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highway speed zoning

NEW JERSEY
DEPARTMENT OF
TRANSPORTATION

bureau of
public information

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THE SAFETY GOAL

Regulation of motor vehicle speeds has been the subject of controversy and misunderstanding almost from the day the first horseless carriage appeared on a public thoroughfare. The consistent goal of regulating authorities over the ensuing years has been to avoid accidents and fatalities resulting from automotive operation.

TRADITIONAL APPROACH

From the beginning, one of the most obvious and controllable means to that end was invoked: speed regulations. This approach to protect life and limb is simple and direct. In actual practice, these are the miles per hour regulations for a stretch of road, street, or highway.

RELATED THEORY

The most generally accepted theory is: The slower the speed, the safer the thoroughfare. From the standpoint of limiting accidents and fatalities, this theory carried to extremes and rigidly enforced might possibly cut highway death rates. However, it would most certainly substantially eliminate all advantages to be derived from the use of the motor vehicle. It is obvious that a sensible approach is necessary in order to enjoy the benefits of modern transportation and minimize the risks.

PHYSICAL PROGRESS

Within the past thirty years vast improvements have been made to achieve this desirable goal. Greater braking power, increased visibility night and day, better tires and traction, and more driver control is evident in the vehicle itself. Hills have been

"flattened", valleys filled, curves eased, riding surfaces improved, and overpasses, barrier curbs, jug handles and traffic lights have been installed — all making highways safer.

CONTINUAL STUDIES

Paralleling this evolution, studies have been carried on re the contributing causes of accidents, including driver actions and reactions as well as speed and its effect. Experience has proven that the old approach to speed zoning — arbitrary limits based on opinion — has not been conducive to safety nor enforcement to the extent some might have generally believed.

NEW APPROACH

Since 1955 setting speed limits on state highways has been an active function of the Transportation Department. To meet its obligation to produce safe, sensible speed zoning the Department adopted standards that are the product of modern research. Formulated by the National Safety Council's committee on speed regulations, these nationally recognized standards rule out opinion, guesswork and arbitrary "rule of thumb".

SPEED DIFFERENTIAL

Facts gathered to form the basis for these standards "debunk" several popularly accepted beliefs. For instance, they show that speed, within reasonable limits, is not the "culprit" it was supposed to be in the accident records. Rather, accidents are more often caused by widely differing speeds on the same stretch of highway. One basis for a safe and realistic speed limit

is that motorists travel at about the same speed.

DRIVER ATTITUDE

Studies have also made it clear that, by and large, motorists actually make a conscious effort to drive safely — both by driving alertly and at speeds prevailing conditions permit. If a realistic speed limit is posted, the odds are that they will substitute it for their own judgment. If the posted speed limit is not realistic it is a sure bet that the average driver will ignore it. Enforcement of the limit then becomes impossible and the dangerous differential in speed between vehicles in this area increases.

PRACTICAL METHOD

Arriving at realistic speed limits is a process that relies upon accuracy and continuity. In New Jersey each route is checked progressively for its entire length, whether it is a few miles long or traverses the entire state. For the purposes of the study county and municipal boundaries (factors in the old method) are ignored and route and roadside conditions become paramount.

RADAR CHECKS

To insure accuracy the facts are gathered by trained Transportation Department engineers. Their principal tool is a radar speed meter. It is similar to that used by State Police in speed limit enforcement operations. It is checked regularly to insure accuracy to within 2 miles an hour. It is set up at all points where driving conditions change and the readings of vehicular speeds are

taken at each location. These locations cover all driving conditions encountered on the route, day and night and for all seasons.

85 PERCENTILE BASIS

Only the speeds of "free moving" vehicles are recorded. Those just starting, slowing to turn, or being held back by other vehicles, are ignored for the practical purposes of the study. From his readings the engineer mathematically calculates the "85 percentile speed" of the cars clocked on that stretch of highway. The 85 percentile is the speed at or below which 85 percent of the cars recorded travel. In other words, 15 percent of the vehicles recorded move faster than the 85 percentile speed. This speed is the basis for establishing a new safe enforceable speed limit.

SPEED ZONE LENGTH

Other readings are recorded at points within highway sections where there are varying traffic and roadside conditions. The speed limit desirable for the longest section of highway often requires that an average be struck in order to avoid too frequent speed limit changes. For example, if within a relatively short distance Point "A" shows an 85 percentile speed of 36 m.p.h., Point "B" shows 38, Point "C" shows 42, and Point "D" shows 37, the suitable speed limit would be 40 m.p.h. for the entire stretch.

REGULATIONS

Department policy demands that the study of an entire route must be completed before separate zones are

established and a realistic speed limit assigned to each zone. After this is done the results are embodied in a regulation covering the entire route. It is prepared for adoption by the Transportation Commissioner and approval by the State Division of Motor Vehicles, a separate state agency. Following adoption and approval, copies of the new regulations are sent to each municipality and county through which the route passes. State police are also notified and speed limit signs are then posted by the Department.

BETTER SIGNS

Speed limit signs have undergone important changes within the past five years. In general they are now larger, more legible, and have far greater eye appeal. The former 18 x 24 inch standard speed limit sign has been replaced by one 24 x 30 inches, with other sizes ranging up to 4 x 6 feet. The latter are used mostly in the center islands of dual highways, with one sign located every five miles. At most other locations intermediate and 24 x 30 inch signs are spaced along the roadside about one mile apart in open areas and an average of three per mile in areas where roadside development is heavy.

IDENTIFIABLE COLOR

On all speed limit signs the legend is printed in black on white reflective face material in order to insure maximum day and night visibility. This combination, black on white, also enables drivers to quickly recognize the sign as being regulatory — as opposed to advisory speed signs and other warning signs, which have a yellow face; directional signs, which are green; or danger signs, which are red.

ADVISORY SPEEDS

To determine at what speed a curve may be negotiated with safety, the Department uses a ball-bank indicator. Mounted in a Department car, which has a calibrated speedometer, this device indicates degrees of swerve the car attains on a curve at certain speeds. When the maximum safe speed is ascertained for each curve, small yellow signs indicating safe speeds are mounted on the regular signs announcing the curve. And the reading is accurate. If a curve can be safely negotiated by the average driver under normal conditions at 40, the sign does not read 35. It reads 40 m.p.h. Traffic circle approaches and ramp speeds are also determined in this manner and posted accordingly.

HIGHER LIMITS

Often the Department receives objections that a newly posted speed limit is too high at a given location. This objection is usually lodged on the basis that the new, and usually higher, limit will produce driver speeds in excess of that normally found on a certain stretch of highway — hence more danger rather than increased safety. However, it has been found (not only in New Jersey) that the higher posted speed limit seldom results in higher vehicle speeds.

REALISTIC RESULTS

To cite an example; in one area posted for many years with a 25 mile speed limit, radar speed checks showed the 85 percentile speed was 36. After a 40 mile an hour speed limit was posted objections were raised. Radar checks

again taken in exactly the same place showed the 85 percentile speed was still 36. On most occasions where Transportation Department studies dictated a new and higher speed limit, the actual 85 percentile of motorists in that area varied by only one to two miles per hour.

SAFER ROADS

An important facet of the Transportation Department's policy is to make many miles of otherwise outmoded state routes more safe and to engineer safety into all of its new roadways. New realistic speed limits, arrived at objectively through application of nationally accepted standards that discard the educated guess, personal opinion and rule-of-thumb factor, have resulted in an increased safety factor for motorists using the New Jersey highways.

