



PLANNING AND REDESIGNING THE ZAFARANIYA INTERSECTION

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ABSTRACT

Roads are mirrors of civilization in a country, its the proud of the peoples, the development in a country measured by the quality and number of paved roads. Thus, road projects are a major part of the allocation of major development plans in the countries of the world.

The reason for studying this intersection (Zafaraniya intersection) is because of its industrial and practical importance at the same time. Where the volume of public traffic in working hours and on different days of the week (Saturday, Monday, Thursday and Friday) the reason for choosing these days because it is located in the first, the middle and the last of the week besides it's also including the weekly holiday.

After knowing the size of the traffic compares with the size of traffic design as well as to know the peak hour at the intersection, where it was found that at this hour of this intersection occurs traffic congestion cannot be this intersection to bear. Therefore, the design of the intersection must be considered to be appropriate to the current traffic size.

In this paper searched with several proposals for intersections were investigated, some of which were suitable, some of which were difficult to implement or unsuitable for the topography of the region. The narrow roads leading to the intersection and the high speed of these roads are factors affecting the difficulty of change. This study was carried out after obtaining information from the Municipality of Karrada, the residents of the area and the peddlers close to this intersection.

Key words: Zafaraniya district, volume of traffic, C.P.U, Traffic congestion.

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1. INTRODUCTION

The aim of controlling the intersection is to achieve a public benefit by reducing the operating costs of the traffic network, which will benefit the users of the road in return. Traffic engineers are constantly facing the problem of modernizing cross-sectional control over the

size and type of traffic that changes over time. The current design, which works without any regulatory control, reduces operational costs to acceptable limits.

Traffic control methods can be used at the intersection by means of a monument to give precedence or change the civil design to intersect by the separation of paths or the establishment of a roundabout. In the event of failure of these solutions, the traffic engineer must consider controlling the intersection by means of optical signals. As the costs of processing traffic signal kits are considered high compared to other methods and its double when the signals that are affected by the movement of cars and it drains an important part of future allocations for the maintenance of different roads.

The Zafaraniya intersection is one of the important intersections in Baghdad, and this is because it is important to connect the city center with the outskirts of Baghdad. The Zafaraniya intersection is one of the oldest intersections to be implemented. It is a circular cross-section intersecting a central island where the direction of the vehicles turns one-way traffic around a central island. It is the type of crossroads considers a developed intersecting and used in all middle-income countries. The importance of this intersection has attracted us to carry out this study and to find out much of the information about it, the most important of which are:

- Future proposals with the Municipality of Karrada
- Soil quality, soil strength and number of paving layers
- Offices and businesses close to the intersection
- Uses of land

1.2. Zafaraniya intersection History

The study of the development of Zafaraniya intersection by officials of the Municipality of Baghdad with the municipality of Karrada was made in 2003 and was a decision to change the tree landscaping and turn it into a garden with a fountain as shown in Figure 1. This proposal was established in the same year. For several reasons, this intersection did not develop in previous years; one of these reasons, it occurred near a military area, and it was neglected because the surrounding area is free of services.

In the last ten years did not study or propose a proposal to improve the status of this intersection because of the reasons for the circumstances experienced by Iraq not qualified to develop the intersection. Through this research, several future proposals have been proposed, which we will mention later.

The land of Zafaraniya is an agricultural land as recorded in the municipality of Karrada. It contains large amounts of groundwater inside and this led to make the land is not coherent and fragile. This is why it has prevented any construction project from being developed or to make it more advanced. However, lately, the traffic volume of vehicles and trucks passing through this intersection with large loads exceeding the design load has increased, leading to defects in the road leading to the intersection, the pavement is relatively about 30 cm see Figure 2.



Figure 1 Zafaraniya intersection

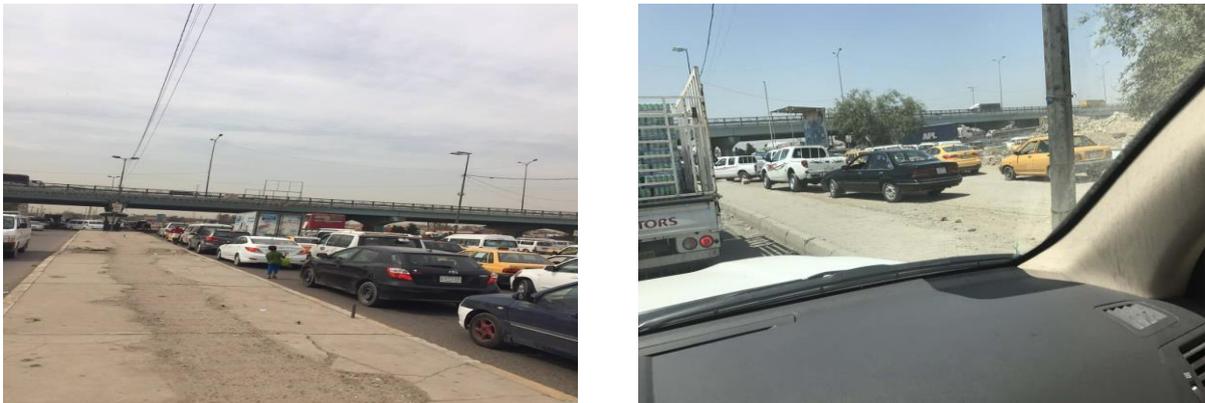


Figure 2 Zafaraniya intersection traffic jam

The area of Zafaraniya of the old configuration compared with some other areas in the capital Baghdad but it has been neglected in terms of services and maintenance because of the distance from the center of Baghdad. However because of its fast links with the center of the city and some areas of the mission in the capital made it from the important industrial areas in Baghdad, where it contains many companies, and various factories with a number of institutes and colleges in this region.

2. THE MECHANISM OF CALCULATING THE VOLUME OF TRAFFIC

It is generally accepted that the volume of traffic is the number of vehicles passing through a given point within a specified time period. Traffic limits are defined by means of traffic restriction, and the methods of restricting traffic include manual inventory, mechanical and vehicle inventory.

The manual inventory is one of the best methods of enumeration, despite the difficulty and cost of material, because they give accurate data, but this depends on the basis of the basis on the accuracy of monitors. The manual inventory is not practical for long or 24 hours a day, and often depends on the movement of the knee, the classification of vehicles and statistics on road users.

The mobile mechanical meter is a rubber tube that is placed perpendicular to the axis of the road and connected to one side by a mobile mechanic meter that connects to an electric pole close to the road. In this way, vehicles passing from a given point are limited without specifying the type and direction of the vehicle, and mechanical means of counting are used. This method has several disadvantages, most importantly, are (if two vehicles pass at the same time, they will be counted as one vehicle, the seconded one if a long vehicle with multiple axes passes, it will be counted as more than one vehicle).

2.1. Purpose of Counting Traffic

1. Determine the importance of the road
2. The study of intersections, the traffic system and how to control the path to the possibility of developing and improving the flow of traffic
3. Engineering design of road network depends on current and future traffic volume
4. An estimate of the rate of traffic accidents on the road network so that this network can be redesigned
5. Measure the current traffic size and determine the future traffic volume that the road can accommodate

3. ANALYSIS AND PRESENTATION OF TRAFFIC DATA

Examination of activity information will fluctuate enormously in many-sided quality relying upon the degree and goal of the study. In the easiest outrageous, investigation comprises of totaling diverse classes of vehicles in a “volumetric count” [1]. At the other outrageous, complex studies may require PC investigation of movement to ventures, distribution of existing and proposed street arrange, activity projections and other related operations/examination [1].

3.1. Vehicle Classification and Configuration

Traffic consists of different types of vehicles and because the strength and degree of acceleration vary from one vehicle to another as well as the weight of a small vehicle is different from the weight of the large vehicle. We see that sometimes requires the conversion of these different vehicles to a traffic unit equivalent to the unit of the special vehicle symbolized (P.C.U) which is referred to passenger car unit; Table1 based on the knowledge of the equivalent vehicle in the manual inventory process.

The classification show in Table 1 is categorized by a visual assessment of the vehicle size and configuration of axles. The present manual movement stream information accumulation framework in Zafaraniya groups vehicles in seven classes.

Table 1 The manual traffic flow counts [1-6]

Truck Type	(P.C.U) Units
Passenger Cars	1
Pickup or Van less than 1.5 tons	1.25
Heavy Lorries, more than 20 tons	3.5
Light Lorries, more than 5 and less than 10 tons	3
Heavy Busses	3
Mini Busses	2
Motorbike	0.5

While the above are the vehicle classes being used, take note of that activity checking and order is a dynamic procedure and its task based. Table .1 above is a normal order of substantial vehicles by their arrangement for the motivations behind hub stack investigation. In this unique circumstance, data being gathered ought to guarantee various employments of information gathered either physically or by a programmed framework

3.2. Counting Characteristics

3.2.1. Traffic Flow

In order to predict traffic flow volumes that can be expected on the Zafaraniya intersection during specific periods, the locations and numbers of selected points were determined. Cognizance should be taken of the fact that traffic volumes changes considerably at each point in time. There are three cyclical variations that are of particular interest; (hourly pattern: The way traffic flow characteristics vary throughout specific the time period during a day about 6 hours; daily Pattern: The day-to-day varies throughout the week (4 days); and monthly / yearly Pattern: two months were chosen for this study).

After analyzing the results Figure 3, we found that there is no congestion on Fridays and public holidays. The peak traffic congestion was at the office working hours only during peak hours (7:30 to 9:30 a.m.) and (2:00 to 3:30 PM), which are considered to be the most important hours passing through the intersection.

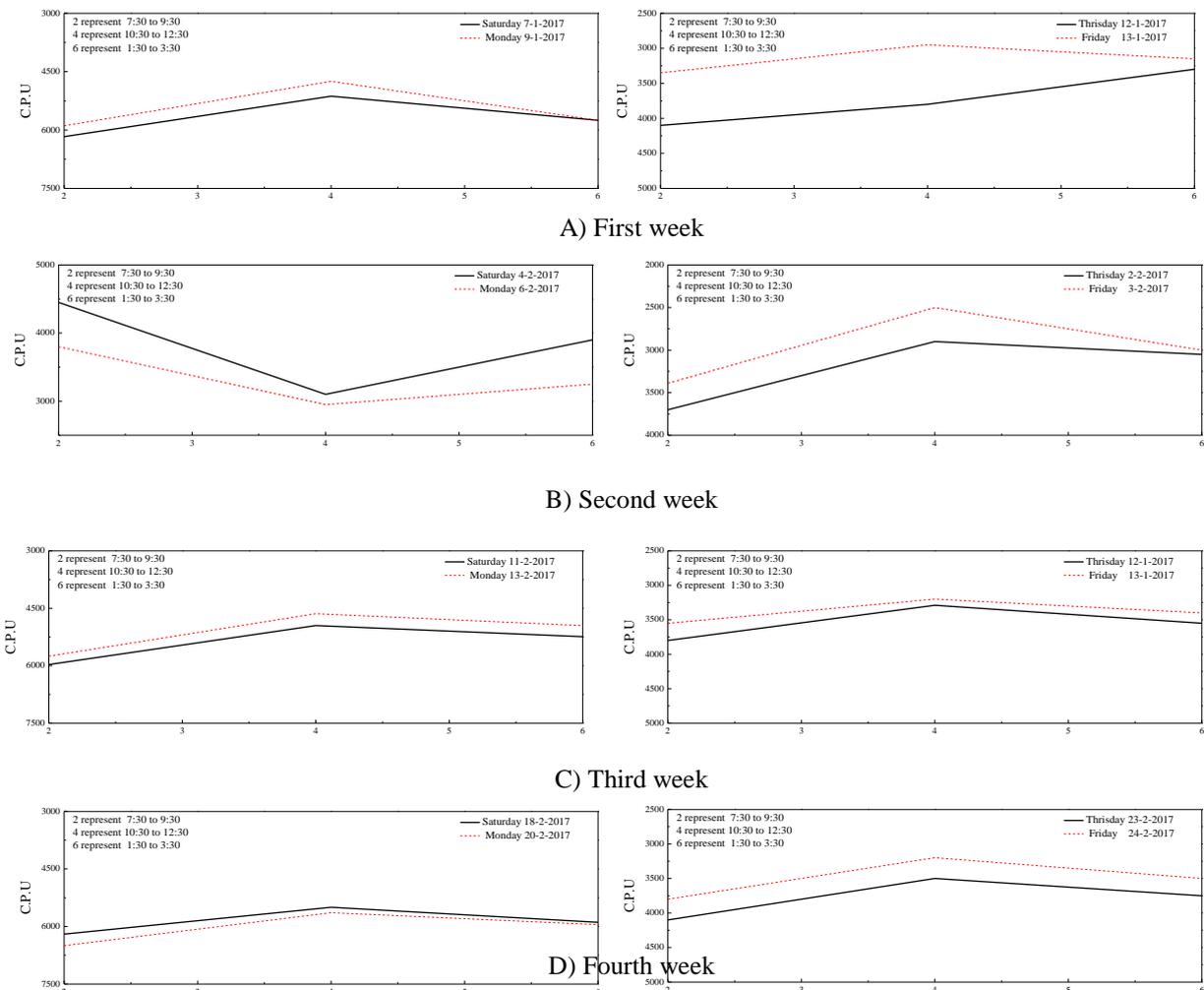


Figure 3 Traffic flow variation for 1 month at Zafrainya intersection (the inter line)

Ordinary hourly examples of activity stream, especially in urban zones, for the most part demonstrate various discernable pinnacles. Crest early in the day, trailed by a lean stream until another crest amidst the evening, after which there might be another crest in the late night. The top early in the day is frequently sharper by achieving the crest over a brief span and promptly dropping to its least point. The evening crest then again is described by a for the most part more extensive pinnacle. The pinnacle is come to and scattered over a more drawn out period than the morning crest. Be that as it may, in urban satellite towns, the morning pinnacle might be too soon and evening pinnacle might be past the point of no return in contrast with the key towns without critical early afternoon crest.

Experience from numerous nations demonstrates that despite the fact that activity volumes may develop over the long haul, the relative varieties of movement at the different hours of the day of a month are frequently very reliable a seemingly endless amount of time [7].

4. CONCLUSIONS

The sources of congestion at the intersection were concentrated in the road of the Muasker Al-Rasheed towards the Kubaisi market, Diyala bridge road towards the center of Baghdad. If there is a traffic jam at the intersection of Al-Rasheed or Al-Kubaisi market, it will reduce traffic at the Zafaraniya intersection. As for the causes of traffic jams in the intersection are:

- 1-The area where the intersection is located, which is considered as educational, industrial and residential areas.
- 2-The increase in the volume of traffic compared to the permissible size of the traffic design.
- 3-Parking on both sides of the intersection with the presence of a passageway crossing.
- 4-The emergence of a negative condition represented by the movement of vehicles in the opposite direction of traffic, causing a state of confusion at the intersection.
- 5-Lack of regular development or maintenance of intersections or roads near the intersection.
- 6-Tight slot rotation in the intersection.
- 7-The passage of long vehicles at the intersection, which is loaded with goodies, although the roads entering the intersection are of a narrow type.
- 8-There is no traffic policeman throughout the day at the intersection.
- 9-Develop, expand or change the shape of the intersection to one of the most advanced forms, which allow to carry a higher traffic volume than it is now. The development of a new road linking the city center (Baghdad) with the Diyala bridge and its environs without passing the intersection of Zafaraniya, and after the abolition of the Rashid camp can be through the camp to extend a highway connecting with the road (Mohammad Qasim Express) exit a road to connect the new Baghdad area with these areas. And that this street will reduce approximately (%50) of traffic at the intersection.

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