

# THE CAPACITY PROBLEMS AND CRISIS SITUATION IN ROAD TRANSPORT

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*Abstract: The government or the commissioner accepts some regulation precaution in the time of crisis's situations. Some of the regulation precautions regulate the road transportation on the public road transport. The paper deals with the regulation precautions which cut the capacity of the crossroads and the roads. The possibly regulation precautions which increase of their capacity and are possibly in crisis's situations are written in this paper.*

*Key words: the capacity, the regulation precautions, crisis's situations, road transport*

## 1. INTRODUCTION

The government or the commissioner accepts some regulation precaution in the time of crisis's situations. Some of the regulation precautions regulate the road transportation on the public road transport. The creation of alternate roads is one of possibility to regulate the road transportation. It is necessary to save for highest quality of transport services and to choose different alternate roads with respect to urban area specificity. The capacity of alternate road is one of relevant choose criterion.

## 2. THE REGULATION PRECAUTIONS

The crossroads, the bridges and the roads are the critical points, which limit the capacity of the roads networks.

There are the regulation precautions which cut the capacity of the crossroads:

- the turn prohibition left on the crossroad,
- the turn prohibition right on the crossroad,
- the change of crossroads control.

The turn of the left puts the accent on the driver attention and it claims more decision-making. The turn of the left increases time losses and the count of the accidents.

It is possible to suspend the problems by acceptable regulation precautions. The choice of the regulation precaution is subject to traffic and building specifications. It is possible to use these regulation precautions:

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- the absolute veto of turning left – when there is heavy the contra-traffic flow,
- the time limited turn prohibition left – in the time of the rush period,
- the temporary opening of the lane for turning left,
- the using of the traffic control signals – the beacon for turning left,
- the ramp for turning left.

If the turning left is prohibited on the crossroad it has to make it possible to turn left or turn right on the crossroad before or after.

It is necessary to awake to these regulation precautions improve the roads capacity and the traffic safety but they can extend the travelling time and increase the vehicle running coasts.

When choosing a suitable action, it is necessary to consider the lay-out of cross and parallel streets (directional routing, cross lay-out, range of vision...) and the impact on surrounding built-up area (exhalation, noise, vibration), too.

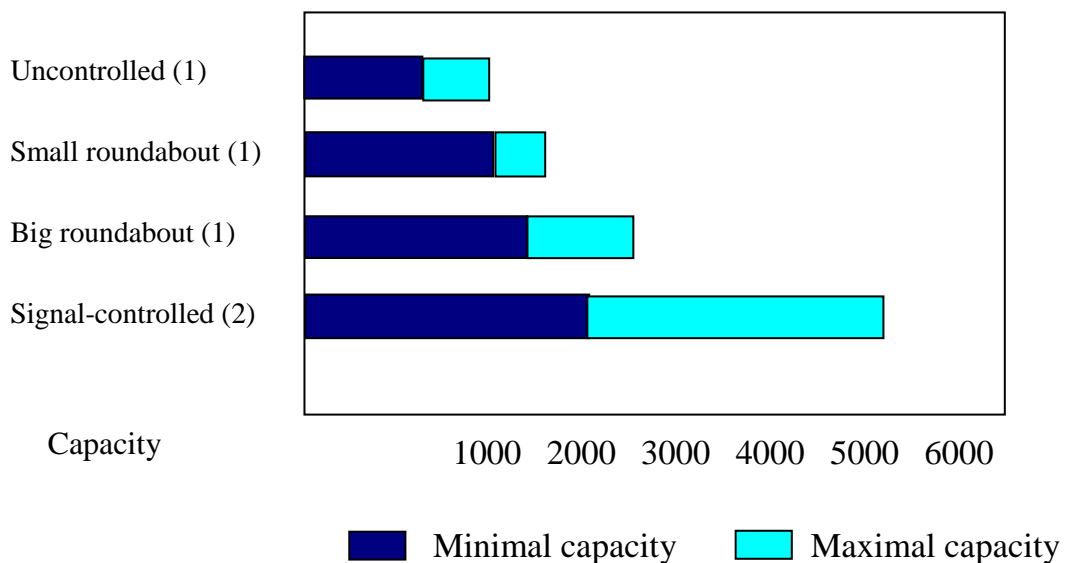
Problems when turning right can rise if the radius of an intersection is small and the vehicles riding though and the vehicles turning right are merged into one lane.

It is possible to suppress the disadvantages and to heighten the advantages of various types of intersections with temporary change of control. There are shown approximate hour-capacities by various types of intersections on the picture 1 (depending on the number of the lanes and also depending on the mode of control and on the number of the lanes).

**Approximate hour-capacity by various types of intersections**

(1) depending on the number of the lanes and on intensities of movements in the intersection

(2) depending on the mode of control and on the number of the lanes



## **Picture 1: Approximate hour-capacity by various types of intersections [1]**

Following measures belong among actions which are suitable for capacity increasing of the roads being chosen for diversion routes:

- prohibition of stopping, waiting, parking,
- turn prohibition into facilities between intersections,
- turning the road into one-way traffic,
- homogenization of routes,
- homogenization of traffic flow.

The reasons why the capacity of the relevant road space is reduced by waiting or parking vehicles:

- the width of road is reduced by the width of the standing vehicle and side safety distance,
- the vehicles which ride in (or out) a waiting (or parking) place interfere the vehicles which move behind them,
- pedestrians who cross the road between such waiting vehicles can cause traffic accidents.

The road capacity isn't reduced by maneuvers when turning right. However, turning left reduces its capacity together with affecting traffic fluency and safety, especially on two-lane roads and on roads with traffic control co-ordination.

Actions related to turning roads into one-way traffic provide simplification of traffic situation together with increasing of road capacity and acceleration of traffic flow. These actions are generally simple, requiring minimum construction work and minimum implementation costs. However, it is necessary to realize that such actions have also its negatives: access to certain service objects can become more complicated, certain vehicle routes become longer, organization of traffic can become not clear, the new situation becomes more complicated also for emergency vehicles. It is always necessary to solve the transitions between one-way and two-way traffic.

There have been various ways of turning the road into one-way traffic:

- one-way traffic roads can be either standalone or duplicate,
- one-way traffic roads can be either fixed or reversible.

The homogenization of routes is suitable especially for roads which are used for transit traffic. This action consists in limitation of disturbing influences on roads and also in improvement of design and construction elements of roads (e.g. replacement of uncontrolled at-grade intersections by controlled or grade separated intersections, improvement of directional conditions, provision of unified width lay-out).

The purpose of the homogenization is to achieve the higher fluency of traffic and approximately equal speed of vehicles in traffic flow. These actions generally require

considerable financial and material costs. In case of using traffic signs for the purpose of traffic organization and regulation, the homogenization doesn't require significant financial and material costs.

By using traffic signs it is possible:

- to exclude slow vehicles (e.g. tractors, machines)
- to reduce the driving speed, i.e. setting of minimum and maximum speed
- to restrict the access of persons to the road (also by using physical barriers).

### 3. CONCLUSIONS

It is necessary awake that the tendency of this the regulation precautions are to ensure the traffic continuousness, to improve road capacity. These regulation precautions have to eliminate their negative effects – especially traffic accidents. The crossroads, the bridges and the roads are the critical points, which limit the capacity of the roads networks.

The proposals for the regulation precautions have to be elaborated in different alternates. All changes and modifications of the traffic organization have to be signaled by control signal. The traffic marking has to be distinct so that the foreknowledge of all users about the regulation precautions would be well-timed and complete.

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