

Project Title

Designing New Cities Without Interchanges or Signalized Intersections

Third Winner

R&D

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Abstract

One of the major problems in metropolises is excessive use of traffic signals throughout the city which often leads to long delay. The principal causes for these delays are the heavy left-turn movement at the signalized intersections.

One of the signalized intersections was selected to be analyzed in this research. The approach level of service during the PM peak hour at this intersection was determined to be F. In order to improve the service level, it was decided to close the median opening and to eliminate signalization. In order to compensate for the movement restricted at this intersection, two u-turn ramps were designed.

All performance parameters on the expressway improved drastically once the signalization was omitted at the intersection.

During the recent years the increasing production of automobiles by car-manufacturers on one hand and lack of action from government agencies in removing old motor vehicles from the existing fleet on the other hand has created congestion at most arterial roadways and city intersections.

Some experts suggest utilizing grade-separators at congested junctions; however, taking into consideration limited financial resources, this alternative is not very viable.

This article introduces the concept of using protected u-turn systems for removing traffic signals and proposes to replace roundabouts and grade-separators with u-turn systems. In other words, this article offers approaches for designing a city without the use of signalized intersections, grade-separators, or roundabouts.