

1 - Introduction:

During temporary works, when car accident happens workers can also be victims. Traffic diversion is a safer solution to protect workers but it is also an obstacle on the road that causes car accident.

To prevent accidents the traffic diversion must be well signaled and located. Training and additional safety measures for workers should be taken.

Minimising the risk of car accident during temporary works is simultaneously to increase workers protection.



2.1 - Temporary works for a long period :

- Traffic diversion with cones as lane separators are not acceptable for safety reasons;
- The installation of rigid separators are deeply recommended;
- Emergency lane enlargement each 2 kms, with SOS phones;






2.2 - Temporary works for a short time :

- Traffic diversion easy to install and promptly removed;
- Needs trained people to install and remove the diversion;
- Installation of traffic cones (minimum 5 kg for windy roads);
- Installation of flash light sequences during night.







3 – Type of works with diversion


3.1 - Fixed located diversion for inspection or maintenance:

- Expansion joints on viaducts;
- Safety barriers;
- Pavements (repairs, enlargement);
- Gantries, VMS, sign panels;
- Electric posts.

3.2 - Movable diversion for works such as:


- Road marking painting or inspection;
- Mechanic sweeping;
- Electric lamps replacement.





4.1 - Planning works:


- Appropriate season or weather: Avoid rainy days or period;
- Special cares is in presence of urban or suburban motorway;
- Appropriate time of the day: Avoid peak hours;
- Working zone definition: length, lane occupation;
- Estimated duration of works.



4.2 - Planning traffic diversion.


- Choose the scheme from the temporary signalling guideline;
- Use Variable Message Panels;
- Fill the form for the diversion team:
 - Choose the best location for the bevel:
 - ⇒ Just after gantry with lights,
 - ⇒ Before a curve on road,
 - ⇒ Before a hill on road;
 - Define the working procedures to be followed by workers;
- Use well trained teams;



5 – Working teams for traffic diversion:

- Well trained for all traffic diversion;
 - ⇒ Reflective vest, boots, etc,
 - ⇒ Radio contact with traffic controller,
 - ⇒ Good knowledge of temporary signalling guideline or schemes.
- Knowledge of internal procedures;
- Optimise the role of these teams:
 - Trained to work on maintenance;
 - Prepared to act on support of car accidents (car removal, fire brigade, cleaning brigade)
 - Trained in first aid skills.




6 – Safety awareness of workers or teams:

No worker should be allowed to go to motorway without knowing the risks he is taking.

All workers from external companies should be aware of general procedures on motorways.

To be sure that workers understood the procedures, before starting the works the Safety Department of the concessionaire must spend some time on safety awareness of these workers.



7 - Safety measures for workers:

- Protective clothing (Reflective vest, boots, etc);
- Radio or mobile phone contact with the traffic control room;
- Awareness of safety procedures:
 - ⇒ How to access to the concession;
 - ⇒ How to contact the traffic controller,
 - ⇒ Authorization to park the car inside the diversion and to start working inside it;
 - ⇒ Walk along the platform behind the safety barrier;
 - ⇒ Use the causeway of the bridge instead of the hardshoulder;
 - ⇒ Forbidden to cross the lanes with traffic.



8 – General safety measures:



Special cars for cones installation;



Workers safety devices for protection during the installation of the diversion;



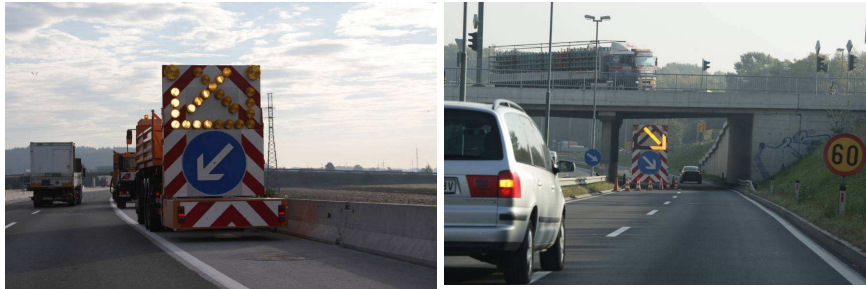
8 – General safety measures




- Working vehicle well identified: flashing lights, red strips;
- Locate the working vehicle just behind the working zone;



8 – General safety measures



Coupled car with light arrow for moved works;



The banner at the top of the slide features a landscape with green hills and a winding white path. On the right side of the banner, there are two logos: the APCAP logo, which consists of a stylized green and blue circular graphic with the text 'apcap' below it, and the Lusoponte Lisboa logo, which includes a circular graphic with a bridge and the text 'LUSOPONTE LISBOA'.

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