UK Roads stage latest Crash Demonstration Day at MIRA

In May almost 400 people attended this year’s annual “Crash Demonstration Day” at MIRA. UK Roads, Mott MacDonald, Traffex, TEC, Surveyor, Road Expo and MIRA staged the event at MIRA’s crash test facility near Nuneaton. Attendees included police, road safety auditors and highway engineers from highway authorities, consultants, contractors and the Highways Agency. David Milne reports

Five live vehicle crashes were staged to demonstrate product crash safety performance. The crashes were similar to the full approval tests to BS EN 1317 for restraint systems and BS EN 12767 for sign posts, signal poles and lighting columns which MIRA routinely stage for manufacturers.

Everyone in attendance was able to physically inspect the item and the test vehicle after each crash. It was instructive to contrast how minor the vehicle damage was in the planned collisions when contrasted with the total vehicle devastation when a test car inadvertently went on to hit a concrete retaining wall after a remote control braking system failed.

The crashes were:

1) **FSP Ltd** showed their 140 mm diameter fibre composite traffic signal post being hit by a 900 kg Citroen Saxo at 100 kph. The pole carried a Siemens signal head and was mounted in a NAL socket with the NAL Safety Isolation System. The SIS isolated the electrical supply to the pole 200 milliseconds after the initial impact. The signal head detached and fell close to the original post location with the post ending up a few metres downstream in the direction of the vehicle. The photograph shows the pole flattening during the impact hugely reducing the bending resistance of the pole and the severity of the impact. The FSP range of composite plastic poles for traffic signs and traffic signal poles are longitudinally reinforced with carbon fibre giving bending strength and stiffness but crush relatively easily on impact making them passively safe. The FSP poles are classified as NE 3 (Non Energy) products when tested to EN 12767.

2) **Highway Care Ltd** demonstrated their BarrierGuard 800 steel barrier with a gate. The gate was struck by a Ford Mondeo at 80 kph at an angle of 15 degrees. The car can be seen to have sustained limited damage in the impact and the gate certainly appeared to be in working order following the impact although this could not be tested due to the rough ground. BarrierGuard 800 system is for temporary and fully anchored permanent applications and options include opening gates, moveable wheeled systems, minimum deflection systems and crash cushions. BarrierGuard 800 is fully tested and approved to EN1317-2 test level N2 and H2 and is approved for use on all UK roads.

3) **SAPA** exhibited their new BSEN 12767 NE3 “Shored-up Sign Post” structure designed for larger signs. The central braced leg frame was impacted by a 1500 kg Ford Mondeo travelling at 100 kph at an angle of 15 degrees. Historically gaps were left in central reserve barriers for emergency access but these were closed off following cross-over accidents. Gates to the same safety standard as adjacent barrier offer safe emergency crossovers.

Highway Care’s “Barrier Guard 800” showing a Ford Mondeo hitting the barrier gate at 80kph and an angle of 15 degrees
angle of 90 degrees to the structure. This was a more onerous demonstration, as official tests require the structure to be impacted at a 20 degree angle. Often when this is the case, the vehicle travels ‘between’ the rear legs and not through them. The internal NE3 construction in both the front and rear legs sheared as designed, leaving the sign standing on the four remaining legs. The car suffered little frontal intrusion in the impact, with the occupant cabin of the vehicle being completely undamaged.

SAPA also crashed an aluminium traffic signal pole mounted in a Poletech socket and equipped with a pedestrian push- button and signal head. The Ford Escort crashed into the pole at 100kph. The pedestrian push- button unit can be clearly seen to stay safely attached to the pole, answering some concerns about it possibly detaching and penetrating the vehicle windscreen. Again, damage to the car was relatively slight with no damage to the passenger safety compartment of the vehicle.

4) Delta Bloc showed their DB100 H4a vertical concrete barrier concrete being hit by a lorry loaded to GVW 7.5 tonnes with concrete blocks. The lorry hit the barrier at 60 kph at 15 degrees. The barrier was almost undamaged and little displaced. The lorry was barely damaged and was driven away. This very high containment concrete segmental barrier is suitable for both permanent and temporary locations. If required any damaged sections of barrier can be easily removed and replaced post impact. Delta Bloc markets a range of pre- cast concrete barriers to EN 1317 across Europe.

Concrete barriers are increasingly favoured on trunk roads as they are robust, need little maintenance and are proving to be very safe in service.

OTHER EXHIBITS
A total of 23 firms exhibited at the event. Products on show included:

- passively safe signposts,
- passively safe lighting columns
- plastic bollards from several manufacturers (NAL repeatedly drove over their X-Last bollard which promptly returned to the upright position ready for the next drive over)
- sockets for founding traffic signal poles and lighting columns
- LED powered internally illuminated signs
- a large portable variable message sign mounted on a trailer with solar panels and batteries
- a lorry mounted crash attenuator
- crash cushions, terminals and barrier systems

Video clips of all the crash tests can be viewed at http://www.ukroads.org/passivesafety/

The merits of the crash demonstrated barriers and passively safe street furniture were convincingly demonstrated on the day. This writer strongly recommends that anybody with a professional interest in highways or road safety should attend a UK Roads Crash Day. The next event is programmed to take place over two days during 2014 supported by Traffex.