Speed Limit, Spot Speed, and Running Speed

I continue my discussion on speed limits.

It is not correct to say that speed limits were first introduced to the USA in the 1970's. Prior to 1974, individual US states set speed limits within their boundaries, and highway speed limits across the country ranged from 40 mph to 80 mph. The Arab-Israeli conflict changed that dramatically, as President Nixon signed a federal law lowering all national highway speed limits to 55 mph in order to force Americans to drive at speeds deemed more fuel-efficient, thereby curbing the U.S. appetite for foreign oil. Today, speed limits across the USA vary between 35 and 40 mph in congested urban areas and 75 mph on long stretches of rural highway.

According to the literature, despite the widespread belief of complete freedom from speed limits, some speed regulations can be found on the Autobahns in Germany. Many sections do indeed have permanent or dynamic speed limits ranging from 80 to 130 kmph. Also, some sections now feature night-time and wet-weather speed restrictions, and trucks are always regulated.

Maintenance is of a very high standard. It is said that inspection crews use vehicles with high-tech road scanning equipment.

Bicycles, mopeds, and pedestrians are specifically prohibited from using the Autobahn, as in the laws of T&T with respect to highways, yet in T&T it is not uncommon for a backhoe to be lumbering along the highway, the driver completely unconcerned about its impact on the traffic.

Passing on the slower lane (the right in their case, and the left in ours) is strictly prohibited! Slower vehicles must move over to allow faster traffic to pass, and drivers should stay in the slow lane except to pass. Fat chance that happening here!

Signage on the Autobahn is excellent. Overhead signs are being used increasingly more frequently. There are automated traffic management and control systems consisting of surveillance cameras, speed monitors, and special electronic variable message signs.

For breakdowns, someone will arrive shortly to assist you. Police, fire service, ambulances, and emergency doctors all respond to Autobahn crashes. A medical evacuation helicopter is also always on standby. Small wonder there are so few crashes, injuries and fatalities on the Autobahn!

The Policy on Geometric Design of Highways and Streets (American Association of State Highway and Transportation Officials, AASHTO, 2011, p. 2-55) suggests that "*the selected design speed should be consistent with the speeds that drivers are likely to expect on a given highway facility. Where a reason for limiting a speed is obvious, drivers are more apt to accept lower speed operation than where there is no apparent reason.… Drivers do not adjust their speed to the importance of the highway, but to their perception of the physical limitations of the highway and its traffic*."

Further, p. 2-56 states "*a pertinent consideration in selecting design speeds is the average trip length. The longer the trip, the greater is the driver's desire to use higher speeds. Therefore, as the average trip length served by a facility increases, higher functional classes of roads with higher designs speeds are more appropriate*."

Some definitions are now necessary. Average Running Speed, also called '*space mean speed*', is defined as the length of the route segment divided by the average running time of the vehicles to traverse the segment. '*Running time*' includes only the time the vehicles spend in travel on the route. Average speed is taken from the speed guns, and is calculated by summing all the spot speeds measured (of the speed gun recordings) divided by the sample size taken.

So, while the speed guns can give an indication of the average speed of vehicles at a point (called a spot), the average running speed gives the average operating speed over the overall journey length. Thus, the longer the journey, the greater the impact of speed for the motorist. Therefore, lower speeds for a long journey, for example from Port of Spain to Chaguanas, or San Fernando, can create a significant increase in the average running time for the motorist, that is, in addition to the already frustrating effects of traffic congestion.

Due to the compression and rarefaction effects of traffic flow, any motorist would seek to speed up in the freer (rarefied) segments after the congested (compressed) segment. This is usually not a critical issue for those motorists who travel only within urban areas, but definitely a serious concern for inter-urban travellers. And AASHTO is saying that this fact should be considered in design speed, and thus, speed limit determination.

I received a very interesting comment from RCK: "*The issue of the speed limit should be heavily ventilated in many more forums because… When the opiate of the ticket money gets ingrained there will be no correcting of the ridiculous limit of 80kmph*."

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June 2, 2016