

## EXPLORATION OF FOREST ROAD NETWORK AND HAULING PLACES

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### Abstract

Forest road network has to answer to standard forest management standards, to guarantee safe and continuous traffic, to make possible efficient and economical transit. The economical transit is safeguarded by determination of forest road network optimal density. Parameters of forest road network have to fit to standards of "Lesná dopravná sieť" STN 73 6108. Nowadays, doesn't exist complex view about forest roads condition in the Slovak republic. On area of the Technical University Forest Enterprise was made exploration of forest road network. In exploration of road network was investigated category of forest road according to STN 73 6108, roadway, damage of forest road, stability of slope of cutting and slope of embankment, state and function of dewatering, accessories of forest road and objects on forest road. Crossroads were measured with GNSS technology for accuracy of the road network. From data obtained by terrain measurement was calculated general length of roads, density of forest road network and from DMR was calculated slope of forest roads. For hauling places was registered type of surface and technical state of the hauling place. The position of hauling places was measured with GNSS technology. Likewise, there were measured parts of forest roads, which weren't marked in the map or the map situation was different from the real situation. The result of investigation is forest road database and hauling places database, which can be complemented and changed according to requirements, as well as the forest roads and hauling places map from area of the Technical University Forest Enterprise.

**Keywords:** forest road network, hauling place, forest opening

Within of terrain work was explored area with more than 500 km of roads. In the whole road network which was created is almost 1000 km of roads. In created road network are highways, 1. 2. and 3. rank roads and roads in cities and villages. Not all forest roads are under administration of Technical University Forest Enterprise.

In details was explored almost 150 km of forest roads. On these roads were measured crossroads, road objects and hauling places with GNSS technology.

By roadway were created these categories:

- Bitumen surface
- Concrete surface

- Other surface (panels etc.)
- Gravel surface
- Soil surface

Damage of forest road was investigated. The damage of forest roads was divided into these categories:

- Roads in good technical condition
- Damaged roads
- Roads in bad technical condition
- Destroyed roads

The state of stability of slope of cutting and slope of embankment was divided into these categories:

- Without slope of cutting and slope of embankment
- Stable slope of cutting and slope of embankment
- Partially stable slope of cutting and slope of embankment
- Unstable slope of cutting and slope of embankment

For the state and function of dewatering were created these categories:

- Suitable
- Wanting
- Without objects of dewatering

In case, that was change of some of these categories between two crossroads, was this change measured with GNSS technology.

We registered these objects:

- Road signs
- Gates
- Beginning and end of crash barriers
- Culvert
- Bridge

We measured parts of forest roads with GNSS technology, which weren't marked in the road map, which was created from forest maps and aerial images. So were measured two roads.

The positions of hauling places were measured with GNSS technology. We registered more than 100 hauling places.

The surface of hauling places was marked:

- Bitumen surface
- Other surface (concrete, panel etc.)
- Gravel surface
- Soil surface

The damage of hauling places was divided into these categories:

- Suitable

- Wanting

The dewatering of hauling places was divided into these categories:

- Existing
- Absent

The result of investigation is forest road database and hauling places database, which can be complemented and changed according to requirements, as well as the forest roads and hauling places map from area of the Technical University Forest Enterprise. The created road network is used for different analyses and also for student works.

## **REFERENCES**

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