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THE IRAQI FIGHTER SQUARE BRIDGE, PROBLEMS AND SOLUTIONS, A STUDY IN TRANSPORTATION GEOGRAPHY

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Abstract

Traffic congestion on the roads has become a daily problem that the citizen suffers from, whether he is a worker, employee or student, especially during the period of the end of the daily official working hours, whether for students at various levels, employees, workers or the daily movement of citizens for the purpose of shopping and the like, especially in major cities, including the capital Baghdad in particular, being the city The first in the country in terms of population density, in addition to being the main center for all ministries and government institutions, so that the transportation movement in it continues throughout the days of the week, as well as recreational centers and economic activities as it is the economic center for the rest of the governorates for wholesale trade in various commercial activities.The phenomenon of traffic congestion appeared in Iraqi society, especially after the events of 2003, due to the increase in the number of vehicles and the spatial expansion of some commercial activities, as well as the increase in population density and the survival of the transportation network as it is without modernization, development or expansion, in a way that is not commensurate with the traffic movement on it, as well as the closure of some roads For security reasons, in addition to the deterioration of most of the transportation network roads in Baghdad in particular, and the governorates in general, all of these reasons led to the exacerbation of this phenomenon day after day and it became a permanent problem whose solutions are almost intractable because the development of the transportation network of road roads in Baghdad contradicts many obstacles, including the basic planning of the city of Baghdad is no longer the same This is an increase, especially the population increase, in addition to the fact that some roads conflict with the natural structure of the city of Baghdad from soil or terrain, especially the shoulder of the Tigris River, and others conflict with its construction with oil pipelines, all these obstacles

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and others made this phenomenon permanent with the daily life of the Iraqi citizen. But the concerned authorities are working hard to reduce this problem and provide solutions that fit the reality of the city and as far as possible, and among these solutions are the bridges under study that reduced this phenomenon, which we will address in this research, which is the bridge intersection of the Iraqi fighter square

Research problem

The importance of the Iraqi Fighter Square intersection as it is one of the important and main intersections in the Bab Al-Moadham area (Baghdad city center) for the traffic of vehicles, as it suffers from suffocating traffic jams, especially in peak times and the consequent delay in waiting time for the user of this intersection, in addition to the psychological problems of vehicle drivers As a result of the long wait and the consequent problems and violations, and the efficiency of the bridge's work in solving all these problems.

Research Hypothesis

Given the importance of the intersection as a meeting point for the roads that reach the surrounding areas, as well as the transition point from Rusafa to Karkh and vice versa, it was necessary to conduct a study on this important and vital intersection and the extent of the efficiency of the bridge to reduce the problem of traffic congestion and the flow of traffic for vehicles used at the intersection and reduce Waiting time.

Research Importance

1. The importance of the intersection of the Iraqi fighter square
2. Intersection site
3. The design of the intersection
4. Traffic of vehicles at the intersection of the Iraqi fighter
5. Making the intersection before constructing the bridge
6. Traffic volumes of vehicles at the intersection
7. Future expectations of the Iraqi fighter's intersection for the target year (2027)

The importance of the intersection of the Iraqi fighter square

The Iraqi Fighter Square intersection is one of the main intersections in the Bab Al-Moadham area (Baghdad city center), as the number of vehicles served by the intersection reaches more than (14 million) vehicles annually. Which increases the delay time for users of this

intersection, as the delay rate reaches approximately (6,118 seconds) for each vehicle, and this constitutes a very high number compared to the usual global rates, which range from (zero to 55 seconds) for each vehicle (1) and the consequences of that Psychological problems among the users of the intersection, in addition to the negative effects on the environment, as well as the large material losses caused by the delay in work for users of the roads that pass this intersection, in addition to the consumption of fuel and vehicles (decreasing the operational life of vehicles) Therefore, the competent authorities, foremost of which is the Municipality of Baghdad, are seeking to improve the performance of the transport network in Baghdad, and to make this network keep pace with the developments of modern life witnessed in most cities of the world, by transforming most of the main intersections in Baghdad into bridges to ensure the continuity of traffic and reduce traffic momentum and work To reduce waiting time and reduce the use of traffic lights.

Intersection Site

The intersection of the Iraqi Fighter Square is located in the Bab Al-Moadham area, the center of the capital, Baghdad, on the side of Al-Rusafa, which divides the city into two parts, the eastern part (Al-Rusafa) and the western part (Al-Karkh). Maarouf (Al-Karkh) Jisr Bab Al-Moadham forms part of the path of this road.This road is characterized by being a main distribution road (principal Distributor) and represents the east-west direction at the intersection. As for the second direction, which is the south-northern, it is a road road classified as a Secondary Distributor, and the southern part represents the extension of Al-Rasheed Street through the Maidan Square, while the northern part is represented by Imam Street The greatest, which leads to the greatest.The importance of the Iraqi Fighter Square intersection lies in the fact that the surrounding area is characterized by various activities, including:

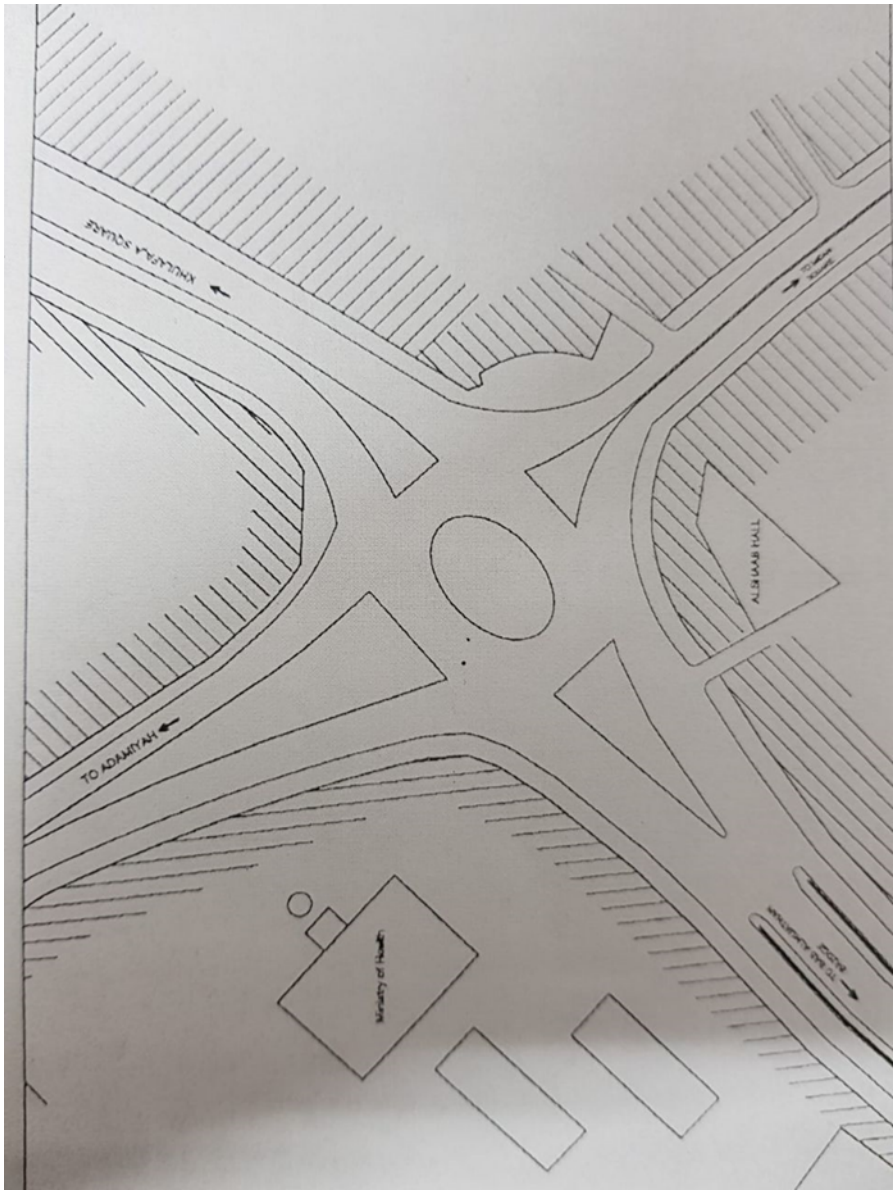
1. It is located on the lane of the road linking Rusafa with Karkh, as the intersection with its location near the Bab al-Moadham bridge constitutes the meeting point of the traffic volumes that travel between Karkh and Al-Rasaa. F.
2. Quality is near several government buildings as well as service buildings such as Medicine City Hospital and university colleges such as the College of Nursing and the Technical Medical Institute, which increases the momentum of the daily traffic volumes at the intersection.
3. This intersection, with its important location in the Bab al-Moadham area, represents the first main option to arrive or leave from and to the residential areas surrounding this intersection. (2(

Intersection design

The intersection is a round yard that operates using the traffic lights, and the round yards work on the basis of diverting all traffic movements in the approaches to the yard into a right-turning movement, and through the traffic volumes passing through both axes at the intersection

(Al-Rasheed Axis - Imam Al-Azam Street, and the axis of Sarbab Al-Muadham - Caliphs Square). (3)

We conclude that there is no main and secondary axis in this intersection, but both directions are major. As in **Figure (1) The design form of the intersection before its transformation into a bridge (4)**



Traffic of vehicles at the intersection of the Iraqi fighter

The traffic count was conducted on four days distributed over Sunday, Monday, Tuesday and Wednesday, in order to clarify the variation in the traffic volume during the peak days in the week except for the weekend and holidays of the count, because the expected traffic volumes on such days are few if compared to days Peak, and the counting period was from seven in the morning until five in the evening, in order to determine the rush hour (the rush hour for the traffic volumes of vehicles), which represents the design hour that is relied upon in the analytical study, and for the purpose of this study it was relied on the highest readings of traffic.

The vehicles passing at the intersection were classified into two main categories

1. Small vehicles, including saloon cars, pickup cars, or small transport vehicles, which run on four tires.
2. Heavy vehicles, including all vehicles except for those included in the previous category, ie including trucks, large public transport vehicles (buses), and other vehicles that run on more than four tires.

Here appears the role of heavy vehicles on the traffic movement of the intersection and the decrease in the drainage capacity of the intersection. When the traffic light is green, because each heavy vehicle is equivalent to two small vehicles, and Table No. (1) shows the traffic at the intersection during the counting hours (peak time). (5)

Table (1) Traffic at the intersection during daylight hours (vehicles/hour) (6)

5-4	4-3	3-2	2-1	1-12	12-11 noon	11-10	10-9	9-8	8-7 A.m	direction
543	782	832	879	910	902	879	845	955	675	Coming from Jisrbab Al-Moadham
413	432	589	768	812	808	760	786	828	612	Coming from the Caliphs Square
101	132	186	211	173	186	186	160	148	102	Coming from the square
166	216	259	284	272	271	260	378	408	377	Next from Adhamiya

We note from table (1) that the percentage of vehicles that pass forward is the highest among the approaching Jisrbab Al Muadham and the Caliphs, it reached 82% for Jisrbab Al Muadham and 71% of the Caliphs arena, while the percentage for the approach coming from the Maidan Square was 34%, compared to 46% for the approach coming from Adhamiya. These

varying percentages in the traffic movement of the four approaches to the intersection reflect the volume of economic, educational, health, governmental and population activities, which in turn reflect the volume of traffic of vehicles of all kinds, whether small or large, whether they belong to the public transport sector (the Municipality) or heavy vehicles, as this intersection represents the center of Baghdad, both at the level The commercial center is close to the main commercial center in Iraq, which is the (Shorja) area, in addition to universities and institutes, and leaves the movement of students, especially during the school period, from a traffic momentum, as they constitute a large segment and have a great impact on the traffic volumes of all roads and intersections in general and the intersection of the Iraqi Fighter Square in particular. It is noticeable that traffic congestion increases during working hours, especially the morning rush hour from (7-8) at the start of the official working hours for the various working segments of society, whether students, employees, workers or earners, and this is considered the outward journey, while the return journey is from 12-1 in the afternoon. The two time periods in the morning and noon, the traffic momentum on the roads is very large, and the traffic congestion begins to decrease gradually. At the end of the school year for all the different stages of students, traffic is lighter on roads and intersections, as the student segment constitutes a high percentage of traffic.

Intersection work before the construction of the bridge

The intersection of the Iraqi Fighter Square operates with the system of pre-timed traffic lights, that is, depending on the traffic passing from each direction at the intersection, the time required to pass (green) for each direction is determined, and the cycle time is usually (60-120) seconds, but In fact, the traffic lights are broken, so the construction of the bridge within this vital intersection was necessary in order to reduce traffic congestion, as well as to facilitate the flow of vehicle movement, cancel the use of traffic lights and reduce waiting time. As shown in Table (2)

Table (2)Criteria used to determine the level of service (7)

The level of service	Delay rate (veh/sec)
A	less than 10
B	20-10
C	35-20
D	35-55
E	55-80

The movement of small and large vehicles per hour is taken into account to determine the amount of traffic volumes for each of the four directions of the intersection, in addition to the width of the corridor, the carrying capacity, bus stops, the presence of parking spaces for vehicles, the type of area according to the commercial, educational, health and government activities in it,

which reflects the traffic movement of vehicles. , The presence of parking for vehicles, and Table (3) shows the drain energy of the directions of movement at the intersection.

Table (3)Discharge energy of movement directions at the intersection of the Iraqi fighter(8)

Discharge power(small vehicle/hour)	the movement	Direction
3185	Traffic forward	Coming from Jisrbab Al-Moadham
3183	Traffic forward	Coming from the Caliphs Square
1439	Turn to the right	Coming from the square
1624	Turn left	Next from Adhamiya

We conclude from the above table that the traffic performance from the level of service and the degree of saturation, in addition to the delay rate for vehicles in different directions of the intersection as well as the intersection itself, that the performance of the intersection is below the service level, and the delay rate for vehicles reaches 118.6 seconds, so it is necessary to find radical solutions to change the engineering design of this intersection and the way A currency to improve performance and reduce the delay time for vehicles, and to ensure the flow of vehicle movement to reduce and reduce the delay problem. Table (4) shows the traffic performance indicators for the intersection.

Table (4) Traffic performance indicators for the Iraqi fighter intersection (9)

performance level	Delay rate (veh /sec)	degree of saturation	Direction
F	164.1	1,28	Coming from Jisrbab Al-Moadham
F	91,2	1,10	Coming from the Caliphs Square
D	38,4	0,43	Coming from the square
F	409,8	1,79	Next from Adhamiya
F		118,6	Intersection

We note from Table (4) that the traffic performance of the intersection from the level of traffic service and the degree of saturation, in addition to the delay rate for different vehicles and for different directions of the same intersection within its old design works below the standard and with a delay rate of 118.6 seconds for vehicles.Therefore, the goal was to find radical solutions to this problem, as all intersections and squares in the areas of Baghdad suffer from the phenomenon of traffic congestion and long waiting time, and there remain minor differences in terms of

congestion or waiting, all according to the activities surrounding the intersection or the squares and areas they serve and the nature of population density also for the areas that surround intersections and squares.In addition, the basic design of Baghdad roads did not take into consideration the increase in population density and the nature of the activities that have developed on the nature of life in the city, as well as the increase in the number of vehicles that exceeded expectations, in addition to other factors that were not included in the studies, the security situation and the consequent placement of controls on the roads. From the problem of traffic congestion, as well as the closure of many roads and the addition of concrete barriers, in addition to the emergence of new population centers, whether regular or irregular random.All these developments and others were the cause of exacerbating the problem of traffic jams, so it was necessary to find radical solutions to solve this phenomenon. It works with two capacitive cards to drain traffic volumes, in order to reduce waiting time, reduce traffic jams, and facilitate the smooth movement of vehicles of all kinds, small and heavy.These plans will include all yards and intersections located in Baghdad, and the implementation time remains dependent on the location of the intersection and its conflicts with the infrastructure of the site located in it. During the writing of the research, in front of the Antarfa bridge, all studies related to its implementation have been completed and will be implemented in mid-2022.Accordingly, we will address the future vision of the intersection to perform the bridge, and the changes that will occur in the flow of vehicles in terms of time and movement.

The future traffic volumes of the Iraqi fighter intersection

The design of transportation roads or intersections in order to be economically feasible, which depends on the basis of the design age and the annual increase in traffic volumes, thus ensuring that these facilities perform the acceptable role and tasks required during the years of the operational life and with specific efficiency within the engineering design of the intersection.And because the Municipality of Baghdad is responsible for the capital, Baghdad, and in order to make the city look beautiful and renewed, it worked to transform the intersections that suffer from traffic jams, and cannot absorb the volumes of traffic passing through them, and because most of the intersections and squares in Baghdad have their current design and the actual reality of the activities surrounding each intersection, it stands as an obstacle. In front of the designs to be implemented, we mention, for example, but not limited to, the Aden Square, which witnesses a high traffic momentum, as the area has various commercial, governmental, religious and educational activities, in addition to being of a high population density. The construction of the bridge supports, as well as the buildings and their design surrounding the square, in addition to the water and sewage pipes, all these and other obstacles stand in the way of implementing many important projects that reduce the problem of traffic congestion that all Baghdad regions suffer from.Therefore, the Municipality of Baghdad relied on calculating the future traffic volumes, according to which the engineering design of the bridged parts of the intersection is carried out, as it adopted a design life of 20 years and an annual increase in traffic volumes of 3%. The future traffic of the Iraqi fighter intersectionThe fact that the basic design of the city of Baghdad was not

expected in proportion to the current reality in which the city of Baghdad is living, as the increase in the number of residents and its accompanying increase in activities of all kinds, in addition to the increase in the number of vehicles in a way that exceeded the carrying capacity of the roads, so it was necessary to find appropriate solutions And the actual reality of the city. In addition to the fact that the basic design of the roads and the activities around them of all kinds have become difficult to modify or expand in the engineering form, because the developments that took place in different types of population, economic, educational, health, government, exceeded the expected and future studies of the city of Baghdad.

Table (5) The future traffic volumes of the Iraqi fighter intersection (10)

Traffic volume(vehicle/hour)	the movement	direction
221	Turn right	Coming from Bab Al Muadham Bridge
1719	Going forward	
332	Turn left	
353	Turn right	Coming from the Caliphs Square
1490	Going forward	
325	Turn left	
256	Turn right	Coming from the square
380	forward traffic	
221	Turn left	
214	Turn right	Next from Adhamiya
567	forward traffic	
734	Turn left	

After taking into account the future traffic volumes of the different directions as well as the limited spaces available to be used in the implementation of bridges, the solution of the Municipality of Baghdad and as shown in Figure (2), if it was decided through the engineering design, there are two options for implementation, the first option is to make a bridge and the second option is to make a tunnel, in the first option the length The total length of the bridge is 437 meters, but in the second option, the total length of the tunnel is 387 meters. As a result of the limited distance available between the square of the Iraqi fighter and the square of the Caliphs, the first option (the bridge) does not provide a sufficient distance for movement represented in the direction coming from the proposed bridge and who intends to turn to the right in the direction of the Republic, meaning that it does not meet the minimum requirements The amount of 70 meters, according to the Iraqi Road Designs Manual 1983, and on this basis, the Municipality of Baghdad worked to implement the second proposal represented by the tunnel, being the only option in line with the reality. And for the forward movement by making a tunnel for these movements and maintaining the rest of the movements and the direction The various vehicles on the ground after being refined in terms of roundabouts, islands and the number of lanes to be able to serve future traffic volumes and at a pre-determined level of performance not less than level (D), through the work of a tunnel for the movement of the forward movement in the directions of Jisr bab Al

Mu'adham and the Caliphs, this will lead to alleviating The volumes passing through the intersection and in the proportions shown below

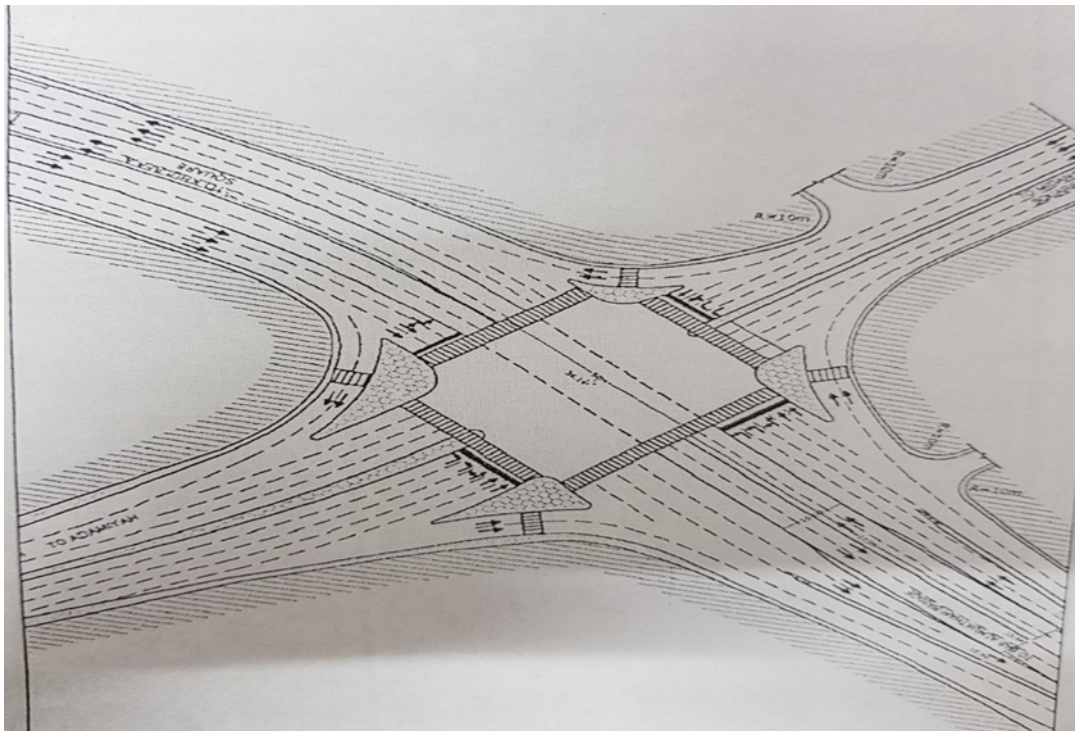
1. The future traffic volume in the direction of Jisr Al Muadham = 1719 vehicles/hour
2. The future traffic volume for the direction of the caliphs = 3209 vehicles/hour

The total = 3209 vehicles / hour, and the percentage of the total number of vehicles for different directions is calculated = 7,092 vehicles / hour. In order to calculate the decrease in traffic volume, it is by dividing the total future traffic volume of Jisrbab Al Muadham and Caliphs Square and multiplying it by 100 in order to know the percentage and as shown in the equation:

The percentage of decrease in traffic volume = (7092/3209) x 100 = 45.2% (11)

Through this ratio, we conclude that the work of the tunnel will reduce the percentage of vehicles occupying the intersection to less than half the size, and this in turn provides an additional space in time (cycle time) to serve the rest of the movements in the different directions of the intersection and also leads to reducing the percentage of intersecting movements. As shown in Table (6)

Figure (2) Engineering design of the Iraqi fighter bridge intersection (12)



table(6)Preparing the required passages for the tunnel at the intersection of the Iraqi fighter (13)

Number of lanes required	Maximum Discharge(v/h)	The level of service	Future traffic volumes (vehicles/hour)	direction
2	1080	B	1719	Coming from Jisrbab Al-Moadham
2	1080	B	1490	Coming from the Caliphs Square

The above table shows the expected service level when constructing the tunnel and the number of lanes required to achieve the desired benefit.

Future expectations of the intersection in the target year (2027)

For the purpose of finding the cycle time and knowing the level of service for the intersection and future expectations for its performance, through the services it currently provides, it was found that the intersection, after the development was carried out on it, operates at the service level in the target year and with an average delay time for vehicles that is four times less than what it was previously before the development was carried out on it. The service was previously substandard.As for the required cycle time, it is 120 seconds, and the time of the two green directions is divided by 20 seconds for the direction of Jisr Bab al-Moadham, 25 seconds for the direction of the Caliphs, 20 seconds for the direction of Al-Midan Square, and 35 seconds for the direction of Adhamiya. In the case of taking the distribution coefficient equal to 20/80 (the distribution coefficient is the ratio of the forward volume that uses the tunnel to the forward volume that uses the ground passages), we find that the performance of the intersection is not less than the service level (C), taking into account that the design of the tunnel in this case is based on The basis of 100% of the volume passing forward (14), the tunnel is used so that the engineering design is on the right side, as shown in Table (7) and Table (8)

Table (7)Traffic performance indicators for the intersection of the Iraqi fighter and the time phases of the movements for the target year 2027 (15)

performance level	Delay rate (veh/sec)	green time(sec)	phase	the movement	direction
C	36,5	20	1	Turn right	Coming from Jisrbab Al-Moadham
				Turn left	
				Turn right	

C	18,1	25	2	Turn left	Coming from the Caliphs Square
C	33.2	20	3	Turn right Going forward Turn left	Coming from the square
C	21.7	35	4	Turn to the right Traffic forward Turn left	Next from Adhamiya
C	25,9	intersection			

The total cycle time is 120 seconds.

The time for yellow is 3 seconds for each phase, and the time for all red phases is 2 seconds.

Table (8) The effect of the distribution coefficient on the service level of the intersection during different years (16)

20/80		10/90		0/100		Distribution coefficient	
Delay	The level of service	Delay	The level of service	Delay	The level of service	turn time	the year
24,9	C	23,7	C	22,6	C	20^{A} 25^{B} 20^{C}	2007
25,2	C	24,0	C	22,8	C	35^{d} 20^{A} 25^{B} 20^{c}	2009
30,5	C	27,5	C	25,9	C	35^{D} 20^{A} 25^{B} 20^{c} 35^{d}	2027

The direction of Jisrbab Al-Moadham A

The direction of the Caliphs SquareB

Field Square neighborhood direction

Adhamiya direction d

We note from the above table the improvement in the level of service at the intersection after the construction of the tunnel and the transformation of the service level to (C) and the smooth movement of vehicles of all kinds, small and large, and evidence of the success of this design in solving the problem of traffic jams experienced by all road intersections in Baghdad, due to their lack of absorption Due to the volumes of traffic it passes, and it is not commensurate with the large population increase that has occurred quickly and the consequent increase in commercial, educational and governmental activities.

Conclusions

1. All intersections in Baghdad suffer from traffic jams in a way that they cannot accommodate the volumes of traffic passing through them.
2. Calculating the optimal timings of the time phases, as well as the total cycle time based on the future traffic volumes for the target year (2027), was not feasible because the service level of the intersection at its best works at level (F) and with an average delay time of more than 300 seconds for vehicles. Therefore, this proposal was not feasible for the intersection. .
3. Changing the engineering shape of the intersection by converting it from a square to a four-arm intersection and adding a number of lanes in all approaches, so that it is able to drain traffic volumes for the target year (2027) and with the least possible delay time for vehicles and based on the recommendations of the standard guide for traffic capacity on which the Baghdad Municipality depends To calculate the number of lanes required to improve the performance of intersections, the number of lanes required in the main direction (Jisrbab al-Moadham - Caliph Square) is 6 lanes for each approach (i.e. 6 lanes for the approach coming from Jisrbab al-Moadham and 6 lanes for the approach coming from the caliphs), As for the secondary direction, the number of lanes required is four for each approach. Using the ideal timings for the time phases of the movements in the intersection, the performance result of the intersection for the target year (2027) works at the performance level (F) and with a delay rate for vehicles of more than 170 seconds, so this proposal was not feasible
4. As a result of the failure of the first proposal represented in changing the timings of the time phases of the different movements at the intersection, as well as the failure of the second proposal represented in changing the geometric shape of the intersection and adding a number of lanes for each of the different directions at the intersection, so the Municipality of Baghdad, in cooperation with the competent authorities, resorted to finding a solution to this The intersection and in proportion to the reality of the place it occupies and the volume of traffic that passes through it and to ensure the smooth movement of vehicles of all kinds, so the Municipality of Baghdad decided to adopt the third proposal that achieves the desired goals for the target year (2027), which is to transform the intersection from a one-level intersection to a two-level intersection (Bridge). What has been implemented on the ground.
5. The solutions developed to transform the intersections from one level to a two-level intersection are not suitable for all intersections, since some of the intersections have their infrastructure and the pillars of their construction intersect with the infrastructure of some other services. The infrastructure of the oil pipelines buried within the ground is the area in which the intersection is

located, and it also contradicts the water and sewage pipelines that serve the area, so its construction is still under study until the time of preparation of the research.

6. There are some intersections that require a radical alteration of the engineering form, because converting them into two lanes instead of one lane, whether by constructing a bridge or a tunnel, we will be the activities surrounding the intersection of all kinds, whether they are residential, commercial, governmental, health or educational, as well as the infrastructure occupied by the intersection are all obstacles that prevent the intersection from being converted into two lanes I take solutions that fit the actual reality and at more costs.
7. Some intersections will be converted into two lanes, since all conditions are suitable for its construction in terms of its infrastructure or the surrounding activities of various types: economic, commercial, educational, demographic, health, governmental. We mention, for example, but not limited to, the Antar Square intersection bridge, which will be implemented in fair 2022.
8. These projects require large financial allocations for their implementation. The lack of financial allocations was also one of the reasons that stand in the way of the implementation of these projects.
9. The intersection service level improved from service level (F) to service level (C) until the time of the study 2022, with a delay rate less than five times after converting the intersection to a bridge.
10. Converting intersections into bridges and tunnels in a manner that achieves a more streamlined movement of vehicles and reduces the waiting time for vehicles, thus reflecting its positive effects on the psyche of vehicle owners and reducing the consumption of vehicle life.

Recommendations

1. Converting intersections and squares into two or more tracks in proportion to its engineering reality.
2. Bridges are feasible engineering solutions to reduce the traffic congestion that plagues all Baghdad roads.
3. Providing adequate financial allocations in proportion to the importance of these vital projects that address an intractable problem that Iraqi society suffers from.
4. There are some intersections that occupy an important site and witness continuous traffic jams throughout the year, but they cannot be converted into bridges or tunnels due to the infrastructure of the site that they occupy and conflict with other activities such as oil pipelines buried underground, water pipes or sewage pipes, which was an obstacle in delaying its implementation. We mention, for example, but not limited to, the Aden Square bridge, which the study is still in place until the period of completion of the research, as it faces many problems that hinder its implementation at the present time.
5. Some of the intersections and their sites have the elements of success in converting them into bridges and tunnels, as it does not conflict with converting them or changing the engineering shape of them and the infrastructure of the site that occupies and among these intersections, for example, but not limited to the intersection of Antar Square, as the Municipality of Baghdad aims to start work in the middle of 2022 after approving the budget for T Availability of the financial funding needed to complete it.
6. Working on finding radical solutions to all intersections in the city of Baghdad in order to solve the problem of traffic congestion, which has become a mark that characterizes those intersections, and the positive repercussions that these treatments achieve on the psychology of vehicle drivers on the one hand, and extending the lifespan of the vehicle on the other hand, as reflected in improving the environment By reducing the emissions of pollutants from vehicles while waiting at the intersection for long periods as a result of congestion.

Margins

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