ANNALS OF THE UNIVERSITY OF ORADEA
Fascicle of Management and Technological Engineering
ISSUE #2, AUGUST 2016, http://www.imtuoradea.ro/auo.fmte/

CONTROL TRAFFIC TROUGH INDUCTIVE LOOPS IMPLEMENTED AT ROAD INTERSECTION

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***Abstract*—** Case study on adaptive traffic lights solution implementation at the intersection of Routh Bihar with Street Starlings. Description of the chosen solution for traffic lights at the current intersection between Routh Bihar with Street Starlings

***Keywords*—**Traffic optimization, adaptive traffic lights, prioritize trams, inductive loop detectors, traffic, traffic lights operating diagram

I. INTRODUCTION

The intersection between Routh Bihar with Street Starlings is well systematized in topologically. The two islands routing of traffic light intersection makes it possible to regulate the trajectories that intersect as close to the point of conflict , reducing lap times security needed a transition from one phase to the next movement .

Through this systematization increase the capacity crossing the intersection , so its yield increases his directing traffic safety both by traffic lights and road markings and signs. Traffic lights must resolve the following conflicts :
Entering the Street Starlings from Route Bihar on the way from the railway station and turn left ;
Street exit from Street Starlings on Route Bihar left and right directions;
These conflicts are resolved through a traffic light in three-phase movement:
Phase I was , the main phase of movement, allow traffic in both directions on Route Bihar ;
Phase II, the second phase allows the left turn for vehicles is coming from the station on Route Bihar and onto the street starlings , simultaneously with the flow of vehicles on Route Bihar . This phase is not associated crosswalks ;
Phase III , is also a secondary relationship allows the exit from Street Starlings on Route Bihar by turning left - right .
All three phases of movement are time variable . Thus during the green phase I has extended applications is recorded in real-time detectors D1 and D2 .
Time extension for each application actually interrupts threshold frequency at which the extension is set to 2.4 seconds. If 2.4 seconds for the detectors D1 and D2 no longer records request to enter Phase I by passing sequences transition between this phase and following .
As he said , by signaling detector D1 move to Phase II or III . Phase II has ,, green " extended detector D1 and phase III detector D2 . There were no cases of disruption of the extension defined ,, green " movement associated phases . This can be implemented , if a priority or emergency criterion will be shown later.

A combination of synchronous adjusted by Microadjustment programs used during high traffic periods and peak and unrestricted zonal programs , asynchronous , with full adjustment of times ,, green " selected hours of low traffic or sparse , is a promising solution for monitoring and optimizing traffic.

This suggests including traffic detectors and inductive loops as structural components of the modernized system of adaptive traffic system in the transport and traffic intersection in Oradea.

Implementation of the chosen solution requires the following :
Phase II of circulation, not related to pedestrian crossings , was chosen to be an attack "on demand" . So if at the time of transition from Phase I to the next request is registered by the detector D2 Phase II skip it and move on to phase III .
There were no cases of disruption of the extension defined ,, green "associated phases circulation. This can be implemented if a criterion of urgency or priority will be revealed later.

Presentation charts variants of the traffic lights programme between Route Bihar and Street Starlings , for adaptive traffic lights functioning by inductive loop detectors and traffic , the author of this paperwork certifies that the testing of almost close ,, "of several variants of the program has come to implement optimal traffic light program which solves loss while awaiting ,, green phase ", where traffic volume is zero conflict .

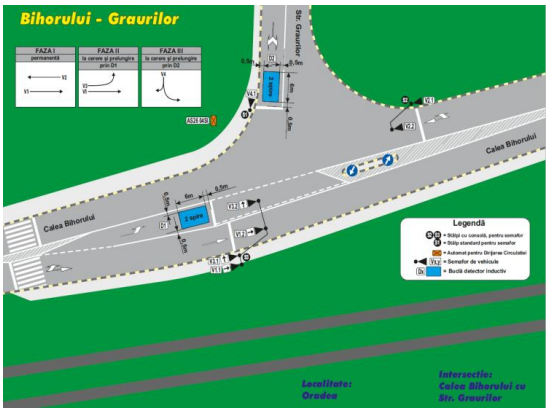

Fig.1. - Plan for the operation of the intersection of Route Bihar with Street Starlings - version detectors and traffic inductive loops

The following are shown stages of developing a program of traffic lights as follows :
Depending on traffic measurements shall be:

1) *Traffic light cycle length ;*
2) *The main direction of flow and secondary .*

Phases configuration and traffic lights for each phase ;
Drawing diagram sketch and operating traffic lights based on traffic measurements Fig. 1, 2 , 3, 4 ;

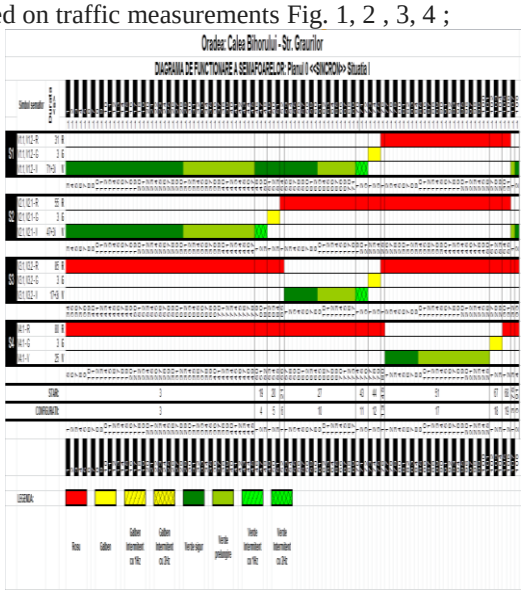

Fig . 2 –Operating diagram of traffic lights at the intersection of Route Bihar with Street Starlings phase I

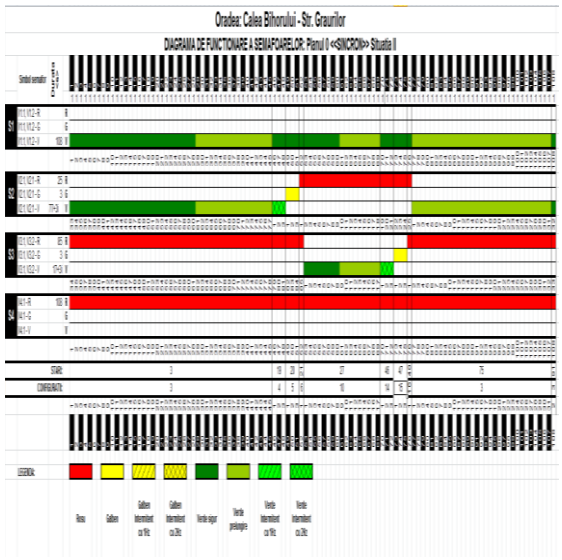

Fig. 3 Operating diagram of traffic lights in the intersection of Route Bihar with Street Starlings phase II

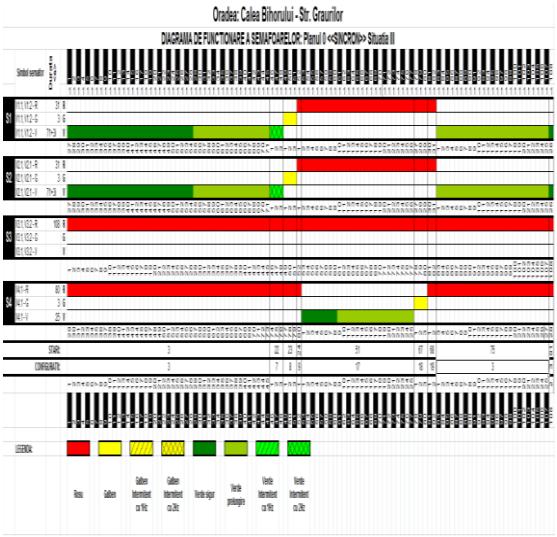

Fig. 4 Operating diagram of traffic lights in the intersection of Route Bihar with Street Starlings phase III

Drafting table states comprising the automatic traffic light output and channel configurations , the modules execution of the automatic traffic light Fig. 5 .
Developing timetables selection table of the schemes and plans of operation Fig. 6 ;
Drafting table presenting equations used Fig. 7;
ConFig. connections between terminals PLC and lights Fig. 8 .

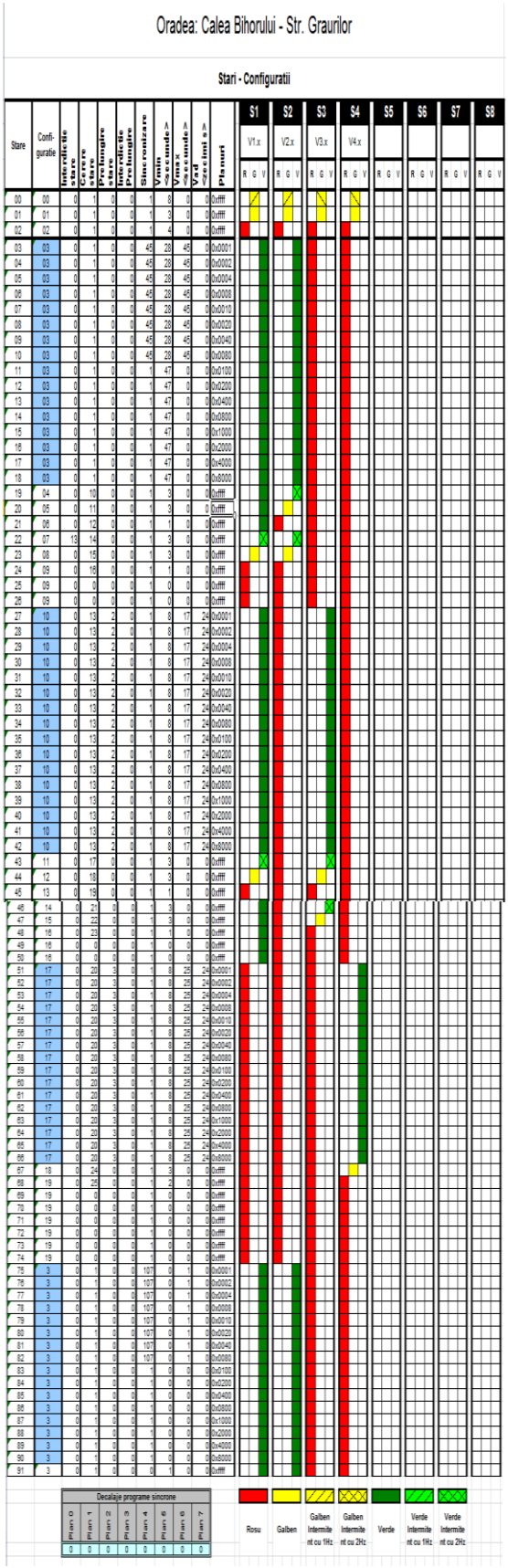

Fig . 5 - Table with states and configurations traffic lights in the intersection of Route Bihar with Street Starlings

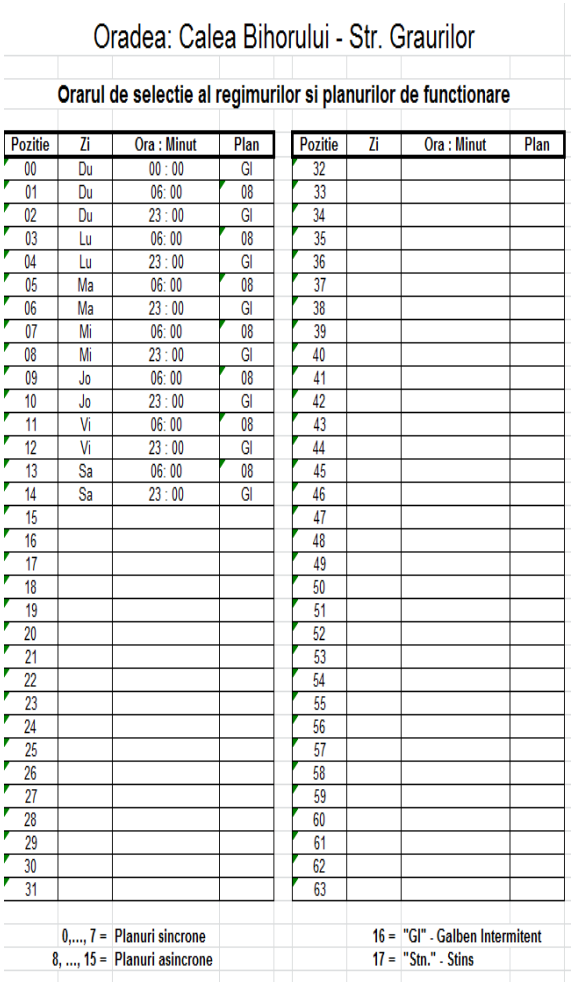

Fig . 6 - Table of schedule and selection arrangements plans operating in Bihar Route junction with Street Starlings

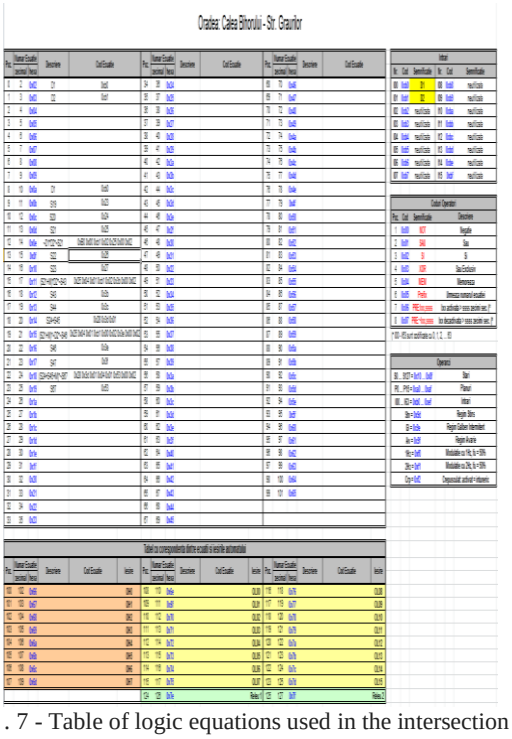

Fig . 7 - Table of logic equations used in the intersection of Route Bihar with Street Starlings

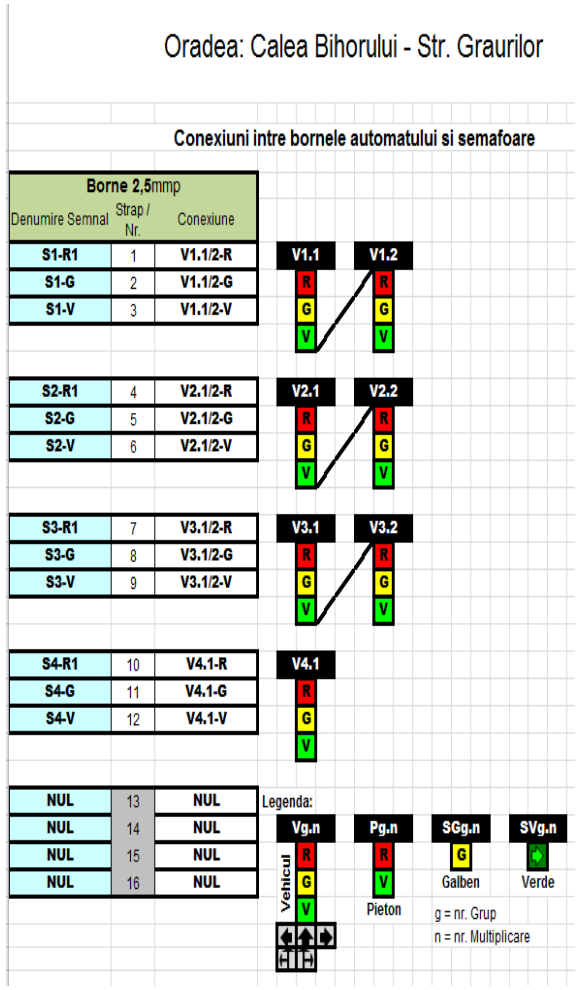

Fig . 8 - Configuring connections between terminals PLC and traffic lights in the intersection of Route Bihar with Street Starlings

II. CONCLUSION

Monitor the effectiveness of the chosen solution involves the selection of measurable parameters based on which to determine the performance index . It can record parameters such as the length of time ,, green " for each phase. Based on their time calculating the percentage ,, green " use of the maximum allocation, and distribution cycle times ,, green " if the cycle. The graphical representation of these values makes it possible to analyze traffic intervals and allows adjustment of parameters such as time ,, green " maximum allotted each phase and the allocation of those times in the cycle.

Adjusting the performance of graphs and reiteration process can lead to an optimum . This is true only for the hours that traffic values are repetitive . The theory seeks to describe traffic in a mathematically precise as the interaction between vehicles and their operators (mobile components) and infrastructure (components property). Infrastructure includes the system of roads and runways all operational components : control devices and traffic light signaling and monitoring. So , these theories are indispensable for the design and construction of all types and facilities used in the design and operation of streets and highways. Measuring the effectiveness of programs implemented requires a system for collecting traffic data, recording them in a reasonable period , transfer through a communications network to a point calculation and final processing, plotting and analysis, compiling -the statistical reports.

A simple method is a direct observation local . Forming queues at traffic lights without them to be discharged the next phase serving associated semaforizării shows a low efficiency . Therefore if a vehicle is waiting for more than one cycle to the traffic light , traffic light program is not effective . At the same time and waiting at traffic lights , while traffic unloaded phases are conducted consistent with flows of vehicles, it is considered a weak adaptive traffic light program .

In order to solve these deficiencies author proposed solution for implementing adaptive semaforizării presented in this paper and that solves the problem .

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