Analyzing the Problem for Road Speed Limit in China and Discussing Countermeasure

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Abstract: In this study, based on the scientific basis, there is a reasonable speed limit program feasible basis in our speed management. The Road speed limit method and countermeasure have not meet the transportation requirement, with the fleet development of the transportation, the improvement of road condition and vehicle level. Therefore, it brings out the problem such as “road limit value low”, “limit sign position not suit”, “limit scheme not free”. According to these problem, it analyzes the in-depth cause and develops the countermeasure for settle the limit problem in china.

Key words: Countermeasure, speed controlling, speed limit

INTRODUCTION

Speed limit is a common traffic control means for road traffic management. In developed countries, many relevant research institutions have carried out in this area. In China, with the development of road construction in recent years, the improvement of road conditions, improvement of the performance of motor vehicles, it improves drivers driving speed environment. the original speed limit development programs cannot meet the requirements of the majority of road users on road. determining the speed limit value is unreasonable, generally do not reflect the actual traffic conditions prevailing, there have been some problems caused by improper because the speed limit the phenomenon, such as "Road does not speed", "Road to become a fine way", "chaotic highway speed limit signs Intuit" and so on, these phenomena lead to a strong social repercussions, to a certain extent, affected the traffic management image. The purpose of this is to find the speed limit management problems through investigation, and to analyze problems, give the final measures. (Fildes and Lee, 1993) make a speed review: road environment, and make a detailed discussion for the road environment problem. The TRB Special Report analyse the review of current practices for setting and enforcing speed limits. The technical standard of highway engineering have been established by the China Ministry of Communications.

SPEED LIMIT PROBLEM IN CHINA

To find out the problems of road speed limit, this study collect this information and make the road speed limit research. After investigation, it found problems at the national speed limit is relatively common, the severity of different places is different, mainly shows that the "speed limit value is low, does not match with the actual traffic conditions", "flag is not reasonable and does not reflect the humanity", "speed limit program is not flexible, it cannot make full use of resources" three types of problems.

The speed limit value is low, cannot match with the actual traffic conditions: Based on a local example, a 200 km long freeway use 80 km/h speed limit, although the road is used in 80 km/h design standard, but the overall part is in good condition. In the lower traffic volume and good driving conditions, exceeding the speed limit of drivers have occurred in traveling time. According to the survey, more than 90% of the speed limit is too low, the speed value does not conform to reality, the road speed limit value cannot truly reflect the geometric alignment, traffic volume, traffic composition, accident records and other major components of the driving environment (Ministry of Communications, Technical, 2007). Typically, the choice of driving speed is based on road alignment, vehicle performance, road-side environment and the comprehensive evaluation. This evaluation have response to a certain extent, the way to the actual traffic conditions, and the current speed limit is based on driving conditions to identify the worst sections, and road traffic conditions are often only small sections of the worst, most of the better road driving conditions, so that the speed limit will result that speed limit value is low.

Can not reflect the human: This problem is more common on the road in China, the most prominent is the setting of speed limit signs of lack of foresight or ahead of time, failed to inform the driver in front of the speed limit, when drivers see the sign to respond it, it is too late, it is probably for drivers to wait for illegal punishment. In addition, adjacent sections with speed limit often lack of a reasonable transition between the different levels and
different road traffic environment (such as: urban roads and highways on connection), the more serious, because no account of vehicle performance and driving comfort, safety, often not suited to make the driver feel, there are some security risks.

**Cannot make full use of resources:** Speed options are not flexible in setting the speed limit value, often across the board, is not for the actual road traffic conditions, there is a problem in the speed limit. For example, big or small models, the maximum speed limit shall be 80 km / h approach is clearly simplistic and unscientific. When the one-way carriageway greater than or equally, few consider the sub-lane road speed limit. In addition the speed limit linear programs rarely distinguish between good road links and differences between the poor alignment, speed limit cannot be laid targeted programs, to a certain extent, caused by road resources cannot be fully utilized.

**PROBLEM ANALYSIS**

The problem of limiting has a long history Cause, it is caused by the development of road construction, the increasing car ownership, road conditions continue to improve the environment, improve vehicle performance. The performance of a fundamental speed limit in the current program cannot meet the actual needs of the development of road traffic, the speed limit value is not well balanced the relations between transport limitations and security. Specific reasons is the following three aspects.

**The lack of technical support for speed management:** Speed management in foreign countries is a highly technical work, it need reliable technical analysis as a basis for management decisions (Transportation Research Board Managing Speed, 1998). In China, the basis in this regard, reference to technical standards, specifications or guidelines is limited, there is no specific guidance on the basis of speed management techniques. Currently, the speed limit can be used is mainly based on road traffic safety laws and local regulations, road traffic safety law is a macroscopic speed limit guidance, not considers the road traffic conditions, environmental changes, program implementation and the actual access , it is , cannot pass an objective response to traffic conditions. Local regulations due to lack of systematic, often sets speed limits based on experience, ignoring a number of factors, given the program a reasonable speed limit is not strong. In addition, our research carried out with speed limits less than, less research results can be summed up, the corresponding speed limit standards, norms and guidelines have not been issued a timely manner, also contributed to the speed management as a reason for the lack of technical support.

**The speed limit based on design speed and experience in scientific:** Due to historical reasons, the speed limit is based on technical standards, guidelines, limited, managers and designers of general experience with the design speed or the speed limit, this is unscientific. Design speed is the key to road design parameters are based on the function of a road, grade, service level, along the topographic and geological and other natural conditions, but also to control the size of the project and the project cost, and to determine a certain minimum length of constant speed control value (Fildes and Lee, 1993). The speed limit is the balance of managers in the management process and other transport safety and transport time to decide between the value of a speed control, speed and design speed limits are different concepts. Widely used in foreign countries to determine the speed of the speed limit value, because it can be made according to actual traffic operating conditions. In addition, the road most of the indicators were higher than the design speed, as long as some sections of very small targets with a design speed, design speed using the speed limit so that, for those sections of high-speed targets in terms of design speed is a waste of resources. Experience is unscientific speed limit, speed limit is a highly technical science, considering the security requirements, transport limitations and the road environment and traffic conditions to be ascertained, the experience is not well-balanced relationship between them, often with a bias towards one aspect of the , ignoring the other side. In addition experience of speed limit signs, speed limit set can not solve the problem.

**COUNTERMEASURES**

From the above analysis of the rate-limiting cause of the problem can be seen, the main reason is the influence of two types of speed management. One is a technical reason: lack of speed limits based on, the use of unscientific design speed and experience the speed limit; the other is management reasons, there are long traffic management administration. The following reasons for these two types, with some mature experience abroad has been given the speed of problem-solving measures.

**Strengthening scientific research to solve technical problems in the speed limit:** Speed problems from the engineering point of view, comes down to the speed control problem of such a system science, which involves the speed and security, speed limit, transport efficiency and road alignment and other factors. For such a relationship, how to speed, control vehicle speed, so that transport limitations and to achieve a better balance between security and protect the security context to maximize the efficiency of road transportation, we need to have more in technology research large investment. Research in this area need to address three key issues,
first is the method for determining the speed limit value; second, limiting the program selection method; the third method is to set the speed limit sign. Here are three proposed solutions to the problem.

The method for determining the speed limit value: In other countries, determining road speed limit value, the more commonly used method is V85 speed method. This method is a kind of engineering methods to 85% of the bit speed as the speed of the initial value, and then considering the road alignment, road traffic accidents, road-side environment and other factors, the final selection of a speed limit value. The method used in foreign eet the wishes of the driver's driving, in line with the spirit of speed limit laws, in addition to acquainties more mature, with 85% of the speed because the speed limit most of the management to m number of studies have shown that 85% of the speed-bit speed in the vicinity of the the lowest rate of incidents. View of the method for determining the maximum speed limit value, the foreign share the results of more mature, our speed limit, but also the actual situation in our country should adopt this approach. Here the work of the next steps of this method (Ministry of Communications, 2009).

Step 1: Determine the speed target. Determine the target speed, target speed limits which determine the topographical features, linear features, climate and environment characteristics.

Step 2: The composition of traffic on the road to investigate, and also by a good road in accordance with the speed surveys were conducted.

Step 3: Determine the speed limit and speed limit section of the initial speed limit value within the segment, based on the findings of the speed within the segment by value, for the adjacent section, the survey speed line can be combined into a, by the end of each section to determine and the initial speed limit value.

Step 4: The road alignment verification, within the different sections of the pilot survey and analysis of road traffic accidents, to amend the reference speed value. Within each section to find out the speed limit value may be due to increased risks caused points to be processed when the speed limit

Step 5: After verification, can finally set the maximum speed limit within the different sections of the value.

How to select the speed limit: The final program in determining the speed limit value should be considered of "Road Traffic Safety Law" and the implementation of the provisions of the Ordinance on road speed limit. Speed limit in the specific selection programs should consider the following five kinds of factors to make a choice based on.

a: The speed limit value V85, consider restricted road speed limit: Programs in determining the speed limit, speed limit value should be determined by V85 method to determine the speed limit. Taking into account the limited road speed limit.

b: Considering traffic composition, speed characteristics: Traffic composition affect the operating characteristics of traffic flow, traffic operational characteristics of different models are different, so plan to be considered in determining the speed of traffic composition and speed characteristics. Traffic in the composition of a small passenger cars, buses and trucks of three. Analysis of the main service road are passenger cars, passenger or goods vehicles. Speed limit should make reference to passenger cars, buses and trucks V85 speed. This analysis can be used as sub-lane, divided models based on the speed limit.

Considering the number of one-way carriageway: When an amount equal to one-way carriageway lane 2, can be divided lane speed limit, driving directions on the left lane speed limit is higher and the right lane. Difference between the two Drive the speed limit 20 km/h, while more than equal to the number of one-way carriageway lane 3, should adopt the sub-lane speed limit, combined with the composition of traffic models can be sub-divided lanes and speed limits. Drive the speed limit value of the difference between two adjacent 20 km/h goods to zero.

Considering the minimum speed requirement: On the road, out to meet the road traffic safety law on the minimum speed requirements, at a minimum speed limit is also subject to the following requirements on. When, regardless of lane, you can not set the minimum speed limit value, because the provisions of the Road Traffic Safety Law has a minimum speed limit; lane speed limit when the set points, the minimum speed limit for lane. Drive the speed limit minus the 20 km/h.

Considering climate: Rain, fog and snow affect traffic sight distance and traffic conditions, speed limits when considering these factors. If the weather is good, more than 100 speed limit should be considered rain, fog and snow effects on the speed limit. In addition, the Road Traffic Safety Law should also be considered in the motor vehicle on roads in case of fog, rain, snow, dust, hail and other weather conditions of low visibility given requirements.

The speed limit signs setting: Setting the speed limit sign means drivers should be in the appropriate psychological and physiological test based on the observation - reaction - action and to study the relationship between the location of signs. Speed limit signs in the layout of information should focus on
repetition and speed limit signs to consider the value of
the transition.

Marking duplication of information: The distance
between speed limit signs should be certain limits. Spacing is too small, likely to cause information overload,
causing fatigue, or cause the driver of the blind, no longer concerned about the flags. Spacing is too large, may lack sufficient prompt the driver to make the driver feel confused, do not know the current road should take a reasonable speed.

Limiting the value of the transition: Two adjacent speed limit sign the speed limit should not exceed the difference between 20 km/h, especially in the current section of the road signs section of the road after the speed limit is higher than the speed limit signs 20 km/h or more, due to the speed differential greater may cause a more severe slowdown in operations to adversely affect driving comfort. In this case, may take the following interim measures to deal with:

Between the two speed limit signs in the appropriate place to set an additional speed limit signs, between the size of its value before and after the speed limit speed limit sign the speed limit of two between the transitional role to play.

If the previous value of speed limit signs, speed limit higher than the speed limit value after a speed limit sign, speed limit sign in before the appearance of the latter set "in front of deceleration," "pay attention to slow down" and warning signs to inform drivers in advance in front of traffic information, timely measures; also available for the location marking the laying of deceleration, deceleration through mandatory measures to achieve the transition from high to low speed. Where appropriate, signs and markings can be used in conjunction.

Strengthen the coordination of speed management,
clear responsibility: China's current traffic management system of long impact on the speed limit more serious, the management body is not clear, overlapping responsibilities, there is a typical reflection of the interests management are also set according to their needs, road speed limit signs set chaos. Therefore, all road traffic management should be strengthened coordination all swarmed; problems or conflicts, all of them after the reduction, so that the problems reflect the complexity and between departments, clear roles and responsibilities for the management duties. Proposed road management in of lead to social. Set the main responsibility for road speed limit signs is not clear, leading to Traffic Police Department on-demand setting, other road traffic determining the speed limit should be public security and traffic management business, both to take full account of safety factors, can also reduce the road traffic safety management responsibilities. Set clear procedures for the road speed limit signs, the proposed speed limit signs by the road management department is responsible for determining and Public Security Traffic Management business, the Commission, after public notice setting.

CONCLUSION

Speed management is an important traffic management work, it need to work from the technical coordination and management of all aspects of handling properly, can play its own role. At present, the road speed limit problems caused repercussions in the larger society, to some extent affected the management of the image. In order to fundamentally solve this problem, it need to increase research investment, improve the speed control method, the introduction of appropriate technical guidelines or standards for speed, so that our speed management based on the scientific basis, there is a reasonable speed limit program Feasible basis. Furthermore, it should strengthen the coordination between the traffic management department, to set clear procedures and speed limit signs, road sector management responsibilities, to make our work effective service to the traffic management.

REFERENCES


