TRANSYT workshops (22-23 & 24-25 October). The workshops are suitable for beginners to moderately proficient users who wish to extend their knowledge of the products. The courses are a well-balanced mixture of lectures and practical sessions. With a PC for each delegate, course members can make full use of the practical sessions. We also encourage delegates to bring along their own problem cases - this adds a sense of realism to the practical sessions as well as being a useful source of advice!

Information and booking forms are available from either the Software Bureau or from our web site, [www.trlsoftware.co.uk](http://www.trlsoftware.co.uk). In addition to the workshops at TRL, we are able to offer special courses to users at their own premises, where the course content can be tailored to the customer's requirements.

## Traffic Engineering Software BUNDLE 3 Latest:

Demo version of BUNDLE 3 is now available on our web site in addition to the existing PowerPoint® presentation.

See <http://www.trlsoftware.co.uk/download.htm>

A fully working time-limited "evaluation" version is also available upon request from the TRL Software Bureau.

### TRL Traffic Consultancy Services

- Traffic Impact Assessment
- Review TIA
- Junction/Network Modelling
- Traffic Signal Design
- MOVA Verification Service, Design and Installation

### TRL Safety Consultancy Services

- Accident Prediction Models
- Route Treatment
- Safe Route to Schools
- Safety Audit
- Speed Management
- Traffic Calming
- Accident Investigation and Litigation

## WORKSHOPS & USER GROUPS 2002

### ARCADY/PICADY

TWO 2 DAY WORKSHOPS  
1-2 & 3-4 October 02  
Course Fee £500  
(£450 Maintenance Holders)

### TRANSYT

TWO 2 DAY WORKSHOPS  
22-23 & 24-25 October 02  
Course Fee £500  
(£450 Maintenance Holders)

### OSCADY

TWO 2 DAY WORKSHOPS  
12-13 & 14-15 November 02  
Course Fee £500  
(£450 Maintenance Holders)

Places are limited  
(9 delegates for  
each course)

Contact the Software Bureau

### SCOOT

A 3 DAY WORKSHOP  
24-26 September 02  
Course Fee £650

For SCOOT contact  
Kathryn Smith  
Tel: 01344 770766  
E-mail: kasmith@trl.co.uk

All prices exclude VAT

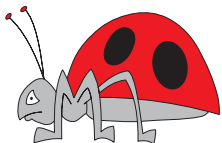
### USER GROUPS (Birmingham)

TRANSYT 31 October 02

OSCADY 1 November 02

ARCADY/PICADY  
1 November 02

## BUG BOX



### OSCADY 4.02

A few minor bugs which occur in some versions of OSCADY 4 are currently being corrected, the main one of which concerns vehicle storage of opposing traffic.

This along with the other fixes will be included in the next maintenance release, OSCADY 4.02AF.

## Internet Interaction

**As time passes the internet is becoming more and more part of our daily lives. So much information is now available at our fingertips, we wonder how we ever managed without it. Everyone is aware of the power of instant publishing and now in commercial terms a Website has become a must. The TRL Software Bureau site has been in existence for about a year and a half and we would like to let you know what's been happening.**

Over the last year there have been about 35000 visits to our site, with about 500 unique IP addresses a week, with most revisiting more than once in a week. This has resulted in an achievement of 25000 page calls in a week. The statistics show that many of our visitors are UK based, although we are very aware that websites are global publications. We are very happy with the progression of our site, but are always looking to provide an even better service in the future. Any comments on how we could improve this facility would be gratefully received and we are always pleased to hear your suggestions.

A review of the site is currently taking place and we are considering whether the provision of the site in another language would be appropriate. It is an interesting point that the most called for pages on the site tend to be the Software Design Tips from within the Users Section. Is this because this section is helping potential customers make evaluations based on the software's theoretical background or is it helping current users consider the techniques of design appropriate to specific live projects? This information we can only find out from you the user, so if you use the 'design tips pages' we would be grateful if you would let us know, and why, and did it help.

Another consideration is to create project specific pages to show our customers what we have done and what we can do, in terms of helping you to provide more efficient and safer junctions and networks. If there is a traffic or transportation service that you need then we can provide it. Just talk to us and we will find a way.

**Carole Dixon**

**Email: [cdixon@trl.co.uk](mailto:cdixon@trl.co.uk)**

## USER GROUPS IN OCTOBER

**A year ago in October, by popular request, we ran the TRANSYT User Group in Birmingham. Users had requested a more central location to ease travel from around the country. The User Group, held at the Copthorne Hotel was very successful, with attendance more than double the previous year.**

Building on this success, we are pleased to announce a full programme of User Groups this year, all to be held in Birmingham. The TRANSYT User Group (Thursday 31 Oct) will be a full day, with ARCADY/PICADY and OSCADY (1 Nov) half-day each.

The User Groups will cover issues from new developments to maintenance. Most important is the opportunity for users to raise and discuss issues, to inform us about their future needs, new facilities they would like to see, practical problems using the software, and areas where the software is not meeting their requirements. Users will be welcome to make short presentations to the meeting.

Information and booking forms are available from the Software Bureau and our web site, [www.trlsoftware.co.uk](http://www.trlsoftware.co.uk). A booking form is also enclosed with this issue of Traffic Software News.

## CURRENT PROGRAM VERSIONS

ARCADY 5	V5.0 AD/1.1
PICADY 4	V4.1 AM/3.0
OSCADY 4	V4.02 AE/2.2
TRANSYT 11	V11.1 AH/1.4
<i>(All above have Right/Left capability)</i>	
TPM	V2.0
STM	V2.2b
BUNDLE 3	V3.0 Issue 2
MOVASETUP	V 4.0c
CONTRAM 8	V 8.1f
MAAP for Windows	4.12
SafeNET	1.02

## Who's Who in Traffic Software



### Chris Lines

Following recent staff changes Chris is currently Head of Traffic Group while also heading business development for TRL's Transportation Division. Chris has worked in many work areas and in various management roles. In the 1990s he made major contributions to the development of TRANSYT and MOVA. With his understanding of traffic software he sees the development of new and improved TRL products as key to the future. Chris is also keen to see the unique understanding and expertise of the staff in Traffic Group used more for the benefit of our customers.



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