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THE EFFECT OF TRAFFIC SIGN LINES ON ROAD TRANSPORT INCIDENTS

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Abstract

In recent years, more than 2,300 people die in accidents in our country every year. Many factors contribute to these accidents, including non-compliant road markings. This article examines the current condition of the road marking lines in the central streets of Tashkent and gives recommendations for improving their condition.

Keywords

Road marking lines, road traffic incidents, Zehntner ZRM 6013+ RL/Qd, night vision, day vision, reflection coefficient.

Extensive organizational and practical work has been carried out in recent years in our country in the field of improving the road safety system. At the same time, despite the measures taken, the number of road traffic accidents leading to death is still high, indicating the need for radical reform of the road safety system.

Decision of the Republic of Uzbekistan in accordance with the strategy for the development of the public safety system in the Republic of Uzbekistan in 2022-2026, as well as in order to guarantee the protection of human life and health on highways from any incidents in the conditions of the New Uzbekistan accepted[1].

In the development strategy of New Uzbekistan for 2022-2026, "Goal 16: To reduce accidents and deaths on the roads by improving road infrastructure and creating safe driving conditions..."[2].

Currently, it is necessary to use road marking lines on highways to increase traffic safety measures, and this has been proven in practice all over the world. Road marking lines, which are an important part of technical means in the organization of traffic, have now become an integral part of normal optical perception of the road. Proper provision of road markings and lines is important in maintaining the integrity of highways.

As a result of the lack of road lines, many road traffic accidents occur. In Russia about 100 people die and more than 300 people are injured every day as a result of traffic accidents [3]. In our country, this

indicator is 9902 per year (27.5 per 100,000 population, 23.7 per 10,000 vehicles), of which there are 2,086 cases of death (per 100,000 population "liq-5.8 cases, death-related cases per 10 thousand vehicles-5 cases), cases related to bodily injury-7816 (injury-related cases per 100 thousand population-20.7 cases, per 10 thousand vehicles 24.4 related to vehicle injuries). Of this, 2356 people died, 2.9%, and 9606 people were injured, 3.9% [4]. Since it is very difficult to expand the road network at a pace that matches the growth of traffic, a generally accepted way to combat the increase in accidents is to use alternative solutions to build a road network that improves road safety in the face of increased traffic. In addition, one of the important tasks is to ensure that the road marking lines are well visible during the day and at night.

Timely and correct use of road lines leads to a 39-50% reduction in the number of road traffic accidents. On highways with lane markings, the speed increases by 1.2...1.5 times, and the number of accidents decreases by 1.3...1.5 times. In addition, It is explained by the significant reduction of conflicts that the number of serious accidents decreases, and the number of oncoming vehicles is full. [5].

In France, it was found that the drawing of longitudinal and center lines reduces the number of accidents by 15%. Germany reported a 26.6% reduction in night-time accidents, a 44% reduction in fatalities and injuries, and similar data in the US [6].

According to the results of the analysis conducted in countries such as Russia, America, Germany, Australia, France, road traffic accidents have decreased and the role of high-quality road marking lines is emphasized. We can see that each line on the road has a special importance in road safety. (Fig. 1.)

a) b)

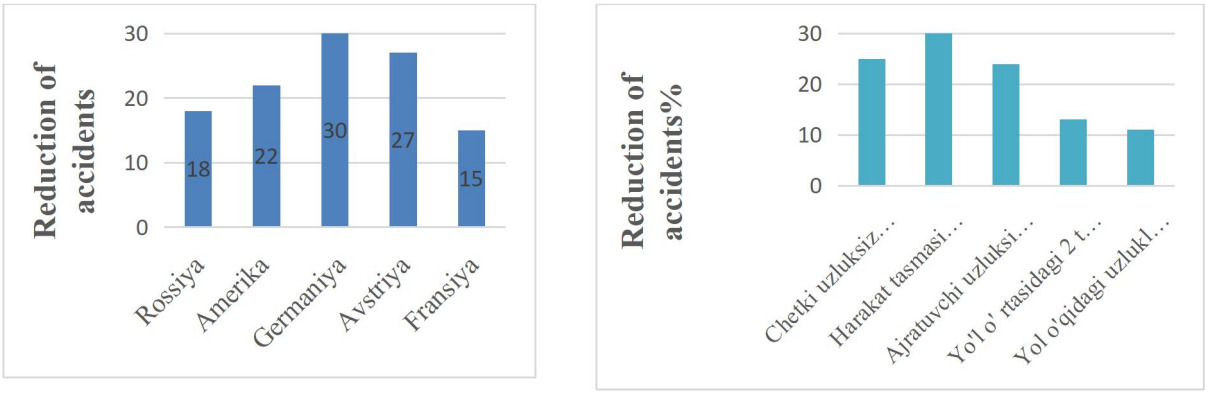


Figure 1. The influence of road lines on the level of accidents: a) according to the data of different countries; b) on different sections of the road.

"Babur Street" in Tashkent city was selected for the purpose of researching the current state of road markings (Fig. 2).Babur street is a street located in Yakkasaroy district, between Beshyogoch square and airport square, 4.3 km long. "Babur" street is one of the central streets of the city of Tashkent and the speed of movement is very high. (Fig. 3).

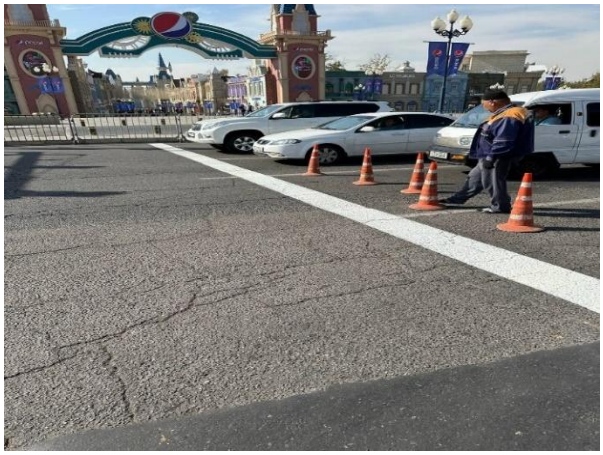


Figure 2. Status of road marking lines on "Babur" street

Figure 3. Speed of traffic on "Babur" street.

Before drawing the road marking lines, cleaning the city streets was almost impossible to wash and dry the road, so such work was not done before the line was drawn. Due to the high speed of traffic, it was possible to close the road for a long time. did not, and as a result, we cannot say that the paint has completely dried and reached a ready state. These conditions are considered to be one of the factors that cause the road markings to be in poor condition in a short period of time. By checking 2 quality types on "Babur" street, the blackout periods of the lines were predicted:

1)R(l)-Specific light reflection coefficient in dry coating (evening)

2) Q(d)-Relative reflection coefficient (daytime).

On "Babur" streetThere are lines 1.1, 1.2, 1.5, 1.4, 1.6, 1.8, 1.11, 1.23. Paints were used to draw road marking lines in our research facility. Materials are imported from foreign countries and prepared at "Uzyolbelgi" DUK. The paint contains enamel chalk and glass ball and several additives.

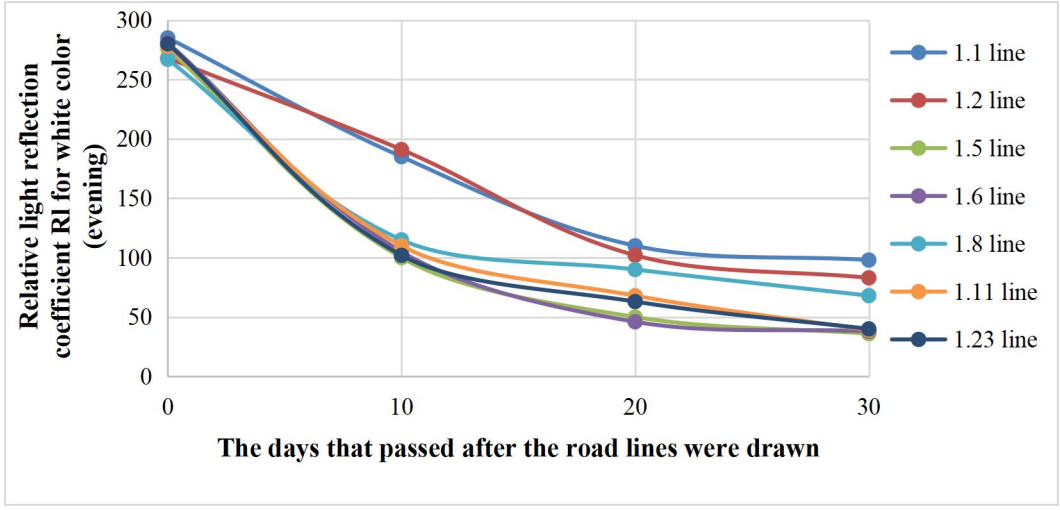
Experiments on dry pavement Zehntner ZRM 6013+ RL/Qd retroreflectometer belonging to the laboratory of DUK "Uzyolbelgi" are used to determine night visibility (RL) and daytime visibility (Qd) of road and airfield markings, ambient temperature and relative humidity in dry and wet conditions. was carried out on the measuring device (Fig. 4). R(l) for white and yellow color R5=300 mcd/lx*m2. Q5 class for Qd white is 200-300 mcd/lx*m2. For yellow, Q3=130 mcd/lx*m2 should not be less.

These indicators were analyzed 10 minutes after the road marking line was drawn, 10 days, 20 days, 30 days, and 157 days before the new line was drawn.

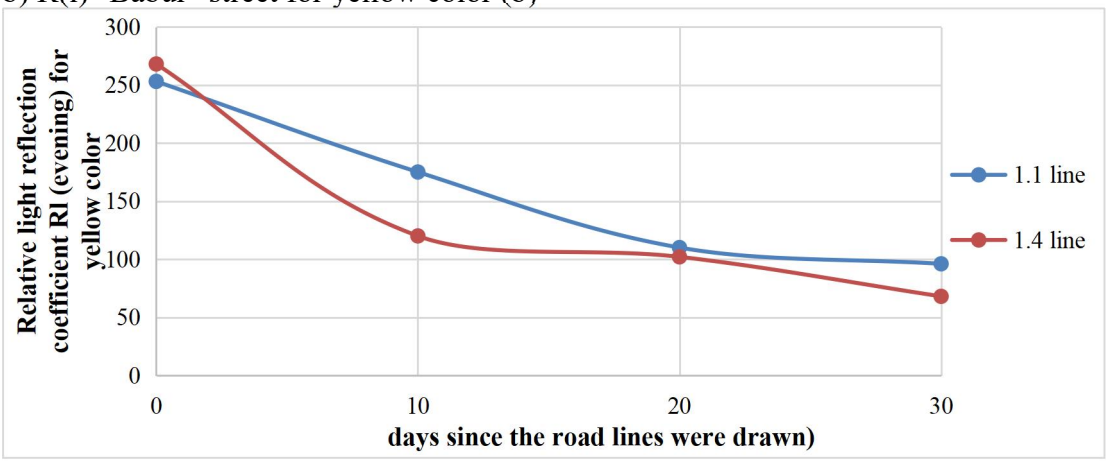
Figure 2. Measurement process using Zehntner ZRM 6013+ RL/Qd retroreflectometer on "Babur" street.

1. Straight plots

a) Relative reflectance values R(l) for White on Babur Street. (a)



b) R(l) "Babur" street for yellow color (b)



c) Qd "Babur" street for yellow color (c).

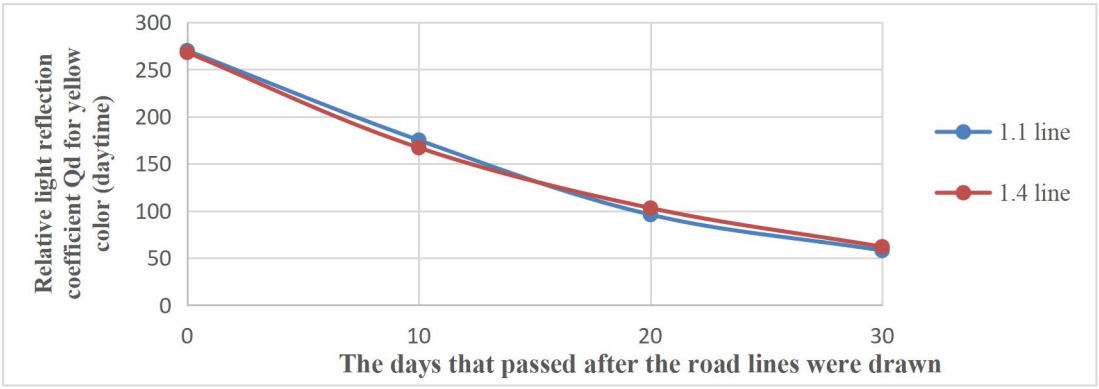
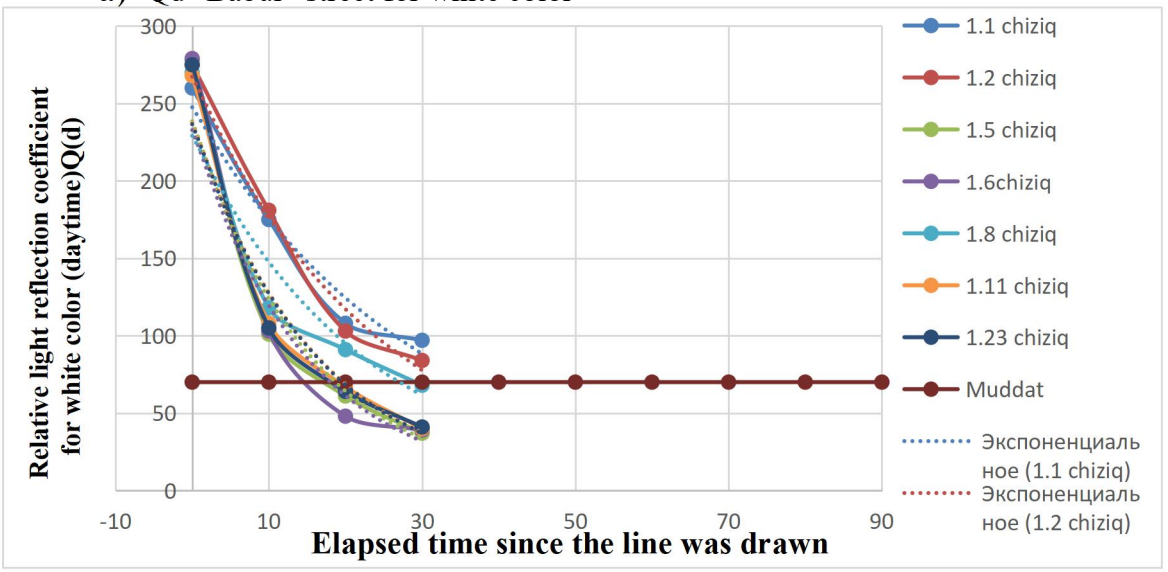


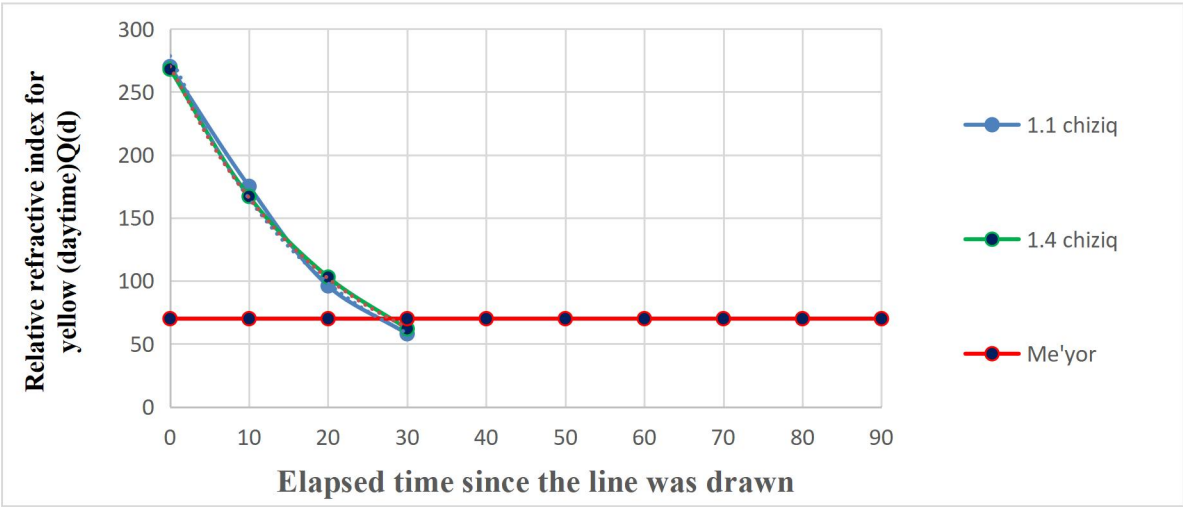
Figure 5. a, b, c - Comparative light reflection coefficient indicators

We can see from the graphs that mostly the road marking lines do not meet the service life requirements after 10 days.

a) Qd "Babur" street for white color



b) Yellowfor color Qd "Babur" street



Own DSt 3419:2022 "Road lines. Classification. If we compare with the standards specified in "Technical Requirements",If the reflection index is less than 75, the line is considered unusable [8]. As a result of the forecast, we can see that the lines become unusable after 30 days.

Conclusion:

In conclusion, the correct application of road marking lines allows to increase road capacity, reduce transport and operational costs and reduce the harmful effects of the environment on nature.Studies show that when drawing road marking lines, the existing pavement surface was not cleaned of dust and other impurities. In this case, the technological process of drawing road lines is broken, and as a result, the service life of road marking lines is reduced by an average of 10 days.As a result of the permission to move 5-7 minutes after the road lines are drawn, the paint does not dry completely, as a result, the car tires press on the paint, reducing the level of reflection from the initial time and, as a result, reducing the service life. In this case, it is recommended to draw the road lines at night or when there is less traffic. On the city main streets with multiple lanes, it is necessary to draw on the lanes in turn and to follow the construction time of the road. As a result of our research, it was found that by washing the pavements of the main streets of the city once a week, the service life of the road lines can be increased by an average of 15 days.By ensuring the correct and efficient functioning of road marking lines on highways, we will achieve a reduction in the number of traffic accidents and, most importantly, create a comfortable and safe environment for the population. We can increase the service life of road marking lines by using high-quality and international standards materials for drawing road marking lines.

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