THE IMPACT OF ACCESSIBILITY ON TRANSPORT INFRASTRUCTURE WITHIN COMMERCIAL SITE

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Land use patterns (Litmann, 2011) have significant impacts on transportation and mobility for the macroscopic, mesoscopic and microscopic scales. There are four ways how to identify accessibility measures (Geurs and Wee, 2004): infrastructure-based, location-based, person-based and utility-based measures. All these measures are interrelated and are focused on how to reduce travel time or distance travelled by motorized and non-motorized modes and improve walk-ability, cycling and public transport facilities at the macro and meso levels.

In the traffic impact studies (micro level) accessibility is affected by different activities within a commercial, office or residential land. Activities include pedestrian and bicycle conditions, transport infrastructure changes, network capacity, level of service within a site. The aim of this paper is to provide better understanding of how transportation infrastructure changes within the commercial site influence on car-based trip generation rates at micro level. Transportation changes include development of new connections to the site: signalling and not signalling intersections with different allowed traffic movements. Three parameters: demand, supply and readiness were considered and analyzed.

Readiness (the number of traffic flows at the connections after changes in geometrical parameters) was determined by Synchro/Simtraffic 6.0 simulation tool with assumption that the level of service of the site connection should be better than D / E. Verification and validation of simulation model was performed. Demand for commercial site was calculated based on ITE trip generation rates (ITE, 2010) taking into account "smart growth" criteria for local conditions (Zenina and Borisovs, 2013). Supply including existing incoming and outcoming traffic flows for the commercial site was observed by the survey (Solvers, 2012).

Road connectivity index before and after infrastructure changes was calculated to compare with results received from analyzing demand, supply and readiness parameters for the commercial site.

References

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