The Research on Aggregate Analysis of the Regulatory Detailed Planning by considering the Traffic Capacity

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ABSTRACT

The regulatory detailed planning is substantive legal planning stage of urban planning in China. The first problem is the need to check and inheritance the indicators of total planning land about construction in the process of compiling. According to city zoning rules establishment work reality, the basic thought of the system analysis, the traffic engineering and urban planning in the related theory and method on the basis of macroscopic traffic flow classification, using the road network capacity calculation method and traffic distribution forecasting method proposed with interregional channel planning level of service and the internal road network planning level of service as the control target, proposes the method by using the master planning road network control to inversely calculate the total amount for the construction of district land use. The calculation example is also given. Studies show that the presented control rules compiled for checking algorithm can play check function about the amount of land used for construction master planning achieve under the premise of the control overall situation trunk road network level of service, to avoid the amount of unnecessary in the subsequent units, neighbourhood planning adjustments.

Keywords: Land Use and Transportation Interaction, Land Use Intensity, Regulatory Detailed Planning, Road Traffic Planning

1. INTRODUCTION

Road network capacity is not a new problem. Ford L. R. Jr and Fulkemon D. R.(1956), professors in operational research at Princeton University, firstly studied the road network capacity by applying the max flow/min cut theory, which was subsequently developed into exploring the maximum traffic entities that the road network can bear by applying the method of traffic distribution simulation and single-double layer planning [C. Chen, 2002]. French engineer Lewis
Ma Shang (1980s) introduced the concept of “the consumption of urban time and space”, which regards the road network as a container, extended in two dimensions of time and space. The movement of any traffic entity shows the consumption of time and space in the container, from which the capacity of road network can be determined. Yasunori Iida, a professor from Kyoto University in Japan, uses the graph theory to study road network capacity of single logistics and uses the traffic assignment method [Yasunori, 1993], to consider the maximum capacity under the conditions of drivers’ route choice, whose study idea and methods are similar to that of the United States.

Our country begins the research on road network capacity later than other countries, which mainly focuses on improving foreign research achievements. Yang Tao from the Southeast University (1995) improved the Ford-Fulkson algorithm and proposed the evolving Cut Set Method based on the max flow/min cut theory, which solved the problem of random and open road net [Yang, 1995]; Li Shuo (1999) from Hunan University proposed the theory and models on road network capacity in a narrow way [S. Li, 1999]. In addition, Yang Dongyuan et al. (1995) from Tongji University, proposed road network capacity models from the perspective of the system, which satisfy the balance needs for both users and the system [Yang, 1995]. From the perspective of facilitating computation, Xu Lunhui from South China University of Technology put forward a method of determining the maximum traffic volume under constraints of road capacity [L. Xu, 1997]. Based on the uniform distribution of the link capacity, Kuang Aiwu et al. (2007) from Changsha University of Science and Technology analyzed the random change of road travel time in degenerated road network and constructed a model of probabilistic users equally distributing traffic [Kuang, 2007]. Based on the analysis of OD structure characteristic of the city road traffic network, Cheng Lin (2007) from Southeast University, proposed basic ideas and models expressing the road network capacity, and illustrated network capacity modelling based on influential factors [L. Chen, 2007]. Laura Eboli et al. (2012) form the University of Calabria, explored the factors which affecting transportation and land-use systems interactions, and the results showed that travel behaviour was more influenced by the economic characteristics of population [Eboli, 2012].

Traffic simulation describes large numbers of vehicles on a traffic network by taking advantage of the reduced dimensionality typically found on road networks: vehicles follow roads and their motion can be described with few degrees of freedom. Research on techniques for traffic simulation has been carried out since the 1950s; see the survey of Helbing for a good overview of the field. Traffic is an integral component of any virtual environment that attempts to realistically portray the contemporary world, be it a video game, movie, or virtual globe. Traffic is also a global challenge with a direct impact on the economy, energy consumption, and the environment in today’s society. Traffic simulation is a key tool to address both the challenges of traffic and its visualization. However, traffic simulation takes place on a complex domain and realistic road networks. The main objective of this work is to create road network representations from polyline data that can be used directly for real-time traffic simulation and visualization in a virtual world.

Traffic simulation presents unique challenges in the acquisition and representation of the underlying simulation domain, namely, the road network. Digital representations of real-world road networks are commonly available, but the level of detail of these data is not immediately usable for many queries related to traffic simulation. Traffic simulations take place on a network of lanes. This network needs to be represented with all its details, including the number of lanes on a road, intersections, merging zones, and ramps.

Regulatory detailed planning in urban planning is substantive legal planning stage, the urban land layout, the layout of public facilities and the shaping of the space environment is of great importance to stipulation, is a key link in the process of road traffic facilities to the ground. In
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