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## Methodology of Transportation System Management

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**Abstract**—In this paper, we propose an improved design methodology to meet the changing demands of an existing transport system available in rural or urban areas. This is necessary to focus on the convenience and comfort for road users. Effective control of the overall transport system is essential to enhance the safety and convenience. However, on changes in population coupled with the economic development, mean that most of the control and management methods can quickly become dated or even have been unsuitable, leading to the vehicle development. This paper thus seeks to develop a practical and efficient methodology to allow current transport system to be updated to alleviate congestion. For this purpose we undertake a comparison between internal transport system and urban traffic. The methodology useful for many applications which are necessary for development in current transport system.

**Keywords**—Transportation system management (TSM), TSMO, safety, mobility, demand, social effects, awareness.

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### I. INTRODUCTION

Main characteristics of the transport system are the following: transport system network; flows of transport means in the network; flows of freight or passengers in the network; capacity of terminals and quantity of interactive transport means in the terminals. From the point of view of the theory of systems –the national transport system is a complex system.

The structure of national transport system consists of numerous elements of system and their interrelation. Main characteristics of this system are:

1. Freight and passenger flows (applications for transportation, their distribution according to time and location);
2. transport network and the fleet of units of separate transport types;

3. Traffic plans of separate transport type units interaction of transport modes in the terminals.

Scientific research of transport may be efficient and useful from the practical point of view, on condition that it is based on the factors determining the development of transport system, as well as on its natural conception and the knowledge of analytical (methodological) instruments offered by the specialists of transport engineering, transport economics, management science, mathematics, statistics and other sciences.

National transport system is being developed and improved in two directions: quantitative – the development of industrial transport capacities; and qualitative – improvement of technical level of transport infrastructure, acceleration of transportation speed, cutting transport expenses, etc.

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Research of transport system has to be carried out in three aspects:

1. Functional – determination of the role of every transport mode within a territory (district), between separate territories and on the international scale.
2. Sectorial – relations between separate transport modes on the national and regional scale, basing on the general Sectorial structure of transport system;
3. Territorial – assessment of the regional peculiarities of general transport system and the forms of territorial transport organization.

**1.1. Need for management performing and assessment methodologies:**

The need for performing and assessing management methodologies is not presented very often in scientific research. For assessing management usually the most of the assessment are realized considering current performance. Most of these methodologies are considered improper due to fact that their bad performance.

**2. Methodoloies for performing and assessing transportation system management:**

**2.1 Transportation system- operations part:**

Transportation system is a part of operations management. It is the management of productive resources, the design and control of the systems which consume and use productive material resources, human resources, equipments and facilities, in order to realize products or services. If you have problems with operations, you cannot think about strategy, while strategy will always blocked by the present.

**2.2 Signal synchronization and Roadway intersection improvements:**

Corridor- wide or regional traffic flow improvements are designed to increase average travel speeds, reduce vehicle delay and idling, and result in fewer vehicle accelerations and decelerations. A specific project includes

traffic signal synchronization, regional congestion management systems, and intersection improvements. Many of these projects involve elements of intelligent transportation system.

**2.3 Incident Management / Traveler Information:**

Incident Management projects include service patrols that assist or remove the disabled vehicles from blocking travel lanes, computer systems that control traffic flow trough intersections when incidents occurs; and monitoring devices that scan roads and freeway for incidents and, in turn, either send assistance to injured or debilitated vehicles or help reroute traffic around incidents. If incident are quickly cleared away, then vehicles do not have to idle in traffic as long. Incident management projects also minimize driver’s need to seek alternate route to avoid congestion due to incidents. Combining incident management with enhanced traveler information can help to reduce the amount of time that vehicles experience today.

**2.4 Tests conducted to find the material properties:**

Material testing capabilities to provide us guarantees about safety, quality and performance. It includes material selection, materials performance and failure analysis, using both destructive and non-destructive testing. Material testing procedures giving us answers about its performance and timescale.

Table No. 1- Bitumen Test results:

Sr. No.	Penetration test	Softening test	Ductility test	Specific gravity test
1	84	45	99.3	.99
2	86	43	82.2	.99
3	83	45	83.4	.98

**2.5 Details of existing road system:**

As per IRC, width of carriageway 3.5 for single lane with kerbs and shoulder width= 2.5 m necessary. The existing road having standard dimensions which is mentioned in IRC. There no need for improve dimension of existing road.

### 2.6 Speed control:

Speed reduction programs are usually implemented by local or state transportation or law enforcement agencies, primarily in order to improve safety. Speed controls can also reduce emissions and fuel consumption since emission of certain pollutants is highest at travel speed above 55 miles per hour.

### 2.7 Shifting/ Separatingg Freight Movements:

Cities can regulate the movements of trucks within some areas of the region at certain times, changing the travel speeds for bothh trucks and other traffic and improving traffic flow. Historically, these programes have involved restrictingg trucks on local streets in certain areas of the central business district during peak hours, designating

specific loadingg zones, delivery schedules, and truck routes, as well as multiple business delivery consolidation. Some strategies are also voluntary, and are designed to create incentives for trucks to use roadway duringg off- peak time periods. Development of “truck only “lanes on highways is also a strategy to separate freight movement, and is often implemented primarily for traffic safety reasons.

### 3. Conclusion:

This paper has given a methodology of the successfully TSM application, for the removal of specific problematic factors (such as Traffic congestion and accident) that cannot be removed effectively via operational methods. It examines, TSM, a method for improving productivity of existing transportation system and operation that use them. The high commercial vehicles and bus timing must be displayed for there will be less density of HCV required to reduce traffic congestion. Different tests taken in lab are used to determine material quality used for pavement construction.

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