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INCREASING THE SPEED OF TRANSPORT CONNECTIONS AND SAFETY OF URBAN PASSENGER TRANSPORTATIONS BY M2 CATEGORY WHEELED VEHICLES

The M2 category vehicles are widely used for passenger transportations in the towns due to such advantages as economy, maneuverability and others.

The research aim is to increase the road speed of route vehicles in the town taking into account the heavy traffic and providing the safety of passenger transportations.

While researching the urban bus route number 4 in Zhytomyr we have detected such organizational and technical factors influencing the road speed of buses as:

- road conditions (type of pavement and its state, width of the roadway and its provision with the necessary facilities, highway lighting and visibility, facilities of street traffic regulation, the amount of crossing at one and different levels on 1 km of way);
- traffic density and traffic flow;
- the absence of the optimal length distances between bus stops on the route;
- the lack of organization of traffic on the bus lanes.

It is suggested to include in the formula of road speed determination the coefficients which show what the speed depends on:

$$V_t = K_1 \cdot K_2 \cdot K_3 \cdot K_4 \cdot V_c, \quad (1)$$

where K_1 – the coefficient of dependence of bus road speed on the amount of distances between bus stops on the town route;

K_2 – the coefficient of dependence of road speed of bus movement on the amount of crossings on 1 km of way;

K_3 – the coefficient of dependence of road speed of vehicle on the traffic density on the town roads;

K_4 – the coefficient of influence of road conditions on the road speed;

V_c – the speed of unobstructed connection.

In this paper the influence of traffic density on the municipal roads on the road speed of the vehicle was more thoroughly examined. The intensity changes depending on the time of the day and the composition of traffic flow.

The route area which passes through the central part of the town was thoroughly examined. The results of traffic density in the traffic flow with the indexes of

acceleration and deceleration have been got. The analysis of the received data represents double the increase of test indexes that caused the delay of the route road traffic. It should be noted that the delay of the bus route road traffic arises at different traffic density of the traffic flow in the certain direction. The influencing factors which allowed making recommendations about the optimum speed depending on the road conditions have been found out.

The delay of the route road traffic in “rush hours” has increased by 25-30 percent in comparison with ordinary or minor traffic. The traffic delay after the “rush hours” has increased by 15-20%.

To increase the traffic smoothness and the road safety the system of help to a driver bringing to the recommended vehicle speed is offered. The proposed system finds out the traffic hindrances and informs a driver about the possibility of necessary manoeuvre execution. The system determines such possibility on the basis of hardware information analysis. Such information includes the presence and distance to other vehicles, their speed; the requirements to the stationary means of traffic regulation.

The offered system can also control the traffic violation because the vehicle is connected to the GPS system and it can pass the information to the traffic control centre.

The increase of efficiency and safety of passenger transportations may be achieved only with the help of complex measures which should be implemented not only on the vehicles but also by organizational and technical activities and by means of traffic regulations.