

Table 1
Experimental data obtained at 45 °C

| Fluidity parameters | Experi- mental tempe- rature | Bitumens | | | | | |
|--|---------------------------------------|-------------|-------------|----------------|-------------|-------------|----------------|
| | | NB 2 | NB 3 | NB 3 P3 | LB 2 | LB 3 | LB 3 P3 |
| Penetration at 25°C | | 79 | 118 | 77 | 75 | 105 | 57 |
| Softening temperature according to ISO | | 48,4 | 42,3 | 52,6 | 50,4 | 48,0 | 57,2 |
| Softening temperature according to the standard method | | 45,4 | 40,4 | 50,6 | 50,3 | 46,1 | 56,6 |
| Penetration time, sec.: | | | | | | | |
| upper boundary | 45 °C | 20 | 8 | 45 | 30 | 5 | 60 |
| lower boundary | 45 °C | 47 | 28 | 134 | 64 | 23 | 160 |
| control plate | 45 °C | 97 | 61 | 240 | 90 | 40 | 270 |
| Penetration speed, mm/sec : | | | | | | | |
| first section | 45 °C | 0,23 | 0,58 | 0,103 | 0,15 | 0,93 | 0,077 |
| second section | 45 °C | 0,01 | 0,17 | 0,035 | 0,072 | 0,20 | 0,029 |
| third section | 45 °C | 0,048 | 0,076 | 0,019 | 0,051 | 0,12 | 0,017 |

Conclusion

Our research has made it possible to arrive at the following conclusion:

- 1) Measurements with the use of the standard (sharp) needle produce errors within the first few seconds of penetration, and this information is important for high viscosity bitumen.
- 2) Penetration data obtained with the use of the cylindrical needle more accurately reflect the true state of bitumen from the starting point to the full length of penetration.

References

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PROBLEMS OF URBANIZATION IN THE CONTEXT OF UKRAINE'S NATIONAL SECURITY

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Urbanization is the most general trend of the last 50 years, but in Ukraine it becomes major, because villages disappear, cities become more popular.

Urbanization has a number of negative effects: there is no balance of citizen allocation across the country, environmental violations, problems of unhealthy environment for human life, for example, noise, pollution of air, ultrasonic radiation, transport problem etc., negative social effects rising of crimes, drug addiction etc.

Urbanization and the growth of number of urban population is difficult and painful for Ukraine. The problem is, that the main reason of urbanization is the following: citizens can't get quality services and normal level of life in the countryside. That's why they leave their home and move into the cities to look for a better life.

Currently, the pollution of environment in big cities has dramatically increased, particular in big industrial centers. There is an unrestrained concentration of people in cities, emerging and growing metropolises. Therefore, the growth of population increases problems.

Ukrainian capital Kyiv is a three-million city. It means, that Kiev could be divided into three separate cities. Also Kharkiv, Donetsk, Lviv and other cities have more than one million people. And there are ten other cities, which population is close to a million.

The vast majority of big cities is industrial complexes, and the biggest problem is industrial waste and garbage. Urban environment makes harm to population's health because of the air pollution, shortage of sunlight, water, and also stress factors, that arise from the hectic rhythm of life, shortage of parks and greenery, hard work and other factors.

Many of diseases have higher level of spreading in big cities than in small towns or villages. For example, lung cancer in big cities is diagnosed two or three times more often, than in countryside. One of the reasons which could be crucial is more polluted air. There are more cars, more smokers, and smokers do harm not just to themselves, but they poison other people too. Also, factories and their wastes.

Difficult situation is also connected with the modernization of life support network, that is very important for big Ukrainian cities. Abnormally high temperature at summer and frosts at winter is a reason of accidents in city utility networks.

Urbanization creates a problem in agriculture. People leave villages and also leave their work places. There is not enough people to work in fields, to work with animals at farms, etc. All these leads to the reduction in the number of agricultural products. In this regard, country loses its resources and is forced to buy vegetables and fruit, that could be grown in Ukraine. And this creates big problems in economics.

We can not examine urbanization without taking into consideration social production, in particular: heavy industry, energetics, chemistry industry etc. Manufacturing needs new workforce on enterprises, so there is an economical factor: rural citizens go to the cities and work there.

As mentioned earlier, urbanization problems influence on the growth of population in cities. So, hence arises a problem in building construction industry, because new population needs new houses. Big and densely built up city do not always have sites for new construction works. Therefore, we have a new problem –

where can we find an area for new houses?

First variant – building in maladjusted place, that violates the standards of building. In the result we can have, for example, building collapses, flooding, sediment into the ground etc. This results can do harm to people's health or even take a person's life.

Second variant – cutting trees in parks or in forests for building at this place. But, this again leads us to ecological problem, shortage of air and other negative results.

So, if we have a problem, we must find the way to solve it.

Cities have to grow, because their population is growing too. Instead of small cottages and private houses, it is useful to build big houses with a lot of floors and with hundreds of apartments.

Also, we have to find the way how to decide economic problems, because building of houses requires a lot of money. This is business. To take down old unusable buildings and to create a new modern city needs large sums of money.

But, in my honest opinion, the easiest way to solve the problems of growing cities is creation of well paid work places in village's. Therefore, they will not even have a reason to move from their home.

In our time urbanization problem is incredibly important. But I strongly believe that all the problems can be solved. Not only by our desire to provide better future for next generations, just to save nature, that is being ruined by humanity.

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RESEARCH OF CHOICE FACTORS OF TRANSPORT MODE WHILE TRANSPORTING BUILDING MATERIALS BY ROAD AND RAIL

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The absence of effective interaction between different transport modes for cargo transportation has a negative impact on the logistics systems development and it increases the transportation cost and time. There is a large range of interchangeability between road and rail. Global trends of these transport modes confirm the need for an integrated approach to a transport choice. The issue of