

## **TRAFFIC CALMING TECHNIQUES APPLIED FOR ACHIEVING SAFE ROADS IN AKYAKA TOWN**

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### **ABSTRACT**

For many years, speed management applications have been used as effective traffic calming measures for improving road safety status' of roads.

In this paper, a planned speed management study will be explained which has partly been applied in one of a small Turkish town, near the Aegean coast, called Akyaka. This town was nominated as the second 'cittaslow' settlement in Turkey which requires safe and calm traffic environments besides promotions for local food and local agriculture productions.

In the study, Akyaka roads were reclassified according to their functions. Throughout this evaluation, town inhabitants were questioned about their journey demands and habitual expectations from roads.

Some road sections were designed as 'pedestrian only' streets and some others have been proposed as 30 and 50 km/hr. roads depending on their roles and functions within the network hierarchy. Application decisions were taken in the municipality commissions after evaluating and accepting the proposed roles of roads in the city council. Necessary design measures were planned including intensive enforcement and public awareness activities.

Part of this plan got chance to be applied and a limited follow-up study has also been implemented to measure the efficiency of the proposals.

### **KEY WORDS**

Speed calming measures, speed management, safe roads.

### **1. INTRODUCTION**

Speed management has been regarded as defining and implementing suitable safe driving speeds according to the different road functions within the network hierarchy. On the other hand, traffic calming has been explained as achieving reasonably less motorists with safe driving speeds on roads and in all traffic environments (1).

One of the small town at the Aegean coast of Turkey, called Akyaka has been evaluated as a case study of a set of speed and traffic management activities which aimed to design the town as a pedestrian friendly and calm traffic environment.

### **2. TRAFFIC CALMING ARRANGEMENTS IN AKYAKA TOWN**

#### **2.1 The town and 'cittaslow'**

Akyaka is a small settlement at the southwest Anatolia in Turkey belongs to Mugla province. Its winter population is about few thousands whereas summer population increases to twenty thousand with daily or long duration tourists' visits.

It has a beautiful seashore with different swimming facilities and also a well-known river which passes through the town. There have been several tourist accommodation alternatives ranging from five beds to hundreds.

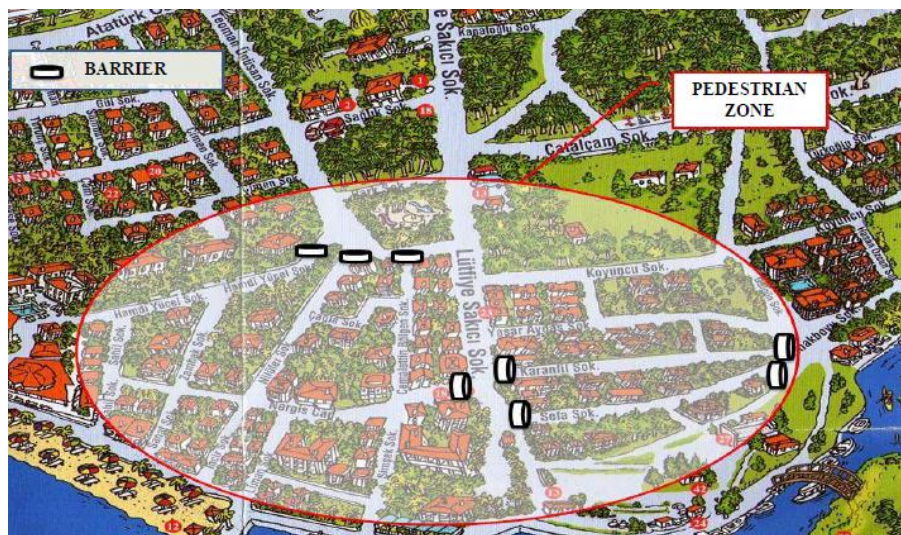
On the other hand; ‘cittaslow’ has been an initiative which was first founded by few Italian municipalities in 1999. It has further been organized as a union of municipalities which fulfills some prerequisite conditions ranging from local food promotions to pedestrian friendly traffic environments (2). At present, there are 182 municipalities from 28 different countries which have been nominated as ‘cittaslow’. The town Akyaka has the second awarded ‘cittaslow’ city out of nine in Turkey.

## 2.2 Traffic calming arrangement planning

Traffic calming activities were taken an important part among the efforts which have been concentrated to make Akyaka Town as a member of cittaslow cities list. Especially during the recent summer seasons, the town has certainly demanded some sort of traffic management arrangements. That need was later formulated as a set of planned activities which aim to arrange the whole town streets as calm and safe traffic environments. These activities can be summarized as follows:

### a) *Pedestrian Zone application:*

During the planning studies, the main effort was devoted to arrange the town center as a ‘pedestrian zone’ (Figure 1) after reclassifying town roads according to their functions. In order to collect inhabitants’ opinions for their participation in decision taken processes, some meetings and roundtable discussions were prepared and implemented.



**FIGURE 1** Proposed ‘pedestrian zone’ area in the center of Akyaka town.

Three proposals were evaluated for the zone. These were:

- Totally forbidden motor vehicle entrances except ambulances, fire and garbage trucks;
- Special allowance to some motor vehicle entrances at some certain time intervals but forbidden to all others;
- Keeping the ongoing condition but following a strict parking discipline.

After discussions, it has been observed that people who lives in the town supported the ‘pedestrian zone’ initiative but they think that among above mentioned ones; ‘proposal b’ could be applicable. Because the proposed area contains many hotels and pensions, it has been thought that a total closure for all motor vehicles might need a stepwise application which can start with special allowances at certain limited time intervals.

The proposal has later been formulated as a pilot application for the next summer duration and the consequences of the trial were also planned to be gathered out as a scientific follow-up study.

***b) Traffic Surveys:***

To understand the tourists’ needs and their visiting plans, a set of traffic surveys were applied at certain locations close to the town entrance.

Passenger car drivers were questioned in the first survey on the base of an acceptable sampling requirements. They were requested to answer five basic short questions within a few minutes. The questions were about

- i) their journey origins and certain destinations within the town;
- ii) their planned stayed durations,
- iii) their accommodation locations if there is any;
- iv) their opinions about pedestrian zone and traffic calming attempts;
- v) their compliments or proposals about the present traffic and parking conditions of the town.

The second traffic survey was about the prevailing speed levels on main town streets to judge upon the need of special speed management techniques including the implementation of speed humps/bumps and rearrangement of some streets’ functions for discouraging motor vehicle entrances (3).

The third survey was related with the available and possible parking areas with their capacities and access limitations. It also included the minibuss and tourist bus parking lots and the collection of their journey frequencies and occupancy ratios.

For this purpose, municipality and private minibuss companies which serve between the town and the near cities were visited and their local data were gathered around.

***c) Ataturk Street evaluation:***

One basic street which connects the town entrance to the town center has been named as Ataturk Street (See Figure 2.). A group of surveys were also made about the local usage of that street including roadside parking needs, junction capacities, etc.

A set of projects were prepared for Atatürk Street that mainly concentrate upon junctions’ geometric improvements and rearrangement of roadside parking facilities.



**FIGURE 2 Atatürk Street**

While arranging junctions and roadside areas, special attention had been devoted to achieve certain, clear traffic tracks. It was done through better marking of lanes and narrowing junction approaches and exits.

It has been observed that similar arrangements can reduce driver hesitations to select their routes and to continue on the same traffic lanes without giving confusion to the other road users.

Pedestrian facilities along the street were also evaluated and upgraded through having continuous sidewalks and safe crossings at some certain locations with prior signing and marking.

### **3. APPLICATIONS AND THE FOLLOW-UP**

#### **3.1 Main Decisions and Applications**

The decisions for attempting and achieving safe traffic environment through applying some speed management and traffic calming techniques in Akyaka ‘cittaslow’ town can be summarized as follows. Among the below mentioned decisions; some of them were fully and some of them were partly implemented.

##### ***a) 30km/zone area application***

After evaluating and assigning new roles to the town streets according to their functions; some streets within the mentioned area were designed as pedestrian only corridors. Instead of ‘pedestrian only zone; the whole small area (Figure 1) was rearranged as a 30km/zone through applying some traffic management measures in and outside streets of the region. Some road entrances to the region were restricted where as some others were narrowed. Roadside parking was also restricted and/or fully prohibited within the all streets of the zone.

##### ***b) Speed bumps/humps implementations:***

Speed reducing measures such as speed bumps/humps (4) were located on some selected roads in which high speed levels above legal 50 km/hr. were observed.

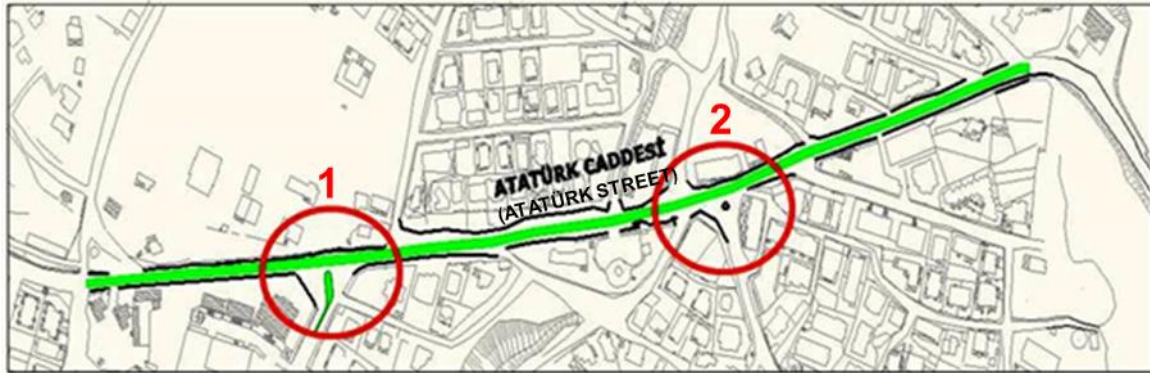
##### ***c) Pedestrian facilities’ improvements:***

Pedestrian facilities within the town were evaluated and tried to be upgraded through having continuous and proper sidewalks. These efforts were also supported with arranging safer street crossing environments for pedestrians by improving signing and marking.

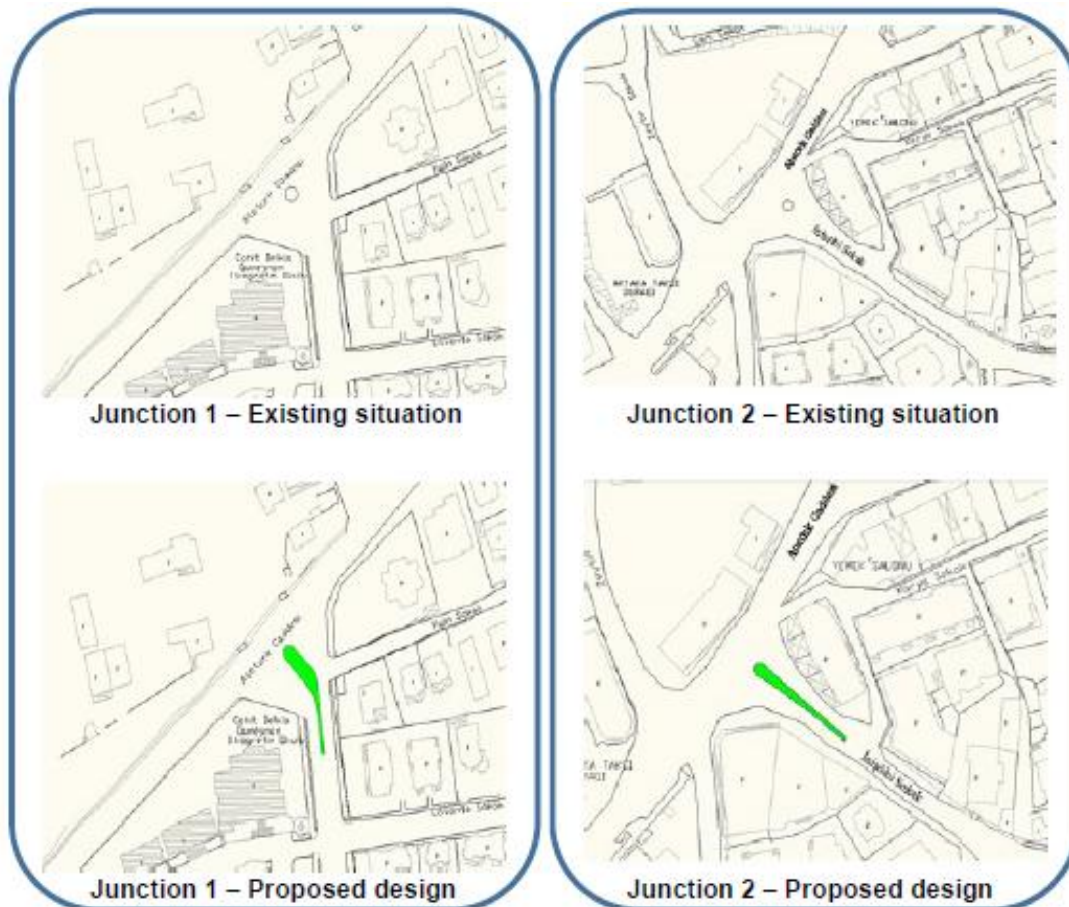


**d) The junctions' improvements:**

Junctions on the main Atatürk Street were partly rearranged by applying geometric changes on their designs (Figure 3 & 4). Roadside parking along the street and close to junction areas were forbidden through intensive enforcement.



**FIGURE 3 Junctions to be redesigned within the scope of the study**



**FIGURE 4 Proposed design changes on junctions along Atatürk Street**

***e) Public information:***

New meetings were made with the town inhabitants in order to give additional information to the public and to receive further comments from them. Small booklets and posters were also prepared and distributed to attract the attention to the 'cittaslow' pedestrian friendly calm traffic environments.

***f) Parking facilities evaluation:***

Present parking locations were redesigned in order to increase their capacities and proper signing and marking were applied along the roads to have more efficient use of them (5).

**3.2. The Follow-up**

Limited follow-up studies were made through and after certain rearrangements within the traffic management system of the town. Follow-up surveys were made by two main ways:

- i) By measuring road users' satisfaction through applying roadside questionnaires about the new traffic arrangements;
- ii) By applying some surveys about speed levels and parking usage frequencies, etc.

Through road users' interviews, a general satisfaction of 7.5 out of 10 had been obtained. The lowest score was obtained from 'parking limitations and facilities' item whereas the highest score was given to the '30 km/zone' application.

On the other hand, the following results were obtained from the second group of follow-up surveys. Average speed levels on some selected streets were decreased by 5%. Wrong parking penalties were decreased by 14%. The average time in which motor vehicles is in local traffic (within the ones which have local plates) was decreased by 10%.

**4. CONCLUSIONS AND RECOMMENDATIONS**

Through the applied interviews and surveys as part of limited follow-up study, it can be concluded that inhabitants and visitors were satisfied by the applied traffic safety and traffic calming measures. It can also be concluded that within the observation period, the drivers had intended to drive slowly, had tried to avoid illegal parking and had also tried to be less in local traffic partly because they preferred to walk for short distances.

Main recommendation was about the need for a comprehensive follow-up study for reasonably long periods to create a base for the further traffic management plan revisions.

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