VOICE SITES

PORTUGAL

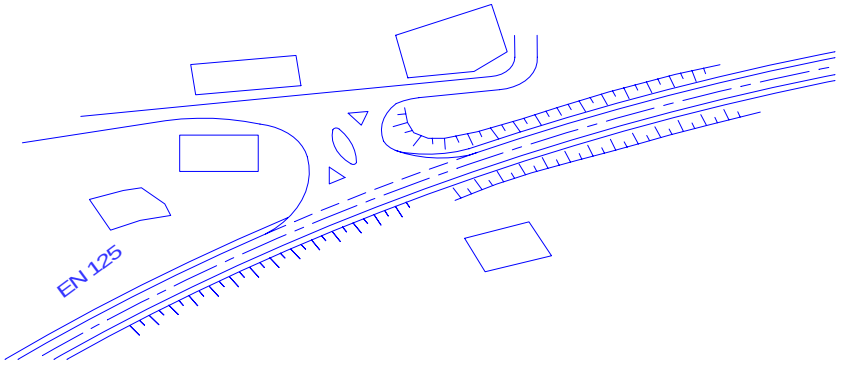
IMPROVEMENT OF A TWO-LANE MAIN RURAL ROAD INTERSECTION

Introduction

This analysis proposes safety enhancement measures to be implemented at the intersection at EN 125, a single carriageway two-lane rural road in the South of Portugal. This road is part of the Portuguese National Road Network. The safety diagnosis of this intersection was part of the intervention at a 30 km stretch of EN 125 road, which included measures applied over the whole itinerary and special measures for each detected black spot.

Analysis of the problem

The intersection provides access to a small village situated near the road. In this area the road has a 750 m radius horizontal curve; longitudinal profile is almost level, with less than 1% upgrade. This is a T-junction, with the minor road arm on the outer side of the curve (see Figure below).



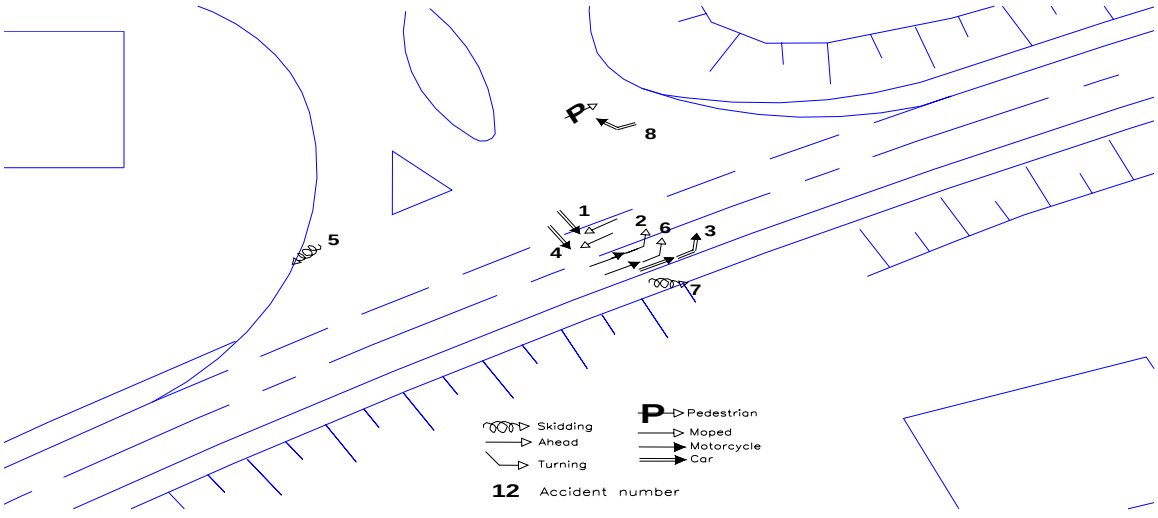
The 7.00 m wide carriageway on the main road is divided in two lanes, one for each direction. Pavement wearing course is made of bituminous concrete. Non-paved 2.50 m wide shoulders are provided on each side of the carriageway. This junction is part of a small five kilometre stretch of road with unpaved shoulders; shoulders are paved and 2.50 m wide in the remaining 25 km of this road stretch.



Bus stops are located along the main road, originating some pedestrian traffic. Nevertheless, a 90 km/h speed limit applies to the main road. Average annual daily traffic (AADT) on the main road amounts to 13 615 vehicles per day. Cars account for 92% of AADT; mopeds are less than 3%, and motorcycles less than 1%. This road is situated in a summer recreational area, therefore traffic in the summer is higher than in the winter with the ratio of 1.1 (1.2 for two-wheeled vehicles).

The minor road arm is very small, as it intersects a street (almost) parallel to the main road at a distance of less than 50 m from EN 125. Divisional islands are provided in the minor road and in the street, but the overall separation of traffic is very poor.

Eight injury accidents, involving six cars, four mopeds, three motorcycles and one pedestrian, were reported to the police on this black spot during a 5 year period, resulting in 13 slightly injured victims and no fatalities. Half of the accidents occurred at night; only two accidents occurred during the summer season (April to September). Crashes include two lateral collisions and four rear end collisions. An accident diagram is provided below:



High traffic speeds on the main road may render detecting powered two wheelers difficult, which partially explains the great involvement of this type of vehicle in accidents.

Lack of adequate traffic flow separation road markings contributes to attempts to perform them at high speeds, resulting in potential sudden speed changes (hard braking) in case of erroneous behaviour correction. Emergency reacting by drivers is complicated due to the unexpected absence of available paved shoulders (as in previous intersections).

Pedestrian movement along the main road, to and from nearby bus stops, is hampered by lack of paved shoulder, especially in wet weather, when the sidetracks become muddy.

Safety measures

The following measures were recommended to enhance safety at the sport:

1. Construction of paved shoulders along the five kilometre stretch that includes this intersection in order to improve main road consistency, enhancing the possibilities for emergency manoeuvres and providing safer routes for pedestrians.
2. Corrective measures for the minor road included a better separation of traffic flow, reducing the space available for manoeuvring from the street and providing a better guidance for the required trajectories to and from the main road.
3. Improper speed choices on the main road was addressed by measures applied to the entire itinerary.