

## **Gap Creating Signal Control Schemes in Truro Cornwall and Poole Dorset**

by Barbara Chard (Traffic Manager, Borough of Poole)

*with acknowledgements to much assistance in the work described below from colleagues Bill Roberts (Cornwall County Council), Charlie Cross (Microsense), Paul Tucker (Belcara), Lee Ford, Craig Hamilton, Graham Otley, Lynne White and Bruce Slattery (Borough of Poole) and Siemens Plessey.*

Three schemes, illustrating different ways in which the creation of gaps using signal control has provided relatively cheap and/or simple solutions to congestion problems.

**Scheme 1: Sainsburys Roundabout, Treyew Road, Truro Cornwall** This was the first gap creating scheme introduced into Cornwall and owes much to the persistence of my then colleague Bill Roberts at Cornwall getting appropriate approval from government departments. An existing three arm roundabout, already at capacity was enlarged and had two arms added, one an entry/exit to a new superstore, and the other, a new entry/exit for the existing New County Hall. Post-construction, it was soon apparent that the new roundabout was at and over capacity in the pm peak periods. Why the original ARCADY submissions said otherwise is another story and led to my TEC paper 'ARCADY Health Warning' printed in March 1997. This alerted ARCADY users to the occurrence of unequal lane usage and ARCADY's inability to directly account for it. The result was that whereas four out of the five approaches received a reasonable share of the available capacity, egress from the County Hall approach was almost impossible in the pm peak. Immediate solutions were sought and it was my happy duty to carry out the feasibility exercise to find them. Hence the birth of 'gap creation' in Cornwall. On Treyew Road, just upstream of the County Hall exit, a pelican crossing had been newly installed as part of the super store development. By converting this to a full signal controlled crossing with a pedestrian phase, a further all red stage was added that could be called by queue loops placed in the County Hall exit. In addition, all red loops were placed on the Treyew Road approach close to the entry to the roundabout to hold the Treyew Road traffic on red until traffic in front of the crossing stopline cleared the giveaway line. Gaps were thus created either as a result of the call/cancel queue loops activating the all red stage, or as a result of a pedestrian phase being called. The scheme was an instant success and cost exceedingly little to implement. The only tricky bit remaining was the politics! How long to set the call/cancel loops so that County Hall employees were not 'perceived' as awarding themselves some very special treatment!

### **Scheme 2 Belben Road and Ringwood Road(s) - two for the price of one!**

**Belben Road** is a small residential side road that has the misfortune to exit onto one of the busiest dual carriageway sections in Poole (Ringwood Road). Residents trying to exit onto this race track, particularly in the morning peak, are obliged to take minimum gaps and sometimes wait for periods that to them, seem a very long time to appear. Their local Councillor has campaigned long and hard for several years for a solution. Now strangely enough, there was a pelican crossing spanning both arms of the dual carriageway immediately downstream of Belben Road .....and so a solution for a princely sum of about £8,000.

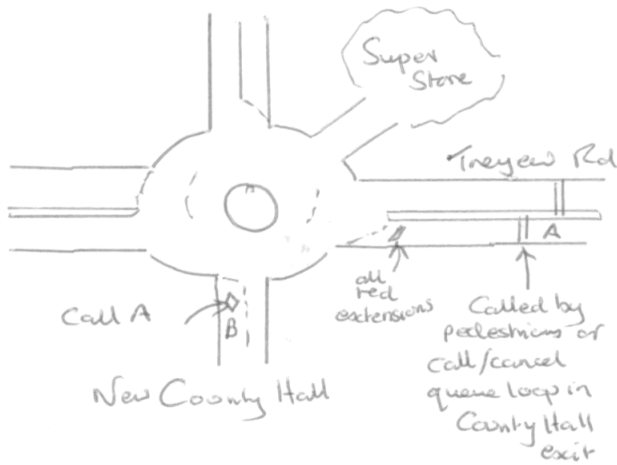
**Ringwood Road(s)** While we were changing the downstream pelican controller for a signal control unit and installing queue loops in Belben Road, work was already in hand to improve bus priority on the Ringwood Road (s) approach onto the Canford Way Roundabout. The latter junction is just downstream again from the said pelican crossing. First intentions to extend an existing bus lane on the Ringwood(s) approach all the way down to the roundabout led to designs that cost in excess of £110,000. But while we were out on site addressing the Belben Road scheme, it became startlingly obvious that we could play the same 'gap creating' card using the complimentary pelican crossing on the other side of the dual carriageway. The prevailing turning movement of the southbound traffic is to turn right along Canford Way. Since the prevailing traffic movement out of Canford Way is also to turn right, southbound traffic not stopped by the existing pelican quickly clears the Canford way roundabout leaving natural gaps for traffic on the the Ringwood Rd (s) approach. Some local widening of the Ringwood Road(s) approach together with a suitably located queue loop has now won Committee approval to proceed, saving the Borough some £60,000 over original proposals.

**Scheme 3 Port of Poole Lifting Bridge / New Quay Road** When ferries arriving late at the Port of Poole coincide with a bridge lift, serious congestion can occur on the adjacent New Quay Road resulting in the ferry being unable to off-load vehicles and re-load to make return trips across the channel. Fortunately, such occurrences are rare, since the ferries are usually on time and bridge lifts are generally scheduled to miss docking times. However, the problem described was serious enough for the Harbour Commissioners to approach us and request that possible solutions be sought. The very limited budget available was an added challenge. Congestion to dock traffic after a bridge lift is caused by the solid stream of traffic coming over the bridge from Poole town immediately it closes, and which turns right at the New Quay Road mini-roundabout. Such traffic does not present any gap opportunities for traffic exiting the dock area from the New Quay Road. The solution, yet to be implemented, was to apply gap creating techniques once again, but in a new and innovative way. A partnership approach with Siemens Plessey yielded

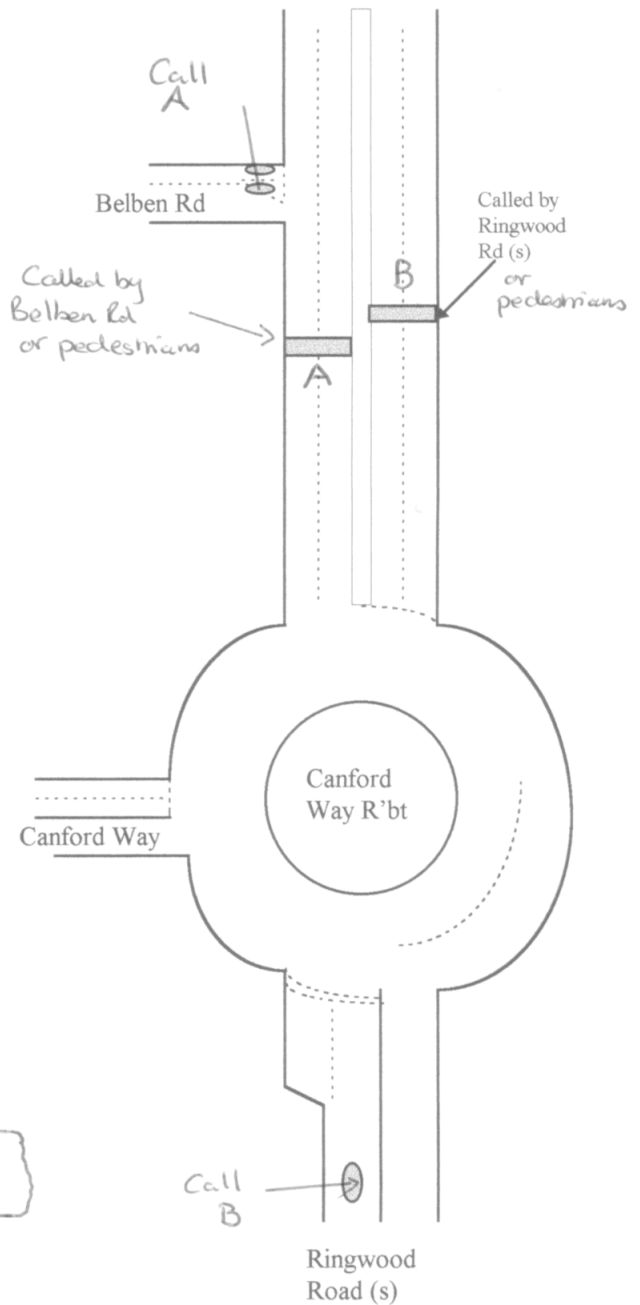
the final solution. Passive Infra Red detectors are to be used in the Docks area and on the New Quay Road to 'call' and 'extend' the red stage at a new stopline placed on the bridge approach. The former will be mounted on a gantry structure in the port and the latter, which will be solar powered, will be located on an existing pole by the New Quay Road mini-roundabout give-way line. Both will send detector signals to the controller on the bridge approach via radio control. Use of these detectors removes the need for expensive cable ducting to detectors over a large length of highway.

A new stopline will be located about 30m back from the mini roundabout on the bridge approach. The lights will normally be in the 'switched off' mode and can only be activated when the set of circumstances described above occurs. The Highways Agency have expressed great interest in the innovative use of the passive infrared detectors, the potential for cableless detectors being a major attraction. They are giving the project 'trial' status and shall be independently testing these detectors at their own research establishment. Although we have decided on some initial call/cancel times, these will be carefully monitored and adjusted once the scheme is operational.

**Scheme 1 Sainsbury Roundabout Truro**



**Scheme 2 Belben/Ringwood - 2 for 1**



**Scheme 3 Port of Poole / Bridge Approach**

