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Research Article

Possibility of The Typical Sidewalks and Pedestrian Paths in The Urban Cities "Aqaba City as a Model

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Abstract: This research aims at revealing the extent of possibility to employ the typical sidewalks and Pedestrian paths in Aqaba city- Jordan.

The researcher used the descriptive and case study methods, referring to a number of resources like the photos and special data concerning the roads and streets in the city to find out extent of employing these sidewalks and pedestrian paths in order to guarantee safe and smooth movement in consistency with the general plan components, including pedestrian paths for these with special needs and cyclists to keep abreast with the urban development and reducing the traffic as much as possible.

The study reached solutions regarding development and enhancing the functions of the sidewalks and pedestrian paths in the city to reduce accidents by applying the higher standards of quality in the design and the implementation

Keywords Typical sidewalks, Urban cities, Aqaba city

1. Introduction

Walking is considered one of the social phenomenon, requiring the presence of planning policies and urban consideration which many Arab cities lack the presence of such consideration as a result of a number of factors including social, cultural and architectural factors.

It is well-known that the pedestrian's movement is considered an important and basic element of the different movements inside the city with its noticeable interaction from the social and humanitarian sides requiring safe and clean environment.

Jordan is interesting in the transportation sector in terms of developing and improving the roads and the sidewalks, preparing the developmental and economic plans for this important sector.

Aqaba city is considered one f the important cities because of its distinguish location as a touristic city in Jordan.

Aqaba city is witnessing huge expansion in streets and roads construction, but often without paying the due consideration to the form and design of the sidewalks and pedestrian paths, lack to presence of the required controls and standards in the construction processes to provide smooth movement of the cars and the pedestrian.

From these consideration this stud aims to reveal the extent of possibility to employ the typical sidewalks and pedestrian paths in the city in order to serve the pedestrian and to be attractive to the viewers, in addition to reduce the number of accidents and protecting the environment.

2- Statement of The Problem:

Statement of the problem represents in the need for more focus and attention regarding one of the crucial issues related to the design and planning of the sidewalks and pedestrian paths through determining the barriers and all factors causing problems to the pedestrian, and activating everything helps in transforming these sidewalks to attractive sites for the pedestrian, the workers and the users.

The focus will be on a number of shortages for the pedestrian paths structure which contribute to the reduction in their expected services.

So, it is possible to formulate the research problem through the following questions:

1. Is it possible to achieve the consistency and suitability between the climate conditions and the city's geomorphologies in determining type and quality of designing, planning and executing the sidewalks and pedestrian paths in shadow of increasing the population and the traffic which opened the door for making radical changes in the city's general plan?

2. What are the available information and data to be used during the design, planning and execution of the sidewalks network?

3. What is the extent of the general design consistence of the sidewalks and the pedestrian paths at the end of the implementation stages with the comprehensive urban planning?

3- Importance of The Research:

Importance of this research stems from its theoretical and practical importance, and from the important information derived from the results regarding the optimal sidewalks and pedestrian paths.

From the practical side it has the potential to benefit the following segments:

1. Researchers: Through making this research a nucleus for other similar studies.
2. Those who are interesting in the typical sidewalks and pedestrian paths.

4- Objectives of The Research:

Generally, this research aims to find out extent of the possibility to employ the typical sidewalks and pedestrian paths in Aqaba city.

Also, it aims to achieve the following sub-questions:

1. Documenting the state of the roads and the sidewalks in the city and revealing the frame of services specific to pedestrian movement.
2. To shed the light on the importance f the researcher's integration, its comprehensiveness regarding the traffic movement and the optimal usages of the sidewalks, pedestrian paths and the different services.

5- Methodology of The Research:

The researcher used the descriptive method through describing & analyzing the present situations, quantitatively and qualitatively according to the research's requirements.

6- Theoretical Frame:

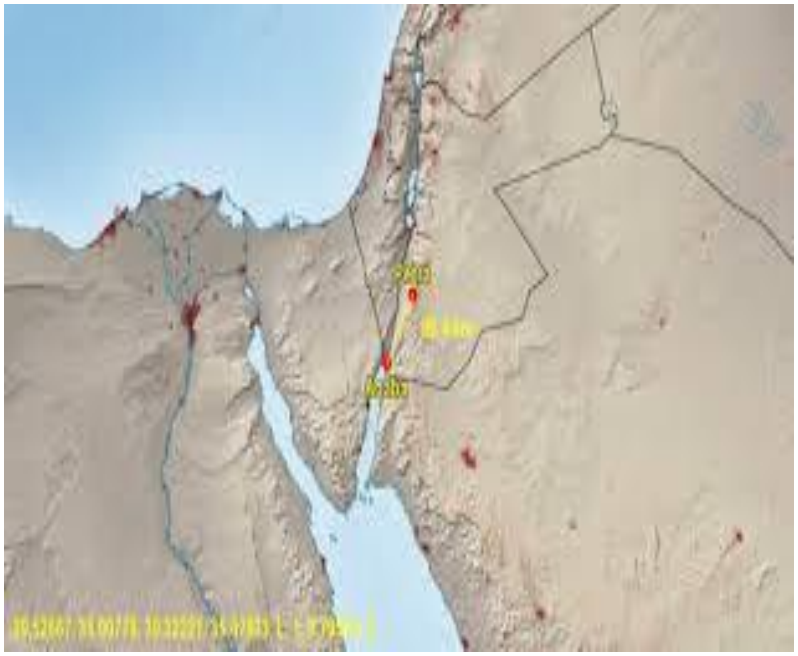
Following is the illustration of the theoretical fame concerning the research's topic, human and natural aspects and their impact on the sidewalks and pedestrian paths.

- Natural Aspects:

Aqaba city locates at far south west of Aqaba Governorate south of Jordan, about 330 km from the capita Amman city, between longitudes 28.5°, 59° and 34°, and between width circles 18.3°, 33.8° and 29°.

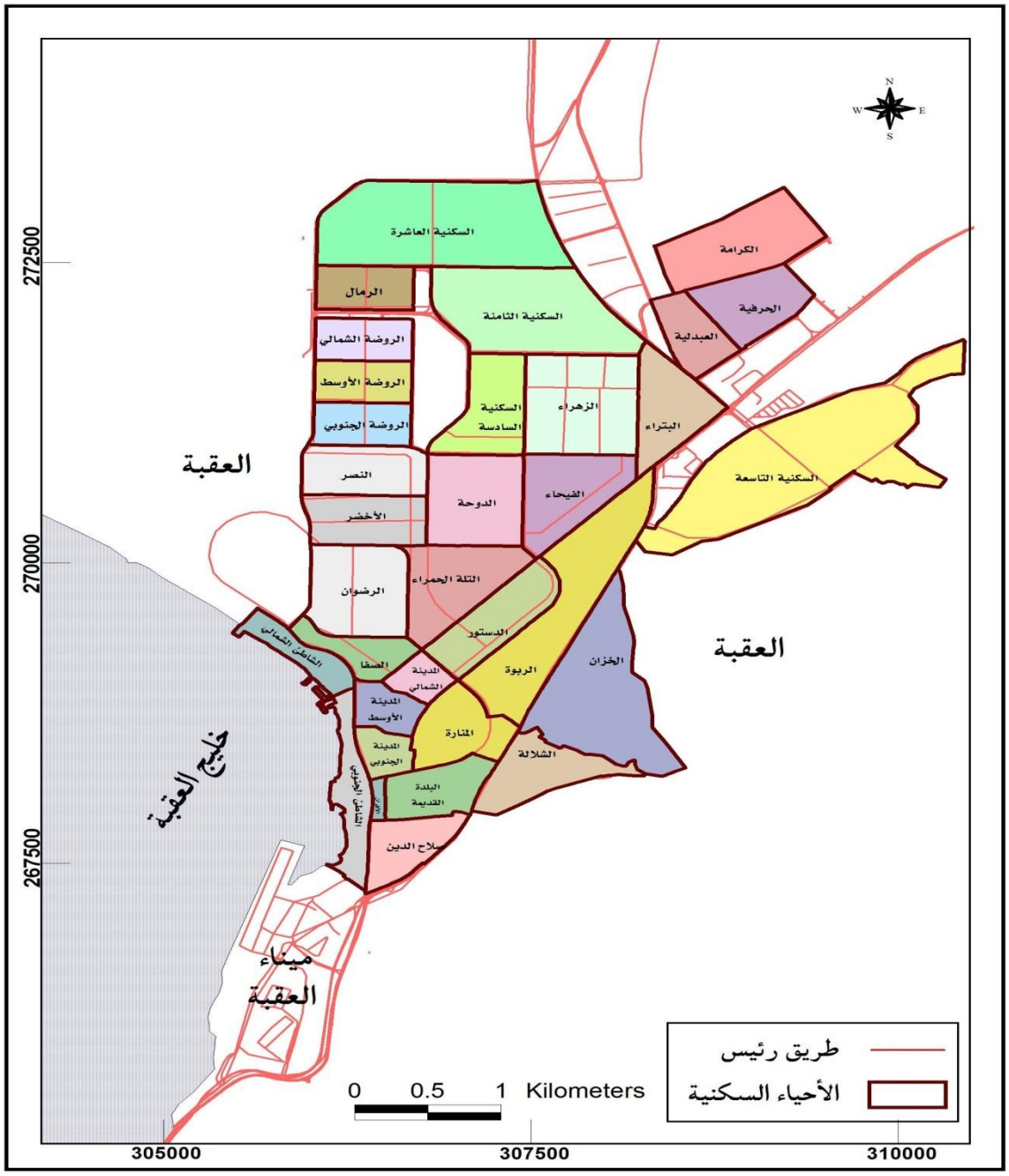
The city locates at the Northeast side of Aqaba Gulf North of the Red Sea. See Figure (1).

Figure (1) Location of Aqaba City



Aqaba city is surrounded by a number of housing complexes, the city has witnessed an increase in its population, and expansion in the building and construction projects. Also, has witnessed economic growth and development in all sectors, see figure (2).

Figure (2) Residential Building in Aqaba City

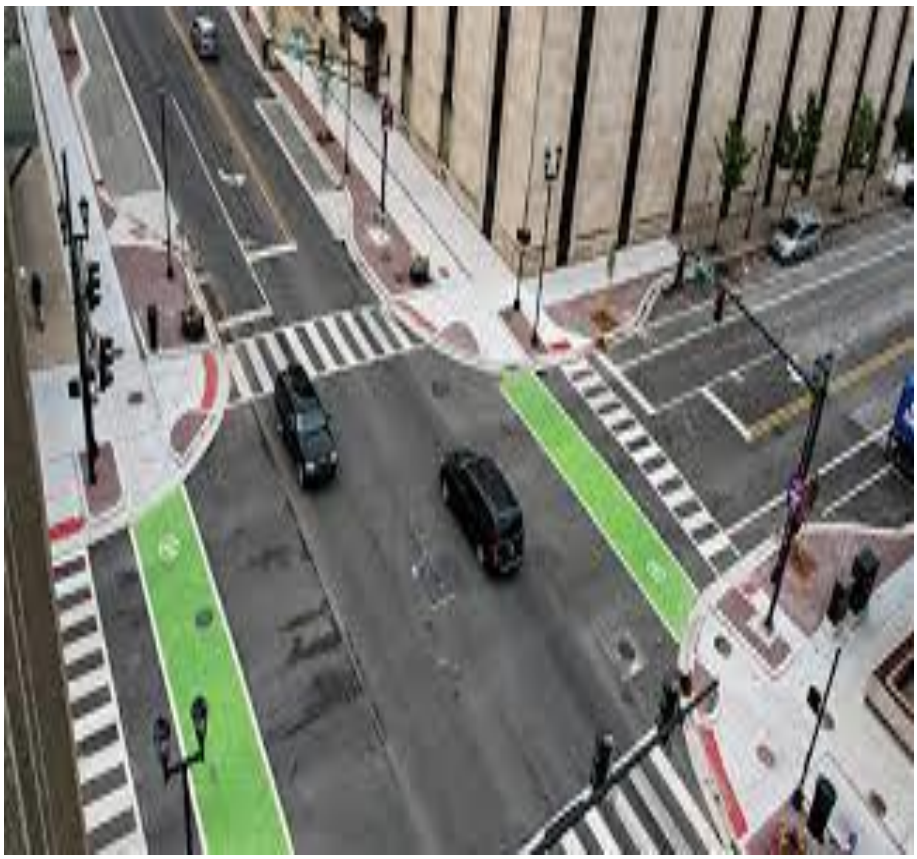


Pedestrian paths and sidewalks are greatly affected by the natural environment, so it is important to have studies regarding the natural environment within the basic determinants and studies before the start in the design process.

The Ground and its importance in Roads and sidewalks Building Aqaba city is characterizes by multiple types of soils, such as the sandy soil, carbonic soil, stone and crusty soil, the brown red dry soil, and other types of soil.

The geological and topographical fabric of the land in Aqaba city have the effect on planning the site, and have the impact on building the roads, and sidewalks, and pedestrian paths, (Al-Marshti, 2016).

Figure (3)



Human Specifications:

Population growth and its influence on the pedestrian movement in Aqaba city.

Population are the basic source around which many of the studies depended on it, knowledge about the population data is considered the mean for understanding many local and regional variables and the resulting influences from these variables.

Aqaba city is a costal city, it enjoys distinguish position and status, its population has increased by annual increase (5.98%), reaching in year 2018 about (102912) person according to statistics of the year 2018, this confirms the increase percentage in the population from the year (1994) which was(51742) person. Department of General Statistics, (2018).

Site Planning:

It is meant by sites planning, locating the constructions and the activity places in specific location, in a coordinated way with the dimensions to achieve specific objectives.

When addressing the design of any site, the planner should deeply investigate the available foundations and components of the site such as the natural components.

In addition, the planner should consider the society's modes of behaviors, and their local culture, since planning the sites and setting the designs have great influence, not only looking at the roads and the constructions, but also to view an integrated, activated environmental formation preserving the nature's characteristics, society's culture and its heritage.

The design of any site includes three basic components (Haider, 2018).

1. The Functions: whether exiting in covered places or open places.

2. The Passage: it means the organic communication between these functions including the pedestrians and the users of the roads.

3. The visual and architectural component, this formation results from coordinating the functions the usage and the passage of the residents.

These components determine the passage from one function to another, it might be visual communication like viewing the connection between the residential complexes with the sidewalks, pedestrian paths, and the parts, or the attractive natural views concerning safety and convenience, providing the suitable sidewalks, considering sidewalks for those with special needs by making the ramps at the edge of the platform as seen in Figuge (4). (Atreesi, 2019).

Figure (4) Optimal group of sidewalks at crossroads with different diameters

Figure (5) shows how to deal with traffic crossroads near children's schools to facilitate and organize the pedestrian's movement and transportation together at the same time.

Roads and platforms work to strength the communication power and facilitate the safe movement process.

Figure (5) A Model Clarifies the Design of an Educational Building Site

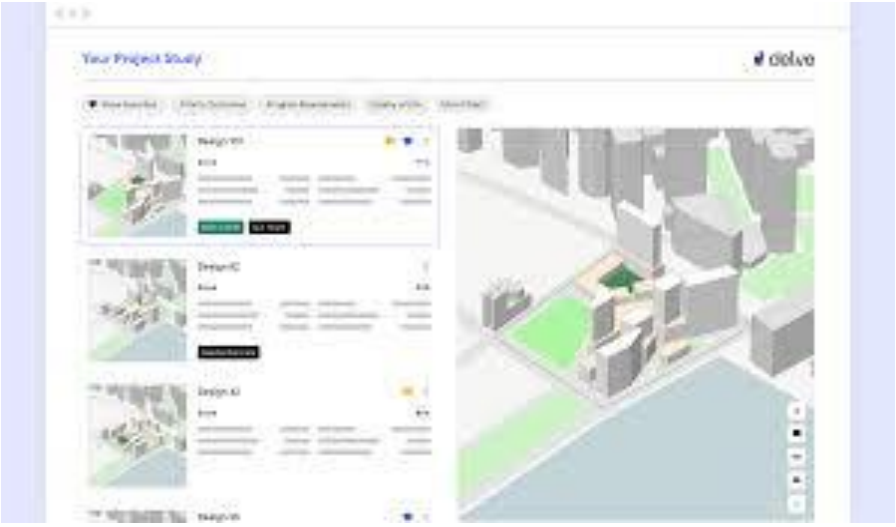
Figure (6)

Sidewalks:

Sidewalks provide the safe movement and convenience to the pedestrians, connecting the housing locations with smaller close units and between the planning units' elements to provide the desired services.

Sidewalks are planned based on continuous network of main Sidewalks linking the houses with service Sidewalks.

Figure (7)



Sidewalks are divided according to three levels of planning units (Msailhi, 2019).

1. Entrance sidewalks- the sidewalks to entrance to a group of housing buildings, or to an independent buildings.

2. Service sidewalks - link between the basic sidewalks and entrance to a group of buildings.

3. Basic side walks- Directly link between the planning units' sections, and the basic sidewalks out of the planning units.

When planning this network, the designer should consider encouraging the pedestrian in a way helping them or forcing them to use the sidewalks and cross the street from specific safe points determined by metal and luminous billboards.

Pedestrian paths inside the city have different types can be summarized in the following points (Al-Hassoon, 2016):

- Platforms.
- Pedestrian paths.
- Crossing paths (at cross).
- Fixed and moving ladders.

These types of pedestrian paths are planned to produce integrated net characterizes by flexibility and vitality and for each type a relevant presentation sufficient to absorb the flow of pedestrian in the direction of the path.

Figure (8)

The desired standards for planning the pedestrian paths movement in the city:

According to the surrounding environmental conditions, there is the necessity for the presence of pedestrian paths net, a safe net completely planned with the roads' net specific to vehicles movement, to be able to connect the different housing regions with the green regions and other usages.

Satisfying the requirements of the human movement, and the functional role of these sidewalks and pedestrian paths to achieve their objective, considering the aesthetic aspect (Shadeed, 2018).

From the theoretical and the field study, the researcher concludes that some of the standards specific to the width of the platforms and pedestrian paths in Aqaba city were not considered when the execution of the roads.

Since part of these platforms is not in accordance with the roads' sides, and suffer from lack of basic elements such as the seats, trees, sunshades, and lighting, signs for determining points of pedestrian crossing.

These current conditions confirm the need for development as a result of the continuous population increase and urban development under the frame of the city's general plan.

Figure (9)

7. Results:

The study reached the following results:

1. The building of many roads without platforms, sidewalks, or pedestrian paths, and the already existing sidewalks and pedestrian paths are in poor situation, lack the focus on safe walking and the free movement in the city by the pedestrian, this situation has reflected on the platform and sidewalks users, forcing them to walk at the street.

2. Because of the multiple economic and social activities in the city, the pedestrian movement has increased in a n unsafe and unorganized way because of neglect and aggression on the platforms, led to the occurrence of damages to the properties and risks to the users, such as collapse of some roads during the winter season due to soil drift under the streets, because of lack of constructing the platforms which distribute the infrastructure services protecting the building.

3. According to surrounding specific environmental conditions, it is imperative to design and plan a net of sidewalks, platforms and pedestrian paths relevant to the prevailing conditions integrating with the vehicles movement, to be able to connect all of the residential regions with the green regions centers for different wages.

8. Recommendations:

1. Distributing the road's area between the users in a way to achieve the objectives of the road, and in accordance with movement goals of the citizens.

2. Allocating basic axis for the pedestrian movement in the city separated from the vehicles movement.

3. The necessity for separation between the pedestrian movement and the vehicles movement at the horizontal level by using organized standards to limit the risks at the crossroads and controlling the different traffic movement.

4. Providing the convenient and public health requirements, including the services, seats, and sunshades.

5. The use of the trees and fountains to add to the aesthetic element relevant to the sidewalks dimensions and the required space for the pedestrian movement.

The use of control systems, the device and traffic guidelines indicating at the pedestrian paths.

References

Arabic Books

1. Almrshti, A. "Fundamentals in the Building Planning and Design, Dar Ibel for Publishing, Distribution and Advertisement Ben Ghazi- Libya, 2016.
2. Haider, F. "Planning The Cities and The Villages, Al-Ma'aref Establishment, Alexandria – Egypt, 2018.
3. Department of General Statistics, Population Count, 2018.
4. Studies, Periodic and Reports:
5. Al-Hassoon, A. Studying the Special Provisions Specific to the Services Related to the Disabled in Al-Riyadh City, 2016.
6. Shaded, Y., "Planning the Pedestrian Movement Net" Scientific Research, Al-Azhar University Publications, Faculty of Engineering, 2018.