

## Study on Countermeasures for Alleviation of Traffic Jamming in Xuzhou

Lihua Wang<sup>1, a</sup>, Yang Li<sup>2, b</sup>

<sup>1</sup>China University of Mining and Technology, Xuzhou 221116, China;

<sup>2</sup>Xuzhou Transportation, Xuzhou 221002, China

<sup>a</sup>wanghl1979@163.com, <sup>b</sup>282671530@qq.com

**Keywords:** Urban traffic, traffic congestion, countermeasures.

**Abstract.** In allusion to the urban traffic actuality of Xuzhou, 5 corresponding countermeasures, such as traffic planning, traffic supply, traffic organization and management, public traffic and constituting special institution, are put forward, which have reference significance for other cities in disposing urban traffic congestion.

### Introduction

In recent years, with the development of economic, society in Xuzhou City, motor vehicles showed a high growth state. Some areas of the city and the peak periods have frequent traffic congestion, and in time and space to spread, Give people travel and city function brings the serious influence. The urgent need to take comprehensive measures from the two aspects of soft, hard problem of traffic congestion is likely to become.

### Current situation and problems

By the end of 2012, Xuzhou motor vehicle quantities up to 1341352 units(Table 1 ) Growth of Xuzhou vehicle, which have a total of 605772 cars, with an average annual growth rate of 25%. Also has 613748 motorcycles and 600000 electric bikes, 700000 bikes.

Table 1 Growth of Xuzhou vehicle



At present, the problems still exist that the urban road network scale is insufficient, the density is low, and the structure is less reasonable. The length of main urban roads is only 345 kilometers, the density is about 2.97 kilometers per square kilometers, and the density of the branch network is only 0.78 kilometers per square kilometers. It is still large gaps between the national standard (7 kilometers per square kilometers). The roads which crossed the ancient yellow river and the railway are quantity deficiency. The channel number of lanes is generally less. It is only the two-way two lanes some by some roadways. The public parking facilities are lack, and the phenomenon of illegal parking is common, and it has a great influence on the dynamic traffic. The public transportation service level is low, and it failed to give full play to the leading role in the city travel. The public bus accounted for the proportion of only about 19%.

In recent years the speed of Xuzhou city construction continues to accelerate, center city development intensity, population density in part of the region is more than 40000 people / sq km, population density is high, leading to increasingly serious city traffic pressure, part of the main road traffic flow is saturated with peak or near saturation, including Fu Xing South Lu, Zhongshan North Road, Xi'an North Road, Heping road, Hubei Road, meanwhile Daqing road tunnel, underground passage under the Lake Road, Jiefang Road Bazi Street Bridge, Zhongshan North Road Qingyun bridge congestion and Heping Bridge West Jiefang road is already very serious.

### **Working thoughts**

Through the analysis of social, economic and traffic developments in Xuzhou, the strategy is put forward for the regional highway development of this area. Take the "pumping sparse, enlargement, priority, restrictions, control, civilization" strategy. Land layout and transport system for city development coordination, Organization of central city function and population density; Strengthening infrastructure construction, improve the traffic carrying capacity; Optimize system of urban public traffic--expand high capacity energetically fast bus system. Raise the level of traffic management, ensure the police force allocation, To carry out the social civilization traffic publicity and education activities, to cultivate the public good traffic literacy; and gradually establish a long-term mechanism to ease traffic jams.

### **The measures to ease traffic congestion**

**Take the strategy "pumping sparse", do subtraction well.** Speeding up the construction of urban layout structure of "two hearts and five kilometer", and actively promote the peripheral group development, accelerating the construction of Xuzhou new city, actively promote the group construction of economic development zone High-speed Rail business district, Copper Mt. district and Jiawang metro, aviation Metro, and strengthen the distribution of public service resources, in those areas making plan to guide the administration, education, health, business and other public service resources to convert into new functional area new, and constantly improve the comprehensive and city service function, increasing employment opportunities, attracting new comers and part of the population in heart city to there. Traffic congestion relief center urban function.

**To break the bottleneck of traffic, improve road traffic net, do addition well.** Conducting a comprehensive search for urban road traffic congestion and congestion points, the implementation of the demolition of center flower, non-isolation beds on key road congestion, increasing the number of lanes, construction of harbor style bus station during peak hours, single and double limit line measures such as ease congestion; the main intersection's Hand an congestion point of the implementation of signal timing optimization, traffic canalization, the construction of three-dimensional underpass, demolition Island, widen the road to improve traffic capacity. Strengthening and improving the road traffic engineering design and traffic operation design for road traffic organization, detailed design, detailed construction and detailed management.

The current ground traffic organization form a single district in Xuzhou is difficult to adapt to the needs of future traffic growth, especially difficult to adapt to the future construction of city center zone, new city, economic development zone, a large volume of traffic demand between the group and the Tongshan new city, we should vigorously promote the rapid communication construction city three-dimensional traffic network of city group. On the one hand speed up the planning and approval of rail transit construction, strive for development as soon as possible; on the other hand accelerate the planning and construction of the city expressway system, actively to the Second Ring Road, Heping road, and other important roads .

Strengthen the management of traffic, enhance the level of civilized traffic. Firstly, it's supposed to make the Construction of center city road, leading smooth working mechanism, Secondly the central city traffic congestion points counseling contingency plans will be helpful, establishing a

first class traffic management making up of a certain number of police to case traffic, strengthening the central city road, the traffic jam node guidance and traffic improvement and site traffic congestion of the school, hospital, market surrounding counseling.

In order to further strengthen the traffic signal control system, effectively reducing the delay of the intersection, and improving traffic efficiency; further strengthen the construction of application of electronic traffic police and monitoring system, improving the efficiency of traffic violation penalties, and road traffic monitoring in real time, taking the timely implementation of traffic control.

Relevant departments can make full use of the news media position and further strengthen about obeying traffic regulations consciously, to improve the modern traffic civilization level of the citizens.

**Developing bus undertaking, adjustment and optimization of public transit network.** A comprehensive set of "bus priority" concept, from the "financial priority, priority, priority, signal priority" and other aspects of the establishment of public transport development policy support mechanism.

Continuously optimization of public transportation network layout, form the coordination bus express and general line, trunk and branch, multi hierarchy transit network layout reasonable division of labor, scientific, and improving the degree of coverage of transit network, increase the bus departure density, improve the bus service timeliness; actively promote the advanced public transportation includes fast bus, bus lanes, strengthen delimit, that the peak period bus priority; speed up the intelligent transportation system construction, improve the public transport scheduling and service level; combined with the rail traffic and road system planning, supporting the establishment of motor vehicle and bicycle park and ride facilities, bus interface facilities etc..

**To establish the professional institution, and gradually establish a long-term mechanism to ease traffic jams.** Traffic congestion management is a very urgent and important engineering, sustainable development of the city. Therefore, consider the establishment of Xuzhou city traffic development policy committee should as soon as possible. To establish a long-term mechanism of traffic advisory, coordination and research, in order to reduce the cost of information transmission process as well as the management and coordination of time and energy; improving the efficiency of city traffic management.

**Strengthen the construction of intelligent traffic, and promotes traffic science and technology.** To further strengthen the traffic signal control system, and gradually realize the area adaptive signal control, effectively reduce the delay of the intersection, improve traffic efficiency; further strengthen the construction of application of electronic traffic police and monitoring system, improve the efficiency of traffic violation penalties, road traffic monitoring in real time, the timely implementation of traffic control; further strengthen the traffic guidance system, effectively regulate the traffic flow distribution, bearing the full potential of city road; strengthen the construction application of intelligent parking system and parking guidance system, improve the parking service level.

Implementing the Huaihai road signal green wave control, and gradually extended to other trunk road. Recently on the three ring within about 60 intersection signal lights the implementation of network engineering.

**Reference and study the measures of total amount control of vehicle.** Learn from the advanced international city and Shanghai, Beijing and other domestic city traffic development experience and lessons, encourages the public to encourage reasonable car, bus travel, and according to the dynamic monitoring of traffic congestion, as soon as possible to study and introduce relevant technical and economic measures the total vehicle control, to slow the car high growth, strive for more time and space to promote bus priority implementation, construction of rail transit network, improve the comprehensive transportation infrastructure system.

## Conclusion

City traffic congestion cannot be solved completely, and just can be released. There are many counter measures to ease the city, but it won't work only by building more roads. needs to considering the city planning, traffic awareness, economic, social management and other aspects, a comprehensive analysis of the cause of congestion, and puts forward the corresponding countermeasures of relieving traffic jam.

## References

- [1] Q.L. Ren: Research about Chongqing city traffic congestion and Countermeasures [J].Traffic standardization, 2009 (13) 163-168.
- [2] Z.W. Zhen: China city traffic [M].Beijing; China Communications Press,1994.
- [3] Lee Simmons: Developing Freeway and Incident Management Systems Using the National ITS Achitecture. Report No.FHWA-JPO-98-032, June1998.
- [4] Peter Newman: Transportation and Land Use: Internation Experiences: Paper for International Conference on Sustainable Transport and Clean Air, Jakarta, 2000.
- [5] Weison Black: Sxenario building as a tool for planning sustainable transportation system [M].2003:323.
- [6] Transportation Planning Handbook [Z].ITE.USA.2003.2.127-149.
- [7] Hiller Bar-Gera: Evaluation Of a cellular phone-based system for measurements of traffic Speed and travel time [J].The case study from Israel.20007.12.380-391.
- [8] Bull Alberto: Traffic congestion the problem and how to deal with it.Mary land :Lexis Nexis.2005.
- [9] Technol. Dev. Agency: Estimating Road Traffic Congestion using Vehicle Velocity [R].ITS Telecommunications Proceedings.2006.7.1001-1004.