

# Transport Flow Management, Optimization and Reduction of Environmental Losses

Khametov Zamirbek Mukhtorovich<sup>1</sup>, Nasirov Ilham Zakirovich<sup>2</sup>, Yo‘ldoshov Komron Qaxramonjon ugli<sup>3</sup>, Masadikov Jahongirmirza Khasanboy ugli<sup>4</sup>

<sup>1</sup>Head of the department of Land transport vehicles and their exploitation, Fergana Polytechnic Institute

<sup>2</sup>Professor of the department Transport logistics, Andijan Machinebuilding Institute

<sup>3</sup>Base doctoral student of Fergana Polytechnic Institute

<sup>4</sup>Base doctoral student of Fergana Polytechnic Institute

Email: <sup>1</sup>[zamir311384@mail.ru](mailto:zamir311384@mail.ru), <sup>2</sup>[nosirov-ilhom59@mail.ru](mailto:nosirov-ilhom59@mail.ru), <sup>3</sup>[komronyoldoshov@gmail.com](mailto:komronyoldoshov@gmail.com), <sup>4</sup>[jmasodiqov@gmail.com](mailto:jmasodiqov@gmail.com)

Measures of Transport flows in three different ways have been found to be affective and deficient. This information was applied as the initial data to create a model of road objects and the geometry of the road network. Beaver Branch Street and S.A model for installing and controlling a traffic light using the PTV Vision ®VISUM program was developed at the intersection of Zunnonova Street.

**Keywords:** Crossroads, traffic jams, Baburshox Street, S.Zunnonova Street, PTV Vision ®VISUM program, traffic light.

## 1. Introduction.

According to the decision of the Cabinet of Ministers of the Republic of Uzbekistan No. 8 of January 18, 2019, the concept of the introduction of smart city technologies was adopted in the Republic of Uzbekistan [1]. It was mainly prescribed the following tasks for managing traffic flows, optimizing and reducing environmental losses:

1. Organization of an inter-institutional working group from among specialists of interested ministries and departments;
2. Development and approval of a program for the development of Transport traffic within the framework of the introduction of smart city technology;
3. Organization of systems for the management of Transport flows and intellectual transport and logistics systems, the introduction of sensors (sensors) and specialized software for the management of public transport;
4. Organization of a network of high-speed motor transport corridors equipped with infrastructure providing information about traffic;
5. Increase in traffic safety by implementing a system of informing drivers through the means of Information tables, radio services, websites, as well as the introduction of computerized traffic, video surveillance, photo and video recording of traffic violators and automatic detection systems for accidents;
6. Organization of the technological system” smart stop”;
7. Reducing environmental losses due to the introduction of new environmental requirements, automated mobile systems of Environmental Control, energy efficient modes of movement of traffic flows, a system for limiting traffic in certain zones;

8. Optimization of traffic flow by introducing intelligent traffic lights, electronic tables, passenger notification system, Sputnik navigation systems, control automation and passenger transport regulation systems, electronic payment systems for road access integrated between transport types (buses, subways, trams, trolleybuses, route taxis) [2].

Traffic jams at the intersection work up to the limits of their capabilities for each direction, so different days have different intensity values. The section of the examined Square is Baburshox Street and S.Zunnonova (80-meter street) in Andijan. In the cross section of, data was obtained on the following methods [3,4];

1. Method of manual data collection. Manual filling of the special control table [3,4];
2. Semi-automatic method of data collection. Using video recordings installed at the intersection;
3. Automatic way to collect data. The use of GPS signals installed at the intersection (figures 1,2).

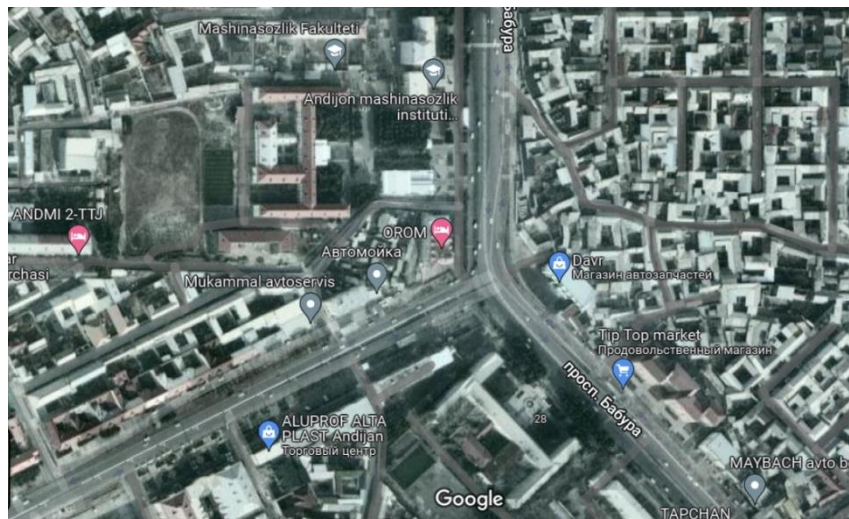


Figure 1. Baburshox Street and S.Zunnonova Street (Andijan city) crossing

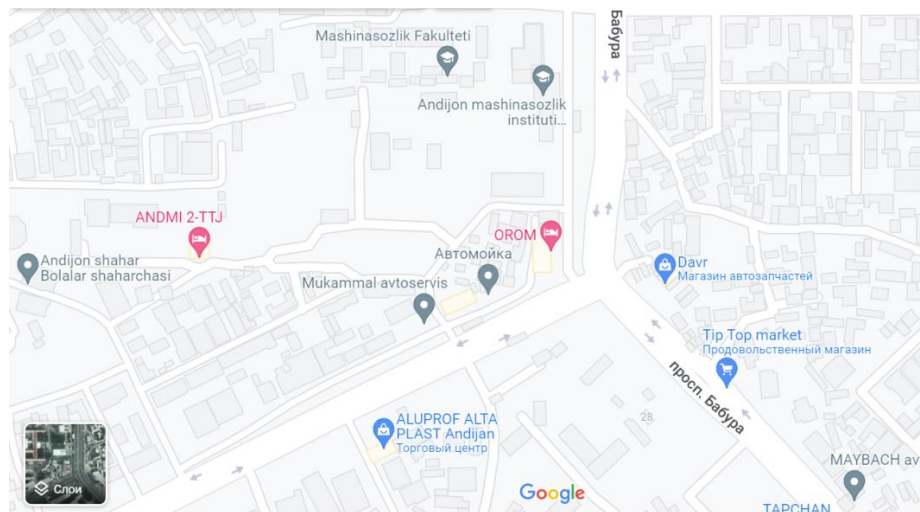


Figure 2. Baburshox Street and S.Zunnonova Street (Andijan city) crossing

Measurements were made during the morning and evening rush hours on weekdays. Method 1 measures data on the intensity of traffic flows with the participation of students, and the rest- using vidocamera and information ridges. The results obtained are listed in tables 1,2 [5].

Table 1. Vehicle traffic intensity (car/hour) in the morning rush hour

| №  | Names of destinations                   | Usulular     |                |           |
|----|---|--------------|----------------|-----------|
|    |   | Manual semi- | Semi-automatic | Automatic |
| 1. | Kilinika-Railway                        | 514          | 642            | 570       |
| 2. | Railway-Kilinika                        | 764          | 955            | 848       |
| 3. | S.Zunnonova Street-<br>Baburshox Street | 602          | 752            | 668       |

Table 2. Vehicle traffic intensity (car/hour) in the morning rush hour

| №  | Names of destinations                   | Usulular     |                |           |
|----|---|--------------|----------------|-----------|
|    |   | Manual semi- | Semi-automatic | Automatic |
| 4. | Kilinika-Railway                        | 520          | 650            | 577       |
| 5. | Railway-Kilinika                        | 724          | 905            | 803       |
| 6. | S.Zunnonova Street-<br>Baburshox Street | 635          | 793            | 704       |

Based on the data presented in the tables, the advantages and disadvantages of measuring traffic flows in three different ways were found. This data was applied as preliminary data to create a model of road objects and the geometry of the road network [5].

Examined Baburshox Street and S. Zunnonova Street The intersection of currently has no traffic lights, resulting in over 1.5-3 km of road running in bexu so that vehicles crossing these streets can travel to and from intersections on either side of the intersection. In return, traffic jams are coming at intersections on both sides, excess fuel is being expended and the surrounding area is being poisoned by processed gases [6].

In order to reduce these inconveniences, Baburshox Street and S Zunnonova Street a model for installing and controlling a traffic light using the PTV Vision ®VISUM program was developed at the intersection of. Based on it, preliminary information about the direction and phases of movement was placed in the passports of traffic lights [7].

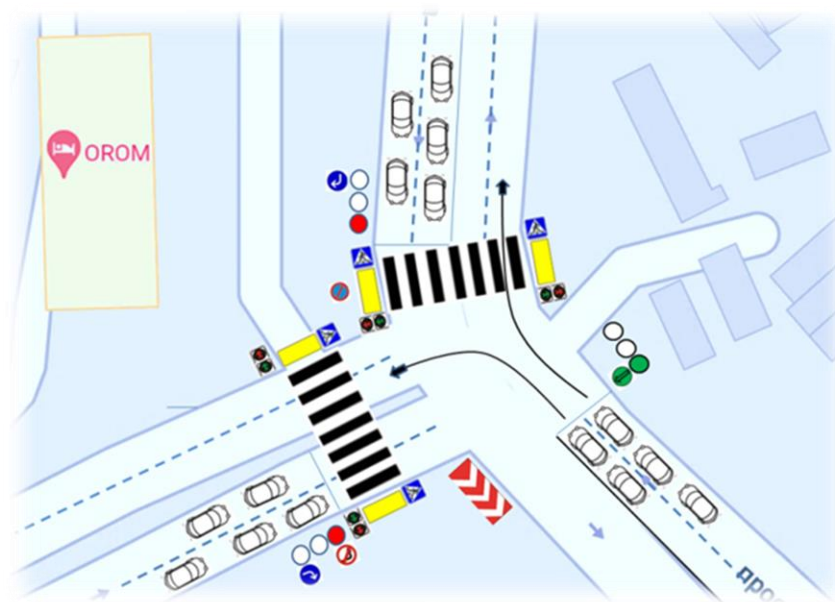


Figure 3. Baburshox Street and S. Zunnonova Street placement of traffic lights and road signs on the cross section

In order to intelligently manage traffic jams at the intersection of these streets, it again took important transportation and operational indicators in qyi: traffic intensity, permeability and volume of Transportation, the level of traffic load on the road, the speed of traffic flow, the density of flow, the cost of transporting passengers and cargo, etc.

These indicators, along with the indicators of Vehicle Traffic Safety, Not only reflect the operational state of roads at different periods of the year, but also allow you to assess the effectiveness of road maintenance and traffic management measures.

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