where: $\boldsymbol{t_r}$ is the reaction time, *s*; $\boldsymbol{t_{at}}$ – the actuating drive time, *s*; $\boldsymbol{t_{inc}}$ – the time from start to fully developed deceleration (from ***0*** to $\boldsymbol{a_{br}}$***)***, *s*; $\boldsymbol{V_1}$ – the speed overpassing vehicle, *m/s*; $\boldsymbol{\Delta S}$ – the security distance, $\boldsymbol{a_{br}}$ – the fully braking deceleration, m/s^2.

Distance $\boldsymbol{d_2}$ is determined by the condition for the safe return to the right lane without skidding by the equations for the performance "Overpass by changing the lane"

$$d_2 = \left(8V_1^2 Y_{sh} / g \quad\right)^{1/2}, \tag{3}$$

where: $\boldsymbol{Y_{sh}}$ is the lateral shift when changing from one line to the other. It can be reception equal to the width of the line ($\boldsymbol{b_l}$); ***g*** - the gravity, m/s^2; φ – the coefficient of friction.

If $\boldsymbol{Y_{sh} = b_l}$ the time of visibility, needed for overpass can be computed as

$$t_{op} = S_{op} / V_1 = \left(l_1 + l_2 + d_1 + d_2\right) / V_1 . \tag{4}$$

The condition for safe overpass stationary obstacle in the presence of a vehicle is complete overpass as between oncoming vehicles $\boldsymbol{A_2}$ and $\boldsymbol{A_3}$ is also ensured a safe distance of $\boldsymbol{S_s}$.

$$S_s \quad S_{op} + \Delta S + S_3 , \tag{5}$$

where $\boldsymbol{S_{op}}$ is the distance between vehicle $\mathbf{A_2}$ and oncoming vehicle $\mathbf{A}_3$ at the start of overpass, *m;* $\boldsymbol{S_3}$ - path, which oncoming vehicles pass for the time needed to overpass the obstacle, *m.*

$$S_3 = V_3 t_{ot} = V_3 S_{ot} / V_2 . \tag{6}$$

After substitution the condition for safe overpass follows the final type of equation

$$S_s \quad S_{op} \left[\left(V_1 + V_3\right) / V_1\right] + \Delta S . \tag{7}$$

B) A model for overtaking into a traffic flow.

Overtaking in traffic flow oncoming vehicle is shown in fig. 2 [1]. The path of overtaking consists of two parts:

- A joint path $\boldsymbol{S_2}$ is the distance which the both vehicle traveled. This is the path traveled by the overtaking vehicle during the overtaking time $\boldsymbol{t_{ot}}$

$$S_2 = V_2 t_{ot}. \tag{8}$$

- A relative path to overtaking $\boldsymbol{S_{rel}}$. This is the additional distance elapsed between vehicle $\mathbf{A_1}$ to be able to go before vehicle $\mathbf{A_2}$.

$$S_{rel} = d_1 + l_2 + d_2 + l_1. \tag{9}$$

The successful overtaking depends on the relative path which should be traveled during the overtaking time $\boldsymbol{t_{ot}}$. As the $\boldsymbol{t_{ot}}$ is less so the overtaking is more safely. $\boldsymbol{T_{ot}}$ depends essentially on the relative difference between the speeds $\boldsymbol{V_1}$ - $\boldsymbol{V_2}$.

$$t_{ot} = S_{rel} / \left(V_1 - V_2\right) = \left(d_1 + l_2 + d_2 + l_1\right) / \left(V_1 - V_2\right),\ s. \tag{10}$$

The accuracy of expert conclusions depends on correct assessment of the relative path and especially the determination of two distances $\boldsymbol{d_1}$ and $\boldsymbol{d_2}$. They should pay attention on determining distances very precisely and to account all factors and evidence, including testimony of witnesses.

There are two main types of performance overtaking: Overtaking at a constant speed and Overtaking at an acceleration. This paper considers only the case overtaking at a constant speed, when more rapid vehicle overtake another moving at a slow speed at the appropriate time when there is no oncoming traffic. In this case the overtaking takes place immediately without changing the speeds of both vehicles. An example of overtaking at a constant speed is shown in fig. 2.