

Visual Pollution of Commercial Street Sidewalks: A Case Study of Design Standards in Al-Hilla City, Iraq

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Abstract: This study investigates the impact of subpar sidewalk design standards on the aesthetic quality of commercial streets. Sidewalks, exemplified by Roman constructions, have historically played a crucial role in urban infrastructure, fostering pedestrian safety and social interaction. The research focuses on Street 40 in Al-Hilla city, examining how inadequate design standards contribute to aesthetic degradation. Previous research has addressed visual pollution in urban environments, but few have specifically examined sidewalks. This study addresses this gap by analyzing design standards in Street 40.

The findings reveal that current sidewalk design falls short of required standards. Inconsistent width, variations in finishing materials, and a lack of consideration for building heights relative to sidewalk level all contribute to a diminished aesthetic experience. Moreover, the sidewalks serve functions beyond pedestrian use, accommodating advertising and merchandise display, further highlighting the need for improved design. The research concludes by proposing recommendations to enhance sidewalk aesthetics, including ensuring adequate width, maintaining design consistency, reserving sidewalks for pedestrians and designated furniture, and implementing color differentiation for improved pedestrian navigation.

Keywords: Sidewalk Design, Urban Aesthetics, Commercial Streets, Pedestrian Infrastructure, Al-Hilla City

التلوث البصري لأرصفة الشوارع التجارية: دراسة حالة لمعايير التصميم في مدينة الحلة بالعراق

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المستخلص: تهدف هذه الدراسة تأثير معايير تصميم الأرصفة المتدنية على الجودة الجمالية للشوارع التجارية. لعبت الأرصفة، التي تمثل نماذجها الإنشاءات الرومانية، دورًا تاريخيًا مهمًا في البنية التحتية للمدن، حيث تعزز سلامة المشاة والتفاعل الاجتماعي. تركز الدراسة على شارع 40 في مدينة الحلة، وتفحص كيف تساهم معايير التصميم غير الملائمة في التدهور الجمالي. تناولت الدراسات السابقة قضية التلوث البصري في البيئات الحضرية، لكن القليل منها تناول الأرصفة على وجه التحديد. تسد هذه الدراسة هذه الفجوة من خلال تحليل معايير التصميم في شارع 40.

تكشف النتائج أن تصميم الأرصفة الحالي لا يرقى إلى مستوى المعايير المطلوبة. يساهم عدم تناسق العرض، واختلافات مواد التشطيب، وعدم مراعاة ارتفاع المباني بالنسبة إلى مستوى الرصيف، في تقليل التجربة الجمالية. علاوة على ذلك، تخدم الأرصفة وظائف تتجاوز استخدام المشاة، حيث تستوعب الإعلانات وعرض البضائع، مما يزيد من الحاجة إلى تحسين التصميم. تختتم الدراسة باقتراح توصيات لتعزيز جماليات الأرصفة، بما في ذلك ضمان عرض مناسب، والحفاظ على تناسق التصميم، وحجز الأرصفة للمشاة والأثاث المخصصة، وتنفيذ تباين الألوان لتحسين حركة مرور المشاة.

الكلمات المفتاحية: تصميم الأرصفة، الجمالية الحضرية، الشوارع التجارية، البنية التحتية للمشاة، مدينة الحلة

Introduction

Walking is one of the different and easiest means of movement within cities, and pedestrian traffic is concentrated in residential neighborhoods and in commercial areas. Sidewalks are one of the most socially and environmentally interactive types, especially in light of population growth and increased pollution due to the increase in the number of cars and daily activities in the city. The movement of walking on the sidewalks is hindered by a wide range of variables that vary in their effects and sources [1].

There is no doubt that improving the walking environment requires finding safer and more suitable sidewalks to move between stores and cross roads and intersections, so we aspire to have comfortable, safe and attractive sidewalks that improve the appearance of the city and commercial streets, and encourage pedestrians to use it and feel comfortable and safe [2].

This research will focus on one the means of organizing the urban environment and its aesthetics, namely: sidewalks and furnishing them with their standards and indicators.

Therefore, the research problem was represented by (the loss of aesthetic sidewalks in commercial streets due to poor design standards)

Accordingly, this research aims to study the condition reality of the sidewalks in a main commercial street in the city of Hilla, which is (Street 40).

Research Methodology:

Because the subject of our research is realistic, we have adopted the descriptive approach that describes the phenomenon as it is in reality, and then analyze the existing indicators by making exploratory visits to the study area and standardizing those indicators based on the criteria required for the case study. In addition to relying on research for previous years and thesis.

Case Study the Sidewalks of the Commercial Street in AL-Hilla City (Street 40):

In this research, Street 40 was chosen, which is the hearts Hilla and the second most important street in the Al- Hilla city, which links between Al-Shawi area on one side and Bab Al-Hussein area on the other side. Below are some pictures (1,2,3,4,5,6,7,8,9,10) that show the condition of the sidewalks on the one hand:

1. Its height, levels and finishing materials.
2. Absence and weakness of the design standards that must be provided on the street sidewalks.
3. Dilapidated places on the sidewalk.
4. Forming the sidewalk with contrasting finishing materials

Its height, levels and finishing materials.

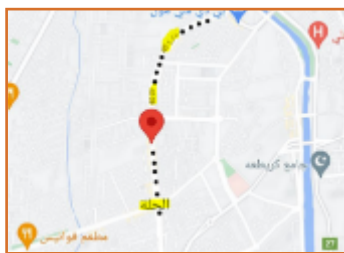


Fig. 1 Aerial photo of Street40.
Source (google earth)



Fig. 2 shows the wear of the sidewalk in some places. Source (Researcher)



Fig. 3 shows some buildings that are higher than the level of the sidewalk, and this condition is good. Source (Researcher)



Fig 4.shows the variation of the finishing materials in some areas of the sidewalk, as well as the asymmetry in the sidewalk level. Source (Researcher)



Fig (5)shows the variation of the finishing materials in some areas of the sidewalk, as well as the asymmetry in the sidewalk level. Source (Researcher)



Fig 6. shows a variation of the sidewalk finishing materials. Source (Researcher)



Fig(7) and Fig(8) show a discrepancy in the sidewalk level. Source (Researcher)



Fig (8) Source Researcher))



Fig(9). Source (Researcher)



(9) Fig(9) and Fig(10) show the inconsistency of the height of the sidewalk level with the street. Source (Researcher)

Visual Pollution of Commercial Street Sidewalks (Case Study):

The current study has taken one the means of organizing the physical environment based on the sense of its aesthetics as a measure for evaluating the visual performance, which are:

sidewalks and furnishing them with their standards and indicators.

The indicators were investigated for the reality of the situation for the purpose of making the comparison (determining the defect or gap) according to the Likert scale and according to the (performance response group), where a method derived from the five-point Likert scale was used, according to what is shown in Table (1), Table (2) and Table (3).

Visual Pollution	% evaluation ●					Visual Performance
	●	●●	●●●	●●●●	●●●●●	number of performance points
	20%	40%	60%	80%	100%	performance percentage

	very low	low	medium	high	very high	performance quality
						performance direction

Table 1. shows a method for measuring the optical performance of 40th Street using a method derived from the Likert pentatonic scale [3].

Required standard [4]	Indicators	Standardization or description of the reality of the situation (investigation)	Assessment
It is raised by (20 cm) to achieve the formal harmony of the street	Building levels in relation to the sidewalk	sidewalk level	●●
Less dimension (15 cm) and greater dimension (25 cm)	The height of the sidewalk from the street	uncomfortable 4m	●●
sidewalk width 4 m [5]	From (4 m) total to (8 m) for the type of street	Different levels	●●●
The height level of the sidewalk affects the harmony, Regulating, and aesthetics of the sidewalk and the street	Same level at one level	unavailable	●
The necessity of having a slight incline on the sidewalk for the disabled	Traffic light areas have a slight incline (15 degrees) for the disabled [6]	Trouble walking	●
is designated for pedestrian traffic Minimum width 2.25 m	1. The path of the sable [7]	unavailable	●●
Minimum width 80 cm	2. Walking for people with special needs [8]	unavailable	●
1.A path for the pneumatic wheels must be provided within the pedestrian area or within the street designated for cars[9]. 2. Minimum width 100 cm	3. Pneumatic wheel belt	unavailable	●
Tags	1.Distinguish each path from the other	unavailable	●

RESULTS AND DISSCUSIONS

The study showed from the table above that there is a discrepancy in the values of visual performance, where the highest percentage of performance was estimated at five points, i.e. a percentage of 100%, meaning high visual performance. that is, very low visual pollution. While the quality of the visual performance was estimated at one point, i.e. at a percentage of 20%, meaning a very low visual performance, that is, the presence of a very high visual pollution.

(Due to a weakness in the required standards necessary for the commercial urban landscape) as shown in Table 3.

Regarding the sidewalk and its furnishing								
Building levels in relation to the sidewalk	The height of the sidewalk from the street	sidewalk width	The sidewalk is one level	The presence of a slope for the disabled	sable walk	Walking for people with special needs	pneumatic wheels	Distinguish each path from the other
40%	40%	60%	20%	20%	40%	20%	20%	20%

Regarding the sidewalk and its furnishing								
performance/below standards	performance/below standards	performance/meets standards	performance/much below standards	performance/much below standards	performance/below standards	performance/much below standards	performance/much below standards	performance/much below standards

Table 3. The visual performance values obtained from the survey are presented.

From the above Table, We Found that the Visual Performance Values are:

The evaluation reveals that the performance of each building level concerning the sidewalk height is at 40%, indicating substandard performance. Conversely, the width of the sidewalk scored 60%, meeting the required standards.

In terms of pedestrian walking performance, it achieved only 40%, falling below acceptable standards. Furthermore, the allocation of slope for disabled access on the sidewalk and provisions for individuals with special needs and pneumatic wheels scored a mere 20%, significantly below the expected criteria. Additionally, there is a lack of distinct delineation for each lane, further impacting performance.

Conclusions:

- The sidewalk design on these streets falls short of required standards.
- Sidewalk widths are inconsistent, lacking uniformity.
- Inconsistent finishing materials detract from the aesthetics of the sidewalks.
- Building heights are not considered in relation to sidewalk levels.
- Uneven sidewalk heights create discomfort for pedestrians when walking.
- Sidewalks are used for purposes beyond pedestrian movement, including displaying goods and advertising, highlighting the need for improved design.
- A clear distinction between designated walking paths on the sidewalks is absent.

Recommendations:

1. **Sidewalk Width:** Considering peak pedestrian flow of 90 pedestrians per minute in front of shops, a minimum sidewalk width of 3.5 meters is recommended. This allows for an additional "recreational area" for shops. Existing sidewalks of 2 meters width significantly limit usable space.
2. **Design Consistency:** Sidewalks should maintain consistent finishing materials, height, and horizontal level throughout.
3. **Pedestrian Priority:** Sidewalks should be designated exclusively for pedestrians and designated furniture, prohibiting parking.
4. **Clear Path Definition:** Implement color differentiation to create well-defined walking paths on the sidewalks for improved pedestrian navigation.

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