**Abstract**
An innovative design called Roto-post allows a sign outreach arm to be rotated from over the running lanes to a position beside the roadway. This allows maintenance to the sign’s electrics without causing disruption to traffic flow. The innovation will improve efficiency and decrease maintenance costs. The concept is also being considered for temporarily clearing static signage on over height vehicle routes to areas such as mines.

**Introduction**
One of authors was a project engineer on the Safelink Alliance (Ipswich/Centenary Motorway upgrade) in Brisbane. On this project, first hand experience was gained during the initial installation of pole and gantry variable speed limit signs (VSLs). During this time, the need to repair night time operational faults with associated lane closures, led to the idea of a traffic sign which could be rotated. If this idea could be put into practise, lane closures may not always be required. This innovative concept did not require the maintenance vehicle to occupy a traffic lane during repairs. The outreach arm could be rotated through approximately 90º to a safer position to allow maintenance to be performed on the outside of the traffic lane or on a wide central median. This idea was developed further by joint collaboration between CDIF Group and Olitek. After the feasibility of the idea was proven, a patent application was made to protect the intellectual property.

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Description
The Roto-post is comprised of a column with a rotating outreach arm (Figure 1). The rotation mechanism is an integral part of the rotating joint. This mechanism has a ring gear fitted to the outreach arm and a worm drive fitted to the column. Because of the high gear ratio of the drive, the outreach arm will not move from its final position despite high wind forces. However, to prevent any movement within the gear drive mechanism which may cause wear, the outreach arm is securely locked once it is in the final operating position. The lock also acts as a security and safety mechanism. The worm drive may be rotated manually or with the aid of a cordless drill. If required, the rotation mechanism may be fitted with an electric drive motor.

Advantages of the Roto-post system are:

- Night work is not essential to repair signs on busy roads
- Repairs can be made without lane closures
- Lower repair costs as traffic control crews may not required
- Increased road reliability and user safety as equipment is repaired faster
- Reduced need for costly large cross road gantries.

The concept can be used for traffic signals, ramp metering outreachs, street lighting, auto license plate recognition/red light cameras, dynamic car parking signs, tolling and any other purpose where electronic parts need to be accessed.

Next step
While this product is still in the final design stage, the next step will be full scale field trials. A small number of Rota-post mechanisms will be installed on electrical signs and traffic signals on roads preferably in the south-east corner close to Olitek’s manufacturing facilities.

Figure 1. Operation of Roto-post