MAURITIUS RESEARCH COUNCIL

INNOVATION FOR TECHNOLOGY

HIGH SPEED NON STOP ONE LEVEL MULTIPLE ROAD INTERSECTION

Final Report

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Full speed non stop one level intersection

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Development of Device

Report Concerning Full speed non stop one level intersection

The process of developing the device started long before the application for a grant from MRC.
However, when I got the grant, the fine tuning started.

In thinking about an invention that will eventually be patented, it is important to think of all possible permutations. Herein lies the challenge of designing a device. If this process is overlooked it is very easy for someone else to find a slightly better version and the original patent is worth very little.

The development was done more or less concurrently with the building of the prototype. When building the prototype, I discovered several important principles and permutations of the device.

Background for the device.
Traffic congestion is one of the main problems of modern society. it leads to pollution, waste of time, stress and accidents. Efficient road systems therefore become a very important aspect of any modern city. There will always be a constraint on how much government can spend on traffic systems, both in terms of money, land and time.

The current invention relates to all of these aspects.

Building a full speed non stop one level intersection is cheaper than building a multi level intersection, it is quick to build and therefore will disturb the existing traffic minimally.

The Invention is based on a combination of looping and merging of traffic.
By merging in one gets less risk of accidents and better flow of traffic.

In the development stage it was discovered that there can be several different versions of the system, related to which directions there is highest flow of traffic.

By using a double loop plus merging in roads one can have a system that has non stop and non merging (direct through) and no extra length of path for traffic from north to south/south to north, north to east, east to south, south to west and west to north.

This would leave only east to north, west to east, south to east and west to south traffic having to do merging and also slightly longer path, but this traffic would also be non stop.

The development of the road system was done through sketches computer models and through building the scaled prototype.

Building of Prototype

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The prototype was built using large sheets of plywood to make it scale 1:100 so that it would be possible to make demonstrations with normal matchbox play cars.

Building of prototype goes very much hand in hand with the development of the device, and I had to redo it a few times because I discovered some conceptual errors whild building the prototype.

Building of the prototype also gave an insight into the distances needed in a traffic system like this.

After having sketched the road system on the plywood I painted it and put on road markings to make the roads look realistic.

The prototype can be used for an explanatory display as well as for simulations and further conceptual work.

Testing of the device

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The device was tested through the physical prototype, and through graphical computer simulation.

For the graphical computer simulation Macromedia Flash 5.0 waws used

The results are as follows:

1. The device would function best if there is a mandatory both upper and lower speed limit for the system.

2. The longer the device is made, the higher capacity it will have.

3. The security of the device is inversely related to the throughput and therefore directly related to the length of the device. The longer the device is made, the higher the security. The longer the devise is made, the higher the throughput. If throughput is increased, security is decreased because of the distance between the cars.

4. The distance required between cars determine the throughput of the device.

5. Different versions of the device can be made for different traffic situations. A system with need for high throughput e.g. north to south can be made with double loop. A system with more equal load can do with a single loop.

Writing of Patent application

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A patent application is a lengthy process involving searching through patent databases, making illustrations and formulating claims in legal terms.
The US patent office encourages inventors to write their own patent applications and several publications and web sites give advice on how to do it.

Full speed non stop one level intersection

Field of the Invention

This invention relates to traffic interchanges and, more particularly, to a one level interchange where the vehicles do not have to stop.

2. Description of Related Art

Normal roundabouts are limited by the fact that entering traffic has to yield from traffic already in the roundabout. This creates congestion when traffic is high.

An example of a typical large interstate intersection is illustrated in U.S. Pat. No. 3,107,590 issued to A. O. Cedeno on Oct. 22, 1963. This intersection requires use of extensive adjoining property to accommodate its wide turning lanes.

U.S. Pat. No. 4,630,961 issued to H. Hellwig on Dec. 23, 1986, extends the teaching of this Cedeno patent, illustrating several attempts to compress Cedeno's design into urban situations. However, to do so required several city blocks and traversing six faces of two city blocks, turning 270 degrees right in order to turn 90 degrees left. If the route is not elevated, it fully corrals the properties of those two city blocks.

U.S. Pat. No. 2,946,267 issued to A. O. Cedeno on Jul. 26, 1960, is illustrative of a traffic intersection which can be used for city streets. However, more than two grade levels are required, all through lines must change in grade level at the street intersection, and right turns are unnatural because they must be initiated from the left side of the street.

A. O. Cedeno's U.S. Pat No. 2,949,067 dated Aug. 16, 1960 discloses a traffic intersection similar to that of U.S. Pat. No. 2,946,267, but provides for left turns from the left side of the street. However, through traffic in the intersection is reversed for the normal flow of traffic.

U.S. Pat. No. 5,049,000 issued to F. D. Mier et al on Sep. 17, 1991, discloses a continuous flow intersection of first and second streets having intersecting through lanes at two grade levels, one at ground elevation and the other either above or below ground. Right turn lanes are all located at grade level, and left turn lanes may originate from the left or right side of each street and cross over to eventually be on the left side of advancing traffic prior to reaching the intersection. Each left turn lane then curves through the intersection to enable traffic to merge with intersecting traffic from a right lane.

All the prior art show intersections with several levels. These levels increase the cost and construction time of the intersections considerably.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide an interchange is on only one level and which can be built with only minor modifications to existing road structures.

Another object is to provide continuous traffic flow through an urban or rural area.

Yet another object is to provide a system with lower possibility for accidents. This is done through merging lanes rather than yielding.

According to the present invention, two roundabouts are joined by several lanes and receives several merging lanes from different directions.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects, features and advantages of the invention will become apparent, and its construction and operation better understood, from the following detailed description when read with reference to the accompanying drawings, in which:

FIG. 1 is a overhead view of a traffic interchange constructed in accordance with the present invention for locations with heavy traffic flow directly through the interchange.

FIG. 2 is a overhead view of a traffic interchange constructed in accordance with the present invention for locations with even flow in all directions.

Fig 1.

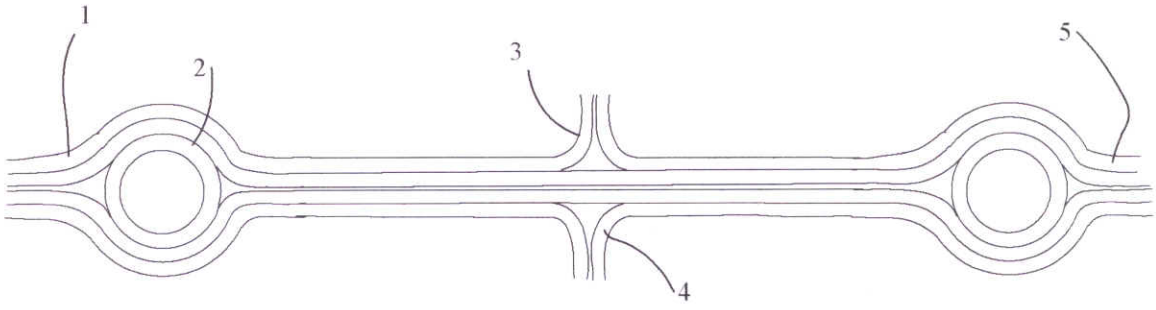
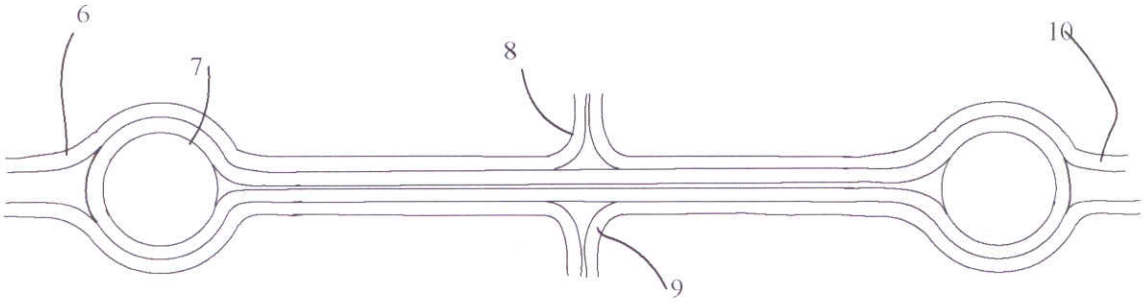


Fig 2.



DESCRIPTION OF THE ILLUSTRATED EMBODIMENTS

Referring first to FIG. 1, this is an embodiment where the traffic from east to west can go without any change of lane. Likewise traffic from west to south, south to east, east to north and north to west will not need to change lane.
Traffic from west to north , south to west, east to south and north to east will have to merge in and out to go through the intersection

Referring first to FIG. 2, this is an embodiment where the traffic from west to south, south to east, east to north and north to west will not need to change lane.
Traffic from west to east, east to west, west to north , south to west, east to south and north to east will have to merge in and out to go through the intersection.

What is claimed is:

1. An interchange for improving the flow of vehicular traffic through an system of same level streets, where said streets touch at least two circular roads in order for traffic to circulate without stopping to and from a given number of directions.

2. An interchange for improving the flow of vehicular traffic through an system of same level streets, where said streets touch one looping road in order for traffic to circulate without stopping to and from a given number of directions.

3.An interchange as defined in claim 1, wherein a first road first touches the first circular road for a specified distance thereafter progresses for a specified distance thereafter touches the second circular road for a specified distance and thereafter continues away from the interchange

and

a second road first touches the second circular road for a specified distance thereafter progresses for a specified distance thereafter touches the first circular road for a specified distance and thereafter continues away from the interchange

and

a third road first touches the first circular road for a specified distance and thereafter continues away from the interchange

and

a fourth road first touches the first road between the circular roads and thereafter touches the first circular road for a specified distance and thereafter continues away from the interchange

and

a fifth road first touches the second circular road for a specified distance and thereafter continues away from the interchange

and

a sixth road first touches the first road between the circular roads and thereafter touches the second circular road for a specified distance and thereafter continues away from the interchange.

Presentation

The presentation has been made in forma of a computer animation that explains how the intersection works.

This will be put on a web site and also shown with a projector to interested parties.