

A method of using rubber poles to control speed on residential roads

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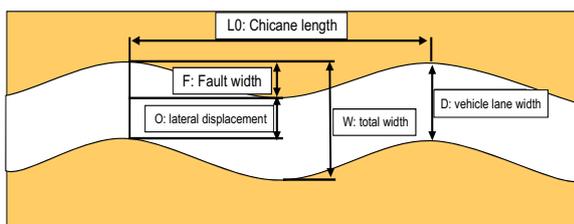
1. Introduction

As a traffic safety measure for residential roads, speed control measures have been taken using humps, narrowings, or other structures which control the traveling speed of automobiles (below called, “devices”). But, many humps or narrowings executed in the past are expensive, because they often require road reconstruction. So while many people are calling for traffic safety measures on nearby residential roads, with the finances of local governments restricted, they wish to implement simpler measures at many locations, even though these may be somewhat less effective.

This research included a survey to clarify the degree of speed control effectiveness of constructing chicanes or narrowings using simple devices (rubber poles) on actual roads and a study of effective and simple speed control measures.

2. Implementing a social experiment using rubber poles

In 2009, at the locations of 15 narrowings, 10 chicanes, and 5 slaloms, the relationships of their shapes with the speeds of automobiles traveling through them were surveyed and analyzed. The results show that in order to lower the 85th percentile speed to below 30km/h, the slowing effects of the chicane is greater than that of the narrowing, and that regarding the shape of the chicane, the relationship $F/W \leq 0.37$ should be established between vehicle lane width W and fault width F .



But, the chicane is L_0 (chicane length) = L_1 (curve length) + L_2 (Fault length)

Figure: Example of the Shape of a Chicane (Slalom)

And in 2010, in cooperation with Kumagaya City in Saitama Prefecture, the division used rubber poles to



Photo View of the Social Experiment (Chicane)

construct a chicane (fault width of about 2m) which maintained the above $F/W \leq 0.37$ relationship on a one-way street with vehicle lane width of about 5.5m, and performed a social experiment with a total of three patterns of chicanes and narrowings with varying intervals and measured automobile traveling speed to clarify whether or not speed reduction effects were obtained and to undertake simple measures while maintaining this effectiveness.

The 85th percentile speed which was about 39km/h without the rubber poles, fell to about 35km/h in two patterns with chicane interval of 35m and 50m, which was speed reduction effects of about 4km/h. At the same time, about half of the automobiles traveled at speeds of 30km/h or less in a section of about 100m or more in an observation section of 180m.

At narrowings at 50m intervals, the 85th percentile speed fell only slightly, by about 2km/h to approximately 36km/h, with benefits obtained by all patterns. And among these, as imagined, the chicanes were more effective, and in the chicane cases, some pedestrians complained that they feel they are dangerous, revealing that it is necessary to separately study ways to improve the feeling of security they provide.

3. Future developments

We are considering summarizing the results of this social experiment and precautions concerning the installation of existing devices (installation interval, distance required from frontage, etc.) as a technical document, and to give support enabling local governments to introduce speed control measures a little more easily.